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Statistical learning modulation through the variation of stimulus rhythmic structure.

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Statistical learning has been widely proposed in the literature as a fundamental mechanism underlying language acquisition. In this direction, statistical word form learning protocols have been used across different developmental stages, showing that even 11 month infants perform above chance. Specifically, this behavioral task consists of two phases. A learning phase, where participants passively listen to a continuous stream of trisyllabic pseudowords, concatenated randomly and without silence between them. Followed by a testing phase to evaluate if participants are able to recognize the presented pseudowords.
Classically, this test presents isochronous syllables, that is, they all have the same duration. However, natural speech is characterized by temporal variability in syllabic production; through different languages, it has been observed a syllabic frequency between 2 and 8 Hz. Here, we evaluate the ecological validity of a statistical word form learning paradigm by exploring how (and if) learning is being modulated by the temporal variability of the syllables'duration. Furthermore, since individual differences in auditory-motor synchronization abilities have been shown to interact with statistical learning (i.e., individuals with a high degree of auditory-motor integration display a higher performance in statistical learning), we included this participants'feature as a control variable in our study. The obtained results show that statistical word form learning is still possible for asynchronous stimuli and that only for those participants with a high degree of auditory-motor integration the synchrony confers a benefit.

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