BOTH NATIVE AND NON-NATIVE DISFLUENCIES TRIGGER LISTENERS' ATTENTION

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Disfluencies (such as *uh* and *uhm*) are a common phenomenon in spontaneous speech. Rather than filtering these hesitations from the incoming speech signal, listeners are sensitive to disfluency and have been shown to actually use disfluencies for speech comprehension. For instance, disfluencies have been found to have beneficial effects on listeners' memory **[1]**. Accumulating evidence indicates that attentional mechanisms underlie this disfluency effect: upon encountering disfluency, listeners raise their attention to the incoming speech signal **[2]**.

The experiments reported here investigated whether these beneficial effects of disfluency also hold when listening to a non-native speaker. Recent studies on the perception of non-native disfluency suggest that disfluency effects on *prediction* are attenuated when listening to a non-native speaker **[3]**. This attenuation may be a result of listeners being familiar with the frequent and more variant incidence of disfluencies in non-native speech. If listeners also modulate the beneficial effect of disfluency on *memory* when listening to a non-native speaker, it would indicate a certain amount of control on the part of the listener over how disfluencies affect attention, and thus comprehension. Furthermore, it would argue against the hypothesis that disfluencies affect comprehension in a rather automatic fashion (cf. the Temporal Delay Hypothesis; **[4]**).

Using the Change Detection Paradigm, we presented participants with three-sentence passages that sometimes contained a filled pause (e.g., "... that the patient with the *uh* wound was..."). After each passage, participants saw a transcript of the spoken passage in which one word had been substituted (e.g., "wound" > "injury"). In our first experiment, participants were more accurate in recalling words from previously heard speech (i.e., detecting the change) if these words had been preceded by a disfluency (relative to a fluent passage). Our second experiment - using non-native speech materials - demonstrated that non-native *uh*'s elicited an effect of the same magnitude and in the same direction: when new participants listened to a non-native speaker producing the same passages, they were also more accurate on disfluent (as compared to fluent) trials.

These data suggest that, upon encountering a disfluency, listeners raise their attention levels irrespective of the (non-)native identity of the speaker. Whereas listeners have been found to modulate prediction effects of disfluencies when listening to non-native speech, no such modulation was found for memory effects of disfluencies in the present data, thus potentially constraining the role of listener control in disfluency processing. The current study emphasizes the central role of attention in an account of disfluency processing.

References:
[1] Fraundorf, S.H., & Watson, D.G. (2011). The disfluent discourse: Effects of filled pauses on recall. *Journal of Memory and Language 65* (2), 161-175. **[2]** Collard, P. (2009). Disfluency and listeners' attention: An investigation of the immediate and lasting effects of hesitations in speech. *Unpublished doctoral dissertation*, The University of Edinburgh. **[3]** Bosker, H.R., Quené, H., Sanders, T., & De Jong, N.H. (in press). Native 'ums's elicit prediction of low-frequent referents, but non-native 'um's do not. *Journal of Memory and Language.* **[4]** Corley, M., & Hartsuiker, R.J. (2011). Why *um* helps auditory word recognition: The temporal delay hypothesis. *PLoS One 6* (5), e19792.