

The role of rhythm in improving non-native comprehension of English casual speech

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1. Introduction

In casually spoken English, reduction processes can dramatically affect the phonetic shape of words, especially function words, reducing their intelligibility for non-native listeners. There is a close connection between reduction and speech rhythm: metrically weak syllables reduce more, and may be cued only by subtle phonetic detail that non-native listeners struggle to detect. Despite growing evidence that attention to speech and music is rhythmically guided (e.g., [1] [2]) and that speech processing depends on language rhythm (see overview in [3]), little work has tested whether encouraging non-native learners to attend to rhythm might support their comprehension of casual speech. We report an experiment to test whether learners' casual speech comprehension is affected by the rhythmic organisation of speech they are exposed to.

2. Method

Participants (n=62, from a variety of language backgrounds, all self-reported normal hearing) were pre-intermediate to upper-intermediate learners of English, resident in Glasgow. The experiment had three phases, pre-test, exposure, and post-test. In all phases, learners heard short sentences spoken fast and casually by native speakers of Glasgow English (different sentences in each phase). In the pre- and post-test learners performed a transcription task involving filling in gaps corresponding to the sentences' function words, e.g. the answer to ___ *stuck* ___ *seat* ___ *car* would be *It is stuck to the seat in the car*. These sentences for pre-test and post-test were chosen from the faster-rate materials. In both the pre- and post-test there were 12 sentences, 6 from the rhythmic and 6 from the non-rhythmic materials. In the exposure phase, learners listened to sentences produced several times with increasing speech rate. In the rhythmic condition, the sentences had regular metrical structure (e.g. *He was **fat** for a **cat** in a **box***, stressed syllables in bold) and tokens were elicited through a modified version of the speech cycling procedure (Cummins and Port, 1998) in which speakers align the stressed syllables with metronome beats occurring at gradually increasing rates. In the non-rhythmic condition, sentences had irregular metrical structure (e.g. *It was **big** even for a **chicken** on a **farm***) and tokens were elicited by instructing speakers to read a story at different rates. We predicted that hearing materials with greater rhythmicity would lead to greater improvement from pre- to post-test.

3. Results and Discussion

A mixed-effects logistic regression analysis showed a trend for learners' comprehension of function words to improve more from pre- to post-test if they received rhythmic rather than non-rhythmic exposure, as predicted. Significant effects of the learners' English language proficiency and the type of connected speech phenomenon were also found: performance improved from pre- to post-test on some of the function word categories, but remained stable or even dropped for others. Ongoing work investigates the detailed relationships between rhythmic structure, grammatical category, and test improvement, and seeks to relate the perceptual results to acoustic properties of the stimuli.

4. Acknowledgements

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5. References

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