Chimpanzees synchronize their steps just like humans

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Credit: *Current Biology* (2022). DOI: 10.1016/j.cub.2022.09.059

A new study by researchers at the University of St Andrews and the Central European University in Vienna has revealed that chimpanzees share a human tendency to unintentionally synchronize their steps when walking alongside one another.

While it is already understood that chimpanzees can coordinate when working towards a goal, such as pulling a string to release food, much less is known about their propensity to coordinate spontaneously.

The study, led by Dr. Manon Schweinfurth, Lecturer in the School of Psychology and Neuroscience at St Andrews and published in *Current Biology*, recorded the walking behavior of chimpanzees at the

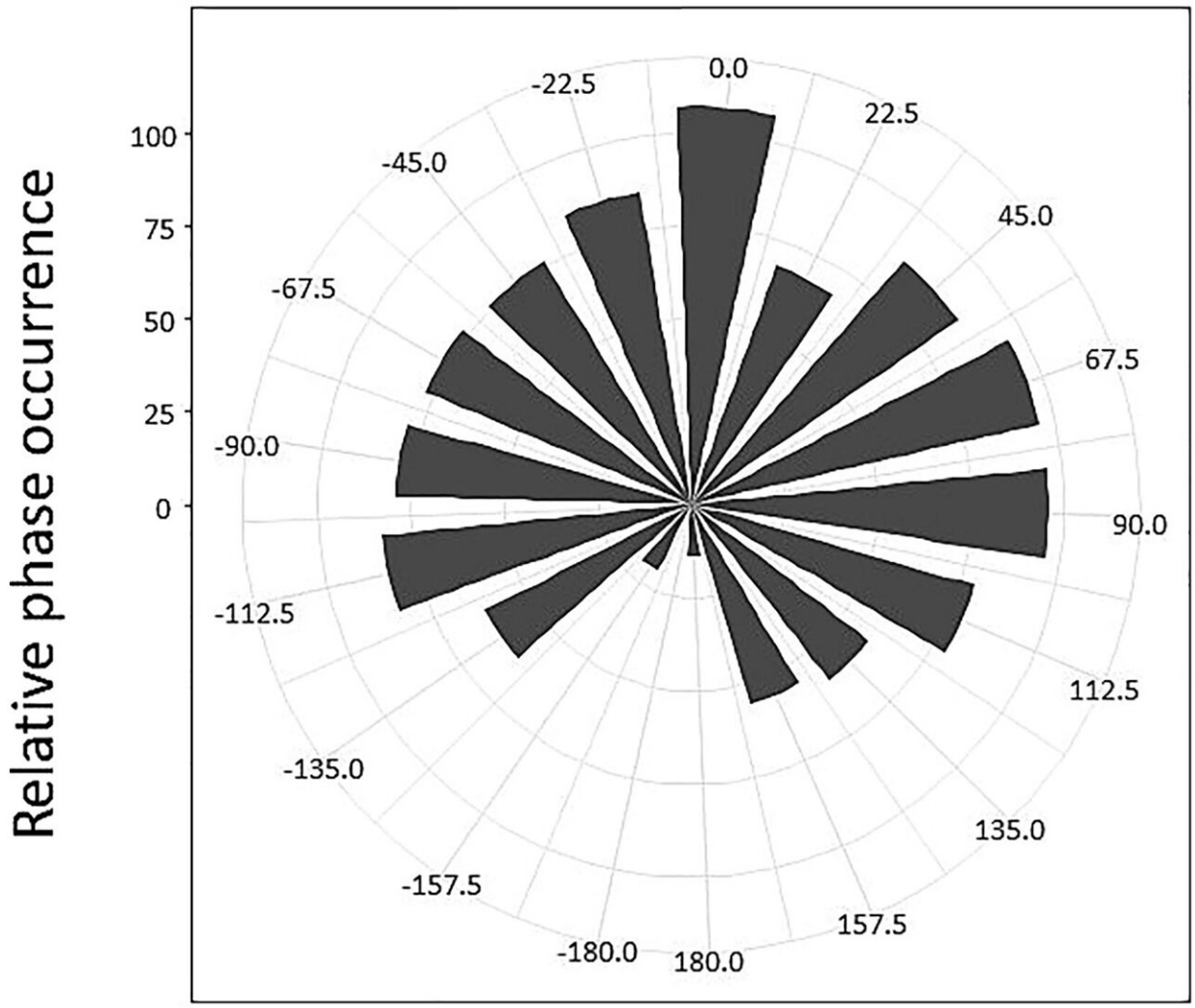
Chimfunshi Wildlife Orphanage Trust, a sanctuary in Zambia, under different conditions. The chimpanzees were observed when walking alone or when walking next to others.

Researchers observed that chimpanzees show unintentional synchronization in their steps when walking next to one another, suggesting that human's strong tendency to coordinate simple actions is shared with our closest primate relative, and therefore might be an ancestral trait.

Dr. Schweinfurth says that "humans deliberately plan and coordinate actions with others during sport games, group dances, musical ensembles, or military actions. But it is also part of our daily life—like carrying items together or getting a child dressed. Indeed, joint actions have been suggested to be crucial for our success as a species because much more can be achieved together than alone. In fact, we can't help it and coordinate actions even when it is not necessary to do so, such as falling into the same rhythm with someone walking next to us."

"In contrast, one of our closest living relatives, the chimpanzee, does not appear to show the same preference for rather complex joint actions. But little is known about simpler forms of joint action, such as a tendency to fall into inter-individual synchrony. Chimpanzees are particularly interesting here, as they are a good model for our last common ancestor with other African great apes."

"We investigated whether chimpanzees spontaneously coordinate their actions in a semi-natural environment when coordination was neither planned nor the goal of an interaction, i.e., when they were walking close to each other. For this, we recorded their undisturbed walking behavior under different conditions. We found that chimpanzees show unintentional synchronization in their steps when walking next to conspecifics."



Circular histogram of the observed phase relationships between steps as a function of the required relative phase. Phase relationship for footfalls between chimpanzees walking close to each other. Credit: *Current Biology* (2022). DOI: 10.1016/j.cub.2022.09.059

The study involved both male and female chimpanzees of a variety of ages, some related and some unrelated. When the chimpanzees walked together, a step by one walker was followed by the same respective foot of the other walker in 79% of the cases within less than 0.5 seconds.

"This study provides evidence that chimpanzees temporally synchronize their body movements to the movements of their conspecifics. This interpersonal coordination of movements is often called entrainment and relies on perception-action links that become coupled. Understanding which mechanisms humans share with other species can help us understand the evolutionary origins of more sophisticated forms of joint action."

"This study provides evidence that this simple form of coordination is shared between humans and their closest-living relative. The difference in more complex forms of coordination between human and chimpanzees is thus probably due to more sophisticated underlying mechanisms. Future studies are needed to identify those."

More information: Manon K. Schweinfurth et al, Inter-individual coordination in walking chimpanzees, *Current Biology* (2022). DOI: 10.1016/j.cub.2022.09.059

Provided by University of St Andrews