

Speech rate effects on sentence processing in German

Angela Jochmann, Esther Ruigendijk (Universität Oldenburg)

Syntactic complexity is assumed to increase syntactic processing load (Gibson, 1998), and fast speech might increase perceptual processing load. Processing complex structures is affected by high speech rates even more, indicating an interactive effect of these factors (Wingfield et al., 2003).

Research so far is based on relative clauses in English, which rely heavily on word order information. This study adds to this by examining the effects of fast speech on German relative clauses (2), and also on V2-structures (1) which correct interpretation depends on case morphology processing.

SVO: Der kleine Junge umarmt den dicken Nikolaus.

The_{NOM} little_{NOM} boy_{NOM} hugs the_{ACC} fat_{ACC} Santa

(1) OVS: Den dicken Nikolaus_i umarmt der kleine Junge t_i.

The_{ACC} fat_{ACC} Santa hugs the_{NOM} little_{NOM} boy_{NOM}.

SR: Der Junge_i, der_i den Nikolaus umarmt, ist klein.

The_{NOM} boy_{NOM} who_{NOM} the_{ACC} Santa hugs is little

(2) OR: Der Nikolaus_i, den_i der Junge umarmt t_i, ist dick.

The_{NOM} Santa who_{ACC} the_{NOM} boy_{NOM} hugs is fat.

41 normal-hearing subjects performed a word-monitoring-task presented in four speech rates (100%, 65%, 50%, and 35%). Online reaction times (RT) to target word detections (underlined words), and offline accuracy to comprehension questions were measured. Object-first structures were expected to elicit longer RT (for OVS at the first N, for OR at the embedded N) and more comprehension errors than subject-first structures. Faster speech was expected to increase these effects.

RTs confirmed this only for the two slower speech rates for V2. Offline accuracy showed main effects of complexity and speech rate.

Our results show that fast speech affected sentence comprehension, in particular for object-first sentences. Furthermore, higher speech rate affected RTs unexpectedly, leading to overall lower RT, which we argue is caused by shallow syntactic processing shallow in fast speech.