# Cross-species differences in the perception of dynamic facial expressions.

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**Abstract**

Primates' facial expressions represent an important channel of emotional communication. Human and monkey expressions of the same emotion can be quite different. How efficiently can we learn to recognize facial expressions of another primate species, and can we understand human facial movements, even if they are linked to faces of another species? METHODS: To clarify these questions, exploiting state-of-the-art technology in computer animation, we have developed highly realistic models of dynamically moving macaque and human heads. These faces were animated using human and monkey motion capture data. Using a hierarchical generative Bayesian model (combining GP-LVMs and GPDMs), we interpolated continuously in space-time between the facial movements representing emotional expressions in humans and monkeys. In addition, this technique allows to modify continuously the expressiveness of such facial movements. Exploiting these stimuli, we categorized facial movements from a two-dimensional morphing space, including two expressions from humans and monkeys in terms of expression and species. Movements were presented on the monkey and the human face model. RESULTS: Representation of facial movement was largely independent of the basic form of the face (human or monkey). For natural expressions we found no own-species advantage in the categorization, but instead higher expressiveness of the monkey expressions. This effect is diminished if stimuli are balanced in terms of expressiveness by equating their optic flow content. This supports a joint perceptual representation for dynamic expressions from different species with a separate encoding of the basic shape of the face and its motion. Also, it suggests a critical role of optic flow in the processing of dynamic facial expressions.

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