**Supplementary Material 5. Effect of stimulus length on the coherence values**

To examine the effect of the stimulus length on the coherence values we first checked the lengths of trials for word stimuli. Second, we cut out the end of the sentence stimuli to be of equal length with the word stimuli (i.e., the initial part of the sentence was used in the new analysis). We then recalculated the coherence between these shortened stimuli and the brain activity (See Supplementary Figure 5.1).

The coherence values were then compared with the original sentence duration values. It could be that having a longer stimulus gives rise to more time points where the brain signal can vary independently from the speech signal. This would lead to lower coherence values for the sentence level stimuli. To examine this, paired t-tests were calculated between the shortened...
and original sentence coherence values collapsed across age and hemisphere. The shortened sentences had significantly larger coherence values in both delta and theta bands (See Supplementary Table 5.1, and Supplementary Figure 5.2).

Supplementary Table 5.1 Results of paired samples T-tests comparing the coherence values to the shortened (word length) and the original sentence stimuli collapsed across hemispheres.

<table>
<thead>
<tr>
<th></th>
<th>df</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delta (1-4 Hz)</td>
<td>52</td>
<td>-3.274</td>
<td>0.002</td>
</tr>
<tr>
<td>Theta (4-8 Hz)</td>
<td>52</td>
<td>-19.798</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Supplementary Figure 5.2 Topographic maps of coherence values of the two frequency bands to sentence (S) stimuli and the shortened (word-length) trials for sentence (W-I S) stimuli and box plots of averaged coherences for the frequencies collapsed across hemispheres and ages. Topographies: warmer colours reflect higher coherence between the stimuli envelope and the brain data. Boxplots: Boldlines denote the median of the coherence values, the bottom and top edges of the box indicate the 25th and 75th percentiles, respectively. Red boxes represent average coherence values for sentences, green boxes for sentences with shortened trial lengths.