

Language prediction is supported by coupling between frontal gamma and posterior alpha oscillations

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Readers and listeners actively predict upcoming words during language processing. These predictions might serve to support the unification of incoming words into sentence context and thus rely on interactions between areas in the language network. In the current magnetoencephalography (MEG) study, participants read sentences that varied in contextual constraints so that the predictability of the sentence-final words was either high or low. Prior to the sentence-final words, we observed stronger alpha power suppression for the highly compared to lowly constraining sentences in left inferior frontal cortex, left posterior temporal region, and visual word form area (VWFA). Importantly, the temporal and VWFA alpha power correlated negatively with left frontal gamma power for the highly constraining sentences, in both the prediction and integration periods of the sentence-final words. We suggest that this negative correlation reflects the initiation of an anticipatory unification process in the language network. Our study extends previous research on the function of alpha oscillations by demonstrating that decreased alpha power reflects the engagement of higher-level language areas and that language processing might be implemented by the coupling between the alpha and gamma activities.