

TEMPORAL SYNCHRONIZATION IN SINGING DUET PERFORMANCES

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Temporal synchronization between members of a singing ensemble represents a key performance goal as it fosters musical excellence. Previous studies, mostly analysing instrumental rather than singing performances and based on the analysis of note onsets, show that synchronisation is maintained through iterative micro-timing adjustments due to expressive interpretations and noise during the cognitive-motor processes. However, how temporal synchronization evolves during vocal ensemble performances remains mostly unexplored. This study investigates the interpersonal coordination between singers during vocal duet performances of legato singing, considering the complexities of synchronisation analysis as singers continue phonation between notes.

Twelve vocal duets performed a two-part piece, mostly homophonic in texture, which was composed for the study. Singers performed forty-eight repetitions of the piece. Data were acquired using electrolaryngograph electrodes and head-mounted microphones to allow fundamental frequency evaluation of the individual voices through acoustic analysis software. Temporal synchronization was then analysed from the fundamental frequency values through an automated algorithm which extracts timings related to the onset and offset of phonation, and note beginnings and note endings within a legato phrase.

Initial results show a tight temporal synchronization in the order of tens of milliseconds, that varies during the performance according to structural boundaries, and a complex bidirectional pattern of temporal adaptations between singers rather than a clear separation of roles.

A better understanding of interpersonal communication will be of particular interest to music pedagogy, as a means to establish strategies to pursue performance excellence, and to psychology research aimed at clarifying human interpersonal communication and coordination. The study will refine rehearsal techniques identifying the most appropriate strategies to excel in music performance, and expand the body of knowledge of interpersonal interaction and communication.