

Effects of Auditory-Feedback Delays and Musical Roles on Coordinated Timing Asymmetries in Piano Duet Performance

Auriel Washburn
Stanford University

Matthew Wright
Stanford University

Takako Fujioka
Stanford University

Abstract: Recent research in human behavioral dynamics has demonstrated that co-actors often successfully achieve joint goals by adopting functionally asymmetric patterns of behavior. To better understand the evolution of such patterns in a naturalistic musical context, the current study examined how auditory-feedback delays and individual musical roles affect collective temporal stability and relative adaptability during duet performance. The delays between pianists were short (10-40 ms), bidirectional, and remained constant during a single trial, simulating those typical in internet-mediated performance. Preliminary results show increasingly reduced collective stability for longer delays along with a distinct pattern of asynchronies across the points where temporal synchrony would be expected, in which individuals exhibited consistent alternation between playing before or after their co-performer. Furthermore, asynchronies became greater when the two musical parts were less similar. Thus, emerging coordinative dynamics appear to be shaped both by asymmetries in co-performers' assigned roles and external constraints on shared information.