

The role of tapping in improving connected speech comprehension of a non-native variety of English

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Comprehension of Glaswegian English is known to present difficulties for speakers of other varieties of English (Adank et al., 2009; Smith et al., 2014). In connected speech, weak syllables get particularly reduced, which increases the chances of miscomprehension even further. This study investigates whether connected speech comprehension in speakers of a non-native variety of English can be improved if subjects are involved in performing a tapping task while listening to rhythmic speech.

Tapping means that the subjects engage in motor behaviour while performing a speech perception task. Tapping can lead to synchronisation of the taps with the regular stimulus, i.e. to entrainment. Lidji et al (2011) conducted an experiment in which native speakers of English and French were asked to tap along to the perceived beat in speech. They found that speakers tapped more regularly to English than to French and that speakers of English were able to tap at higher metrical levels than speakers of French. Thus, entrainment to the beat occurs when listening to speech and this entrainment can be differentiated by the type of language that the speakers have experience of. Here, so called ‘attending rhythms’, which are internal oscillations, (Large & Jones 1999) are coupled with an external speech stimulus, creating an expectation as to what happens next, as suggested by the Dynamic Attending Theory (Jones and Boltz 1989).

The experiment conducted for the present study had three phases: pre-test, exposure and post-test. One male Glaswegian English speaker provided the stimuli. The subjects were 60 speakers of Canadian English living in Montreal, who were divided into two groups – experimental and control group. The task was identical for everyone except for the experimental group being asked to tap to the beat the perceived in speech and the control group to listen to the speech only. The stimuli for all three phases were designed so that they followed the rhythmic pattern of 2x weak – 1x strong – 2x weak – 1x strong syllable, e.g.: *So I came for a show of a friend*. In pre- and post-test, the participants were asked to fill in gaps in those sentences with the words they heard. The gaps were the target weak syllables, e.g. *So I came _ _ show _ _ friend*. The target words were function words and the sentences were designed so that they could be filled in by either of the semantically possible pairs (e.g. *So I came **for/from** a **her/the** show **of/with** **the/her/a** friend.*). The function words/reduced morphemes used in this study were determiners (*a* vs *her* vs *the*), prepositions (*for* vs *from*, *of* vs *with*, *in* vs *on*), and the participle ending *-ing* vs *-en* in such words as *take*, *give*, *eat* (e.g. *taking* vs *taken*).

The results of the experiment will be discussed with reference to our hypotheses. The general hypothesis is that performing a tapping task should itself lead to stronger entrainment than listening alone. The assumption is that greater entrainment will lead to greater improvement on a speech comprehension task, and specifically here to more correct insertion of function words.

The results of this experiment will help to elucidate the role of rhythm in speech comprehension. And more specifically, it will contribute to our understanding of whether rhythm and engaging in a

sensorimotor task can benefit comprehension of a non-native variety as well as how the difficulties in perception between different varieties of the same language might be overcome.

References:

Adank, P., Evans BG, Stuart-Smith, J, Scott, Sophie K. (2009) Comprehension of familiar and unfamiliar native accents under adverse listening conditions. *Journal of Experimental Psychology: Human Perception and Performance*, Vol 35(2), Apr 2009, 520-529.

Smith, R., Holmes-Elliott, S., Pettinato, M., and Knight, R.-A. (2014) Cross-accent intelligibility of speech in noise: Long-term familiarity and short-term familiarization. *Quarterly Journal of Experimental Psychology*, 67(3), 590-608.

Jones, M. R., & Boltz, M. (1989). Dynamic Attending and Responses to Time, 96(3).

Large, E. W., and Jones, M. R. (1999). The dynamics of attending: How we track time varying events. *Psychological Review*, 106 (1), 119-159.

Lidji, P., Palmer, C., Peretz, I. Morningstar, M. (2011). Listeners feel the beat: Entrainment to English and French speech rhythms. *Psychon Bull Rev*, 18(6):1035-41.