

Gorilla study gives clues to human language development

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(PhysOrg.com) -- A new University of Sussex study provides evidence that gorilla communication is linked to the left hemisphere of the brain - just as it is in humans.

Psychologist Dr Gillian Sebestyen Forrester developed a new method of analysing the behaviour of gorillas in captivity and found there was a right-handed bias for actions that also involved head and mouth movements. The right side of the body is controlled by the left hemisphere of the brain, which is also the location for language development.

The findings could provide major clues as to how language developed in humans. Dr Sebestyen Forrester says: "We shared 23 million years of evolution with great apes and then diverged approximately six million years ago. Gorillas have highly-complex forms of non-verbal communication. I think we are looking back at what sort of communication skills we may have once had."

Previous studies by other researchers have found that chimpanzees show a right-handed preference for manual tasks. But Dr Sebestyn Forrester's research is the first to indicate a link between right-handedness and communication in apes.

The key to her findings, published in the journal *Animal Behaviour*, is the development of a detailed method for observing animals. "I have moved away from just studying visual communication signals of gorillas

to looking for a method to capture, code and analyse these signals," she says. "For example, instead of subjectively labelling a behaviour as aggressive, I break down the behaviour into a sequence of stages based on eye gaze, facial expression and physical action. And I look for recurrent patterns within social context."

Dr Sebestyen Forrester carried out the research at Port Lympne Wild Animal Park in Kent, where there is a large biological family group of gorillas living in an enclosure modelled on their natural wild habitat. She focussed her attention on one adult female, 13-year-old Foufou, her infant son, M'Passa, and their social network. Two cameras were used to capture Foufou's every movement and expression as she interacted with the group.

Dr Sebestyen Forrester says: "Apes, like humans, use a range of nonverbal communicative social skills, such as facial expression, eye gaze and manual gestures, and tactile signals, such as grooming and huddling, which are used for social cohesion. Analysing synchronous physical action can help us identify communication signals and may prove a better way to understand of how animals 'talk' to each other."

The method - known as multidimensional method (MDM) - can also be used to study other non-verbal populations. Dr Sebestyen Forrester is now piloting a study of children aged between two and four years with language impairments. "Data from this method could help us to better understand the nonverbal communication signals that were important for the evolution of language and are still important today for the development of normal language skills," she says. "I hope it will lead to better diagnose of conditions such as autism and the creation of new health and education intervention programmes to help these children. Current diagnostic tests are based on how well a child can understand verbal instruction, but if we look for other signals in communication we may be able to learn much more about what is going on for them."

Citation: Dr Gillian Sebestyen Forrester's paper, 'A multidimensional approach to investigations of behaviour: revealing structure in animal communication signals', is published by The Association for the Study of Animal Behaviour: [dx.doi.org/10.1016/j.anbehav.2008.05.026](https://doi.org/10.1016/j.anbehav.2008.05.026)

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