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Time and sequence as key developmental dimensions of joint action

Valentina Fantasia[a], *Jonathan Delafield-Butt*[b]

[a] *Department of Philosophy, Faculties of Humanities and Theology, Box 192, 221 00, Lund University, Lund, Sweden*
[b] *Laboratory for Innovation in Autism, Faculty of Humanities and Social Sciences, University of Strathclyde, Glasgow, Scotland, UK*

Joint action, generally defined as working together towards a common purpose, has become an important concept in many areas of cognitive science, from philosophical appraisal of its core concepts to empirical mapping of its psychological development. How the nature of action is changed by social engagements is a fundamental question for understanding the development of social cognition, our exceptional human capacity to know other minds and to share in their interest and intentions. The present work proposes a theoretical rethinking of how we conceive joint action and its development by considering the nature of human action as prospective, from the beginning of life.

Developmental research has extensively committed towards pinning down the origins of intentional engagements in joint actions and their shaping factors. Researchers have advanced strong arguments toward adopting dynamical, embodied (Fantasia, De Jaegher & Fasulo, 2014b; Lux, Gredebäck, Non & Krüger, 2022), and ecological (Adolph, 2019) theories and methods to the study of social cognitive development. Here, we draw on these arguments to provide evidence that joint action is better understood as a dynamic, situated interactional process beginning early in infancy, as forms and possibilities for participating in co-constructed sequences of shared actions (and goals) are manifold in the ecology of infants' daily social interactions.

Our work pursues three aims. First, to revisit mainstream cognitively-oriented developmental accounts of joint action as individual endeavours based on children's representational capacities (such as the ability to infer others' intentions). We discuss a few of what we see as major issues present in current developmental accounts of joint actions. Second, to counterbalance this standard view with an embodied, dynamic and ecological approach to joint action development. We present evidence of observational studies looking at micro-dynamics of caregiver-infant activity which adopted continuous, quantitative behavioural measures to investigate how experience with formal structures of joint activities support infants' coordinated contribution to the ongoing action, setting the stage for the complex configurations of goal-ended joint interactions. Third, to advance time and sequence as essential elements for investigating how infants understand and share meaning with others in joint actions. This final step is achieved by attending to a fundamental aspect of action not previously considered in cognitive approaches and seldom explicitly addressed in embodied ecological accounts: that of its prospective quality and its necessary sequential organisation. We advance a rationale for the conceptual framework of joint action to include its temporal and sequential structures, and their intrinsic prospective qualities of human action, solitary or shared, as key analytical aspects for the study of how infants understand and share meaning with another, in joint interaction.

We conclude or work by discussing how this new foundation for understanding joint action impacts on developmental science in complementary domains, requiring consideration in future research, and empirical measurement and analysis.