

# Captive gibbons (Hylobatidae) use different referential cues in an object-choice task: Insights into lesser ape cognition and manual laterality

## INTRODUCTION

Cognition of gibbons or lesser apes (Hylobatidae) has only sparsely been investigated. Since gibbons form the extant sister group to the great apes, knowledge on the cognitive psychology of this taxon can contribute to the reconstruction of the mental abilities of the common ancestor of all hominoids.



Object-choice task

## METHODS

We tested six species of captive gibbons in an object-choice task (n=11) for their ability to interpret two different pointing gestures, a combination of body orientation and gaze direction as well as glancing as referential cues. **Hand preferences were tested in the object-choice task and in a bimanual tube task (n=18).**

## RESULTS

### POINTING GESTURES & BODY/GAZE ORIENTATION

Gibbons are able to spontaneously exploit different pointing gestures as well as body and gaze orientation as referential signals to find hidden food in a so called object-choice task.

Their success rate in respective tests is comparable, in parts even superior, to great apes. Object-choice task performance improves when gibbons gathered prior experience with human communicative cues.



Near pointing



Far pointing



Body and gaze

### GLANCING

The same gibbons, however, were consistently **unable to interpret glancing as a referential signal.**



Glancing

### HAND PREFERENCE PATTERNS

Hand preference patterns for unimanual reaching in the object-choice task are strong but do not match with those found for bimanual object manipulation in the tube task.

For bimanual object manipulation, crested gibbons of the genus *Nomascus* show **mostly pronounced individual hand preferences**, but apparently no population-level handedness, in contrast to reported left-handed siamangs of the genus *Symphalangus*.



Tube task



## CONCLUSION

Based on the available data, it can be assumed that **the cognitive foundations to utilize different visual cues essential to human communication are conserved in extant hominoids** and can be traced back at least to the common ancestor of great and lesser apes. However, future studies have to further investigate how the social environment of gibbons influences their ability to exploit referential signals.

Image credits:  
 • Header image of two female *Nomascus leucogenys*: Miriam Lindenmeier  
 • *Nomascus gabriellae* female engaging in an object-choice task: Kai R. Caspar  
 • Photos of object-choice task trials with *Hylobates muelleri*: Kai R. Caspar  
 • Female *Nomascus leucogenys* engaging in the tube task, observed by a male infant: Miriam Lindenmeier.