

CAN SEGMENTAL DETAIL INFLUENCE PROSODIC ANALYSIS? THE CASE OF CONTRACTIONS IN ENGLISH

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The current project rests on two well-attested phenomena. First of all, prosodic structure influences sentence comprehension (Steinhauer et al., 1999; Weber et al., 2006). Secondly, prosodic structure is phonetically reflected not only on suprasegmental dimensions (e.g., f₀, duration, and amplitude) but also on segmental dimensions (e.g., coarticulation, segmental strengthening or reduction) (Cho et al., 2017). This leads to the question whether the listener makes use of the prosodic-structurally conditioned segmental detail to compute the prosodic structure of a given utterance, which then in turn would influence sentence comprehension.

In two previous projects, we investigated this issue. Mitterer et al. (2020) tested the role of the glottal stop in Maltese, which, next to its role as phoneme, also appears as a prosodic boundary marker. The results showed that listeners use the glottal stop to decide between an early or late closure, even though the glottal stop must be processed as segmental information (due to its phonemic status). In Mitterer et al. (2024), we exploited the German *verum* contrast on the auxiliary *haben* (Engl. ‘to have’), which indicates agreement with a yes/no question. Instead of using a pitch accent on the auxiliary, it was produced in its full phonetic form [habən], which, according to a corpus study, is an infrequent, and hence marked, pronunciation ([habm] being a more common pronunciation). Using a web-based experiment with a “video-game” like set-up, the results showed that listeners were able to use segmental detail as a cue to prosodic structure; however, the effect was relatively small and at least partly due to learning of experimental contingencies.

In the current project, we make use of contractions in English. Consider the following three replies to the question: “The aliens haven’t shot the robot, right?”, which vary in the form of the auxiliary *have*.

- (1a) *Well, they HAVE shot the robot.* (full, pitch accent)
- (1b) *Well, they’ve shot the paddle.* (contracted, no pitch accent)
- (1c) *Well, they have shot the paddle.* (full, no pitch accent)

In Answer 1a), the pitch accent on *have* indicates a contrast with the question, implicating that the robot has been shot after all, while 1b) indicates that, as implied in the question, the robot was shot. The interesting case is 1c) in which the lack of contraction might indicate prosodic weight on the auxiliary, indicative of prosodic weight, which might lead to the inference that the speaker intends contrast (as in 1a). The first two experiments showed that a paradigm that avoids potential learning (by sometimes using contextually inappropriate prosodic means) is still able to reveal the influence of prosody on sentence comprehension, but that this effect could only be driven by the supra-segmental pitch accent (see 1a) but not by segmental means alone (1c).

However, the rendition of the uncontracted *have* had a reduced /h/ in the first two experiments. Experiments 3 therefore used a version with a full /h/ in versions of 1c) and now listeners were able to use this as a segmental cue to prosodic structure. Experiment 4 ruled out that this was due to the increased duration with a full /h/. The results hence show that segmental detail is used as a cue to the prosodic structure. Moreover, since we use a mouse-tracking task, this influence arises at an early stage of processing.