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Title
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Journal
Proceedings of the Annual Meeting of the Cognitive Science Society, 39(0)

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Publication Date
2017

Peer reviewed

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

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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.