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## **Study of cognitive behaviour in non-human primate with special reference of Hanuman Langur, *Semnopithecus entellus***

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### **ABSTRACT**

Cognition is the process by which a species acquire, remembers, and resolves problem with flexible behaviour that may change depending on situation, motivation level, and environmental pressures. The study of primate behaviour is dynamic to our understanding of the evolution of cognitive mechanism. Primate must be intelligent to successfully manipulating their resources, with can include problem solving and planning. They must also successfully coexist in social group and maintain relations. Non-human primate cognition is important to the understanding of the evolution of human, as well a better understanding of the underlying cognitive mechanisms of primate behaviour.

**Key words:** *Semnopithecus entellus*, cognitive, non-human primate.

### **INTRODUCTION**

The park celebrated its centennial in 2005 after its The study of cognition was suspect in both models, considered by many to be an inherently anthropomorphic enterprise. And so the cognitive revolution came only slowly to the study of nonhuman animals. We knew about primate cognition was essentially as follows:

- (a) a few things about their problem-solving skills from the studies of Kohler (1925) and others conducted before the rise in behaviourism and ethology.
- (b) a fair amount their skills of discrimination learning from the behaviourism (Harlow 1944)
- (c) some interesting facts about their behaviour in the concerning such things as tool use and making (Goodall 1968)

- (d) a few other isolated facts that could be interpreted cognitively (Menzal 1971; Seyfarth Cheney & Marler 1980).

Cognition is commonly divided into physical and social cognition. Physical and Social cognition – The physical cognitive skills used to continue in one's physical environment together with foraging skill, defence mechanism, learning, and problem solving. Whereas, social cognition- the cognitive skills used to interacting with other, both challengers and collaborators. These skills include such things as defending one's group, navigation the dominance hierarch.

### **Primate cognition about the physical world**

#### **Cognition drawing**

Cognition drawing allows primates to remember not just where physical landmarks are but also

salient and changing features. When navigation their environment, primates do not travel aimlessly, but move about it in a focused manner. Cognitive drawing is essential for increasing fitness, because in dense environments vision is often extremely limited, and fruiting trees may not be easily visible; planning travel paths thus reduces energy expenditure and search costs of course, the foci of individual interest may vary, even within species, revealing flexibility in primate decision making.

### Memory and future planning

The ability to recall certain elements of the environment and information from one's social groups them to solve particular tasks at all later time (Mulcahy & call 2006a).an important part of a primate's world.

The memory of primate had been studies widely that apes are able to recall location of item after delays of up to 16 Hours (Menzel 1999) and replicate novel action demonstrated to them over 24 hours previously (Hopper, 010).

Primate memory also allow for future planning for example, are able to select specific tool and save.

### Tool-use behaviour and causal understanding

Tool use opens up further adaptive possibility by allowing the animal to alteration the environmental niche. By using tool, primates seem to understand the interaction of the tool with environment; they use tools flexibly, modify tools, and even manufacture tools in novel situation. Ape and monkey species use tools to eat otherwise inaccessible foods (Otoni & Mannu 2001; Whiten 2011). The ability of primate to manufacture tools to specified requirements demonstrates an understanding of causal relation and physical properties (causal understanding). Tool uses require flexibility and complexity as well as mental representation. Tools also provide information about how individuals understand causal relation.

### Social cognition

In the study of primate social cognition pretty much everything is controversial. A number of researches (Penn & Povinelli 2007) believe that non-human primates do not understand anything about the mental state of other they operate with perceptually based rules behaviour rule based on association between antecedent and consequent behavioural events. Research reveals that primates can recognize and distinguish individuals (Parr et al. 2000), retain knowledge about social relations (Byrne & White 1988), and that chimpanzees *Pan troglodytes* (Hare et al. 2001), but not capuchin monkeys *Cebus paella* (Hare et al. 2003), recognize what other know . This knowledge of fellow members of their social group enables primates to determine who to associate with cooperate with and potentially learn from, and how

to manipulate individuals or situation (Brosnan & Hopper 2013).

### Cooperation and prosocial behaviour

Cooperation is supposed to evolve in the context of secondary fitness (e. g. kin selection), mutual meeting in which there is no risk of defection and in reciprocal interaction. Cooperation is widely present in ape and monkey species, occurring in foraging contexts (e. g. cooperation hunting) and social contexts, such as the coalitions and alliance used for group defence, dominance, and mating. Primate also appears to engage in only limited reciprocity; although reciprocity is seen in long term analyses of wild populations (Gomes et al. 2011). This may indicate that most reciprocity is based on longer term relationships rather than immediate contingency. While cooperation is common, a prosocial behaviour is more rare. There is little evidence in apes that individuals change their behaviour to bring a partner food (Silk et al. 2005; Horner et al. 2011). Although, several monkey species do so (de Waal et al. 2008; Burkart et al. 2007; Massen et al. 2010), even in case in which being prosocial actually results in inequity towards the provider (Brosnan et al. 2010).

### Social learning

The ability of primate to learn socially from one another, taking advantage of the know ledge of others, blurs the distinction between how they learn about their physical and social worlds (van Schaik & Burkart 2011). Cumulative culture has been proposed to describe the underlying mechanism that has permissible for growth of our complex technologies. Without the ability for imitation or teaching, researchers argue, primate may be skilled of cumulative knowledge because the complex evidence required for such intricate behaviours cannot be transmitted faithfully (Dean et al. 2014; Tomasello 1999). Experiment studies with human, however, reveal that teaching and imitation are not prerequisite for cumulative culture (Caldwell & Millen 2009; Caldwell et al. 2012).

### Cognition in Langur

In langur baby infant is gifted to cling its mother's belly from the day of birth. And its mother may effortlessly move and jump without holding infant. The baby stage for this species is expected to finish when the individual infant has stopped suckling (i.e. weaned), is about 13-15 months old, and it reaches the juvenile stage. During the first growing stage, the infant is carried by its mother, and when it is 3 months old after that infant starts learn to move separately. Juveniles and other females also bring the infants during usual group activities (allomothering). Juvenile females and other subadult females obtain skills in early stage of juvenile for carrying infants. At that time they have very good capacity of learning as a allomother.



**Fig.1. Hanuman Langurs: Mother-Infant attachment.**

Generally Infants acquire the necessary skills in searching and obtaining of its own food by means of individual play and when it is 5-7 months old, it can feed solid foods found by itself or along with its mother. There is a high frequency learning capacity in this stage and most play activities between infants and juveniles of the groups. Grooming is one of the most regular forms of affiliative contact among langurs. Higher-ranking animals groom subordinates as a form of appeasement. Adult females often express their grooming to other females (especially those with new infants); the second most common form of grooming occurs between adult females and adult males. It was found that closely ranked individuals are more likely to groom each other.

## CONCLUSION

We are still much about the cognition capacities of primates, informing is not just about our own evolution past and the skills of our common ancestor, but also about the specific and unique adaptations each species has for its own physical and social world. The cognitive capacities of primates should not just be used as a baseline for comparison to human capabilities, but also studied in their own right in order to better understand the cognitive repertoire of each species and the effects of differing environment on the evolution cognition

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