

Understanding the evolution of language is one of the most important questions in establishing whether or not humans are truly distinct from other animals. In seeking to infer the evolution of language, a primary focus has been to understand communication in primates. As language is primarily vocal, most studies have focused on primate vocal communication. However, a theory of language evolution that is gaining increasing support is that language evolved not from vocalisations, but initially from gestural communication. Gestures, defined as movements of the hands, head, bodily postures or locomotory gaits have attracted considerable attention because of the possibility of being an ancestral trait that humans share with their primate relative. It has been argued that gestural communication is governed by specific neurological structures homologous to the ones responsible for human language. Only humans and other primates habitually use gestures to communicate and gestural communication shows greater flexibility than either facial or vocal signals.

The homology between humans' and non-human primate' gestural communication suggests a relatively recent switch towards complex use of gestures in our pre-hominid ancestors. One feature of this shift is understanding of intentionality, defined as ability to appreciate that others have different thoughts from us, and that these thoughts affect their behavior. Generally, this ability is central to our communication with others, and is part of what makes our social relationships so complicated. One of the key questions is whether only humans comprehend intentionality, or if monkeys and apes also have this 'mind-reading' ability. From an evolutionary point of view, primates are our closest living relatives and are an obvious starting point to look for this ability.

Studies of primates have shown that they have some understanding of intentionality as when communicating with another individual, the signaller will often repeat the gesture, or use a different gesture if they do not achieve the goal of the communication at the first attempt. For example, chimpanzees can figure out if an experimenter knows, or does not know about the location of a hidden food and persist in gesturing until experimenter finds the food. This intentionality in communication, as seen in primate gestural interchange may enable primates to maintain more complex social relationships. A logical extension of gestural line of research is to use social network analyses to see how the social relationships of primates and gestural communication are inter-connected. Such analyses will reveal how primates use communication and other behaviours to maintain their networks of family and 'friends', much as humans use Facebook to maintain their social networks.

This project will be the first in the world to answer the question whether more complex and dynamic social groups demand greater cognitive complexity underpinning gestural communication. To achieve this objective, this project will to collect the valuable data on the dynamics of social relationships and gestural communication in six groups of wild rhesus macaques. Thanks to the results of this project, the international community will gain better understanding of human evolution. In addition, it will gain the tools for more effective protection of wild primates that have been stimulating the imagination of biologists and anthropologists for centuries. The pioneering character of this research was confirmed by the publication of preliminary results in the prestigious journal Nature Communications. In addition, the project is supported by the prominent anthropology department in China with access to rich research resources on wild rhesus macaques, which has committed to provide these resources for my project. Overall, this research will transform our understanding of communication and sociality in primates and also allow me to address a central question of interest to all – what makes us human?