

## How different motions affect lexical access and linguistic structure in a spontaneous speech task

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According to dual task experiments motion plays a detrimental role for cognitive performance (Lamberg & Muratori 2012), because resources need to be shared to fulfil the two tasks. However, it has also been shown that motions are beneficial for lexical access (Krauss 1998), for associative selection of words (Oppezzo & Schwartz 2014) and for learning and memorize a new language (Schmidt-Kassow et al. 2013). We combine both views by suggesting that motion facilitates lexical access of content words, but has some drawbacks on the syntactic complexity. Moreover, we suggest that different limbs movements (legs vs. arms, right hand vs. left hand) may affect syntax and lexical access to different degrees.

Three experiments were carried out involving a spontaneous speech task: in experiment 1 we compared leg motions (biking) with different degrees of effort, in experiment 2 we studied arm versus leg motion using a minibike, and in experiment 3 we compared right versus left arm motions in right handers. In all experiments the dual tasks were also compared with single tasks. Motion, breathing and speech acoustics were recorded simultaneously. Motion and breathing frequency, syntactic complexity (number of clauses, conjunctions for main and embedded clauses) and the used vocabulary (number of content and function words; single word classes) were analysed. The results are in agreement with our predictions.

### References

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