

Periodic Chunking—Periodic Language?

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It has frequently been proposed that periodic electrophysiological activity—so-called *neural oscillations*—subserve auditory and linguistic processing. Oscillatory cycles are thought to provide processing time windows that fit various acoustic units (e.g., phonemes, syllables) and abstract linguistic units (e.g., syntactic phrases).

Most prior studies have studied how neural oscillations *subserve* the periodic extraction and formation of auditory and linguistic units from speech. Here, I am inverting this perspective, claiming that internal oscillatory time windows may also *constrain* linguistic processing—and language as such—from the inside out.

I present a series of electroencephalography experiments that focus on syntactic ambiguities. We found that electrophysiological cycles in the order of seconds constrain ambiguity resolution, such that the grouping of words into syntactic units depends on the phase of slow-frequency neural oscillations; in other words: When a cycle ends, listeners may terminate a chunk.

In the second part of the presentation, I will suggest that periodicity as an electrophysiological bottleneck may also be reflected in linguistic corpora and even in eye movements during reading: First, we found that speech prosody is periodic at a frequency that matches the frequency of those neural oscillations that relate to prosody processing. Second, we observed that eye movements during reading display periodic slowdowns that coincide with the endings of larger syntactic units.

I am making the simplistic claim that the duration of neural oscillatory cycles is an electrophysiological constraint that associates with the periodicity of both linguistic behavior and language as a cultural system.