
According to Coordination Dynamics, the coordination of movements is governed by intrinsic properties of the coupled structures and their interaction with task and other demands. This presentation reports on a study focusing on the influence of movement amplitude and frequency on the nature and stability of gestural coupling during speech production. Both factors have been found to be relevant with respect to coordination in limb control, but thus far their impact on speech related motor tasks has not been investigated in a systematic way. Using Electro-Magnetic Midsagittal Articulography or EMMA (AG100), kinematic data on tongue, lip and jaw movements were collected from 10 normal speakers producing VCV nonwords at 3 different rates. For these stimuli, the first and second vowel combination induced natural variations in tongue constriction degree. The coupling between dominant motion primitives of tongue and lip gestures is quantified in terms of continuous estimates of relative phase and its variability [van Lieshout, P. H. H. M. (2004). in B.Maassen, R. Kent, H. Peters, P. van Lieshout, & W. Hulstijn (Eds.), Speech Motor Control in Normal and Disordered Speech (pp 51-82). Oxford University Press]. Preliminary findings are in support of the claim that amplitude and frequency changes at the level of individual gestures influence the stability of their coupling in a non-linear manner. Both factors are discussed as potential candidates in providing both flexibility and (in worse case scenarios) instability in the speech motor system.