

Detecting and Analyzing Gesture-Speech Mismatches

Workshop by Hedda Lausberg

In gesture-speech interaction research often the aspect of coordination is focused, while the aspect of dissociation, also termed gesture-speech mismatch (McNeill, 1992), is neglected. Already early psychoanalytic work has described semantic as well as temporal gesture-speech dissociation in states of emotional development (Mahl, 1968). Later, mismatches were described foremost in cognitive development as transitions in concept acquisition (Goldin-Meadow et al., 1993). The neurobiological basis for these dissociations – as evidenced by lesion studies - is the substantial amount of gesture generated in the right hemisphere independent from left-hemispheric speech production (Feyereisen, 1987; Kita & Lausberg, 2008; Hogrefe et al., 2010; Lausberg et al., 2023). Furthermore, in interaction, the recipient's brain is suited for detecting gesture-speech mismatches of the speaker, as revealed by event-related potentials (Kelly et al., 2004). As such, gesture-speech dissociations are relevant phenomena for understanding emotional, cognitive, and interactive processes. Methodologically, the detection and analysis of gesture-speech mismatches requires a gesture analysis that in the first step is independent from speech analysis, since in the combined gesture-speech analysis the interpretation of gesture has been shown to be biased by the speech context and vice versa, and therefore, dissociations are often not detected. In this theoretical and practical workshop, I will outline the psychology and neurobiology of gesture-speech mismatches and introduce to the NEUROGES® system (www.neuroges-bast.info) as an objective and reliable analysis system for gesture and nonverbal behaviour independent from speech.