

Compositionality in intonation: Are tunes composed of independent elements?

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A recurrent issue in the study of intonation relates to whether contours should be treated as gestalts [1, 2] or composites of independent elements [3, 4]. We contribute to this debate by examining a corpus of 2135 Greek wh-questions, elicited from 18 speakers using a discourse completion task (DCT). DCTs involved two scenarios: Scenario A presented a situation ending with an information-seeking question, while Scenario B presented a situation in which the wh-question was used as an implicit statement. The expected tune for Scenario A is autosegmentally analysed as a L*+H pitch accent on the utterance-initial wh-word, followed by a L- phrase accent and a H% boundary tone; for Scenario B the expected tune is analysed as L+H* L- L% [5]. We applied functional principal component analysis (FPCA), a data-driven method that breaks down curves into components capturing independent modes of curve variation. FPCA was followed by LMEMs on the principal component coefficients. The results show that the pitch movement associated with each of the posited tonal elements is captured by a different PC: PC1 captures the shape of the fall (as a consequence of peak height and alignment), PC2 captures the extent of the initial rise and subsequent peak alignment of the pitch accent (the difference between L*+H and L+H*), and PC4 the difference between a final rise (H%) and low, flat pitch (L%). Given that each PC presents an independent mode of variation, we can conclude that tunes are composites of independent elements. These results provide prima facie evidence for tune compositionality.

References

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