

# Finding the beat in German poetry: The role of meter, rhyme, and lexical content

Benjamin G. Schultz & Sonja A. Kotz

Department of Neuropsychology and Psychopharmacology, Faculty of Psychology and Neuroscience, Maastricht University, The Netherlands

Ben.schultz@maastrichtuniversity.nl, Sonja.kotz@maastrichtuniversity.nl

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## 1. Introduction

Poetry is an artistic form of communication that may or may not contain meter, rhyme, or lexical content [1]. We examined how the temporal regularity of spoken German poetry varied as a function of these features. Using a beat tracker that was previously used to measure speech rate based on moments of acoustic stress [2], we examined how stress rate and variability were influenced by meter, rhyme, and lexical content during read poetry performances. Theories of cognitive fluency state that less cognitively demanding tasks are performed more quickly and less variably than more cognitively demanding tasks [3,4]. Based on the dynamic attending theory [5], we expected that meter increases cognitive fluency. Based on syntactic [6] and lexical [7] priming, we expected lexical words and rhyme to increase cognitive fluency. Therefore, it was hypothesized that the stress rate would be faster and less variable for: i) poems with an implied meter compared to those without, ii) rhyming poems compared to non-rhyming poems, and iii) poems with lexical words compared to pseudo-words.

## 2. Method & Analysis

An anonymous German poet performed poetry readings consisting of single phrases ( $N=800$ ) where the written stanzas varied in meter (meter, no meter), rhyme structure (rhyme, no rhyme), and lexical content (lexical words, pseudo words). The recordings were subjected to beat tracking analyses that yielded the mean and standard deviation of the inter-beat intervals for each recording measuring the stress rate and variability, respectively. Analyses were conducted using a linear mixed-effects model with fixed effects meter, rhyme, and lexical content and the random effect of stanza. Bayes factor  $t$ -tests were used to measure evidence in favor of the null hypothesis.

## 3. Results

In line with our hypothesis, poems with an implied meter were spoken with a faster rate than poems without an implied meter ( $p < .001$ ; see Figure 1). Bayes factor  $t$ -tests revealed substantial evidence for the null hypothesis indicating no difference in stress rate for the factors rhyme and lexical content. Results also showed that stress rate was less variable for poems with an implied meter than those without ( $p < .001$ ; see Figure 2). Bayes factor  $t$ -tests revealed substantial evidence for the null hypothesis indicating no difference in stress rate variability for the factors rhyme and lexical content.

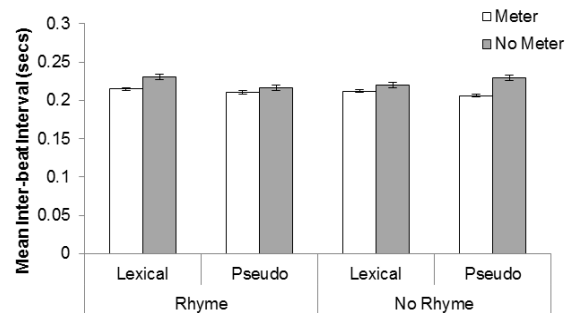


Figure 1. Mean inter-beat interval for meter, rhyme, and lexical content conditions. Whiskers represent standard error of the mean.

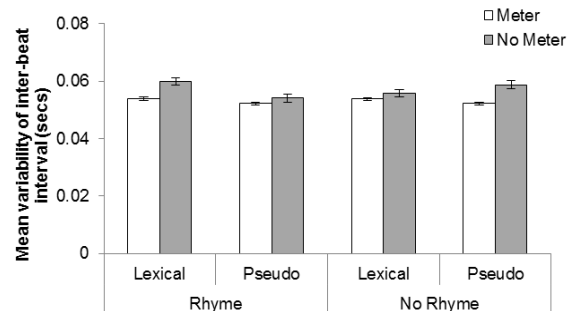


Figure 2. Mean standard deviation of inter-beat interval for meter, rhyme, and lexical content conditions. Whiskers represent standard error of the mean.

## 4. Discussion & Conclusions

Results show that, during readings of poetry, meter increases stress rate and decreases variability. This suggests that an implied meter may increase cognitive fluency. However, rhyme and lexical content do not influence stress rate or variability and, subsequently, cognitive fluency; this does not preclude that other acoustic cues are used instead. The increase in stress rate for meter conditions could also be interpreted as an affordance for the perceiver; the increased regularity facilitates cognitive fluency for the perceiver (e.g., [8]) and, as a result, the performer can afford to speak at a faster rate without disrupting comprehension. This hypothesis will be tested in perceptual tasks that assess the recollection accuracy of poetry readings with and without meter at different stress rates. The effects of arousal and aesthetics will also be explored (see [9]).

## 5. References

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