

**Humans and apes create social closeness by co-attending to the same thing in close proximity, but only humans create additional closeness through establishing common ground about this experience being shared.**

Unlike other animals, humans have a variety of ways to create social closeness with others that revolve around shared experiences. We feel socially closer to others with whom we make music, dance, play team sports and converse, especially when sharing personal information or attitudes, or by gossiping. The human ubiquity of such behaviors contrasted by the absence of similar behavior in other species raises the question what the psychological mechanisms underlying human social activities are, how these mechanisms develop in human ontogeny, and to what degree we share this psychology with other animals through common descent.

One of the core components of human social activities centered around shared experiences is that in order to successfully engage in them, participants have to share psychological processes, such as attention, intentions, emotions or beliefs. This sharing might play a crucial role in creating social closeness through shared social activities. Our research therefore examined whether sharing attention, one of the most fundamental psychological processes required for joint action and behavior coordination, facilitates social closeness between individuals.

An experiment with human adults showed that college students, even when instructed not to talk and not to look at each other, reported to feel closer towards an interaction partner who had consistently been attending to the same part of the screen in a response time task, than towards an interaction partner who had been attending to the opposite side of the screen. Subsequent experiments with 2.5-year-old children showed a similar effect early in human ontogeny. In an experimental procedure where an experimenter was instructed not to look at the child for the duration of a video, children approached faster (i.e. were more willing to interact with) an experimenter after that experimenter had attended to the same video they had been watching, than towards an experimenter who had been sitting equally close to them but could not see the screen and instead attended to a book in their lap.

To find out whether we share this part of our psychology with our closest evolutionary ancestors, we conducted a similar experiment with great apes (i.e. chimpanzees and bonobos). We found, perhaps surprisingly, that chimpanzees and bonobos approached a human experimenter faster after that experimenter had been watching a video (of a playing juvenile chimpanzee) together with the experimenter, compared to a condition in which the screen was turned away from the experimenter, who was reading their own clipboard instead. In a follow up study in which the human experimenter was replaced by a conspecific we found that chimpanzees spent more time in the same part of the room after they had watched a video on the same screen than after watching a video on an individual screen (i.e. unable to see what was displayed on their partner's screen).

This suggests that, on a basic level, humans share the psychological mechanisms that facilitate the creation of a social connection through sharing attention with other animals. It has been proposed, however, that a key part for human sharing/joint attention is that they are not only aware that they are attending to the same thing as another individual, but, in addition also create common ground about this (i.e. establish that that they both know that they are watching the same

thing). We therefore conducted a study to see what role common ground plays in the creating of social closeness during a shared experience, and if this role is similar for human children and great apes.

In this study, we compared human children's and great ape's willingness to approach an experimenter following an interaction in which both they and the experimenter were watching the same video. However, in one condition, the experimenter attempted to create common ground by means of a communicative look to the child in response to the video starting on the screen, providing the necessary information for the participant to infer that they now both knew that they were both watching the same video. In the control condition, the experimenter did not look back at the participant when the video started, meaning that during the video the participant was merely observing the experimenter watching the video while watching the video themselves as well. Importantly, in the control condition the experimenter looked at the participant when they reconvened for the dependent measure so that there was a look from the experimenter to the participant in both conditions. We found that human children, but not great apes approached faster after the experimenter had attempted to create common ground with them.

Overall, these experiments suggest that sharing attention creates a social connection between individuals, facilitating feelings of social closeness and a willingness to interact. Furthermore, the basic psychological mechanisms of creating a social connection with others through sharing attention can not only be found in human adults, but also in human children as young as 2.5 years old, and, surprisingly, in great apes as well. However, where humans create additional social closeness by establishing common ground between them and their partner about the fact that they are sharing attention to something, attempts to create common ground does not seem to influence great ape's social behavior towards their partner. As such, humans' propensity to spent so much time, energy and resources into creating shared experiences is most likely not merely explained by a drive to engage in similar experiences in close proximity. Instead, an (at least) equally important factor is that such social activities provide opportunities to create common ground about sharing that experience with others.

More generally, this series of studies provides more insight in human and great ape social cognition and its role in social interaction and social relationship formation. The current results imply that apes are, unlike some have argued before, actively comparing others' psychological processes with their own, and infer social value from this similarity. At the same time, the current results suggest that human children, in addition, also place social value on creating common ground with others, whereas this does not seem to be the case for great apes.