

The evolution of primate intelligence assignment



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An evolutionary trend in primates involves the development of offspring both before and after birth and their integration into complex social systems.

Another trend in primate evolution has been toward a more elaborate brain.

In addition to brain size and gestation periods, social organization also demonstrates and plays an important role in primate evolution due to its complexity and hierarchy. Brain size does matter. The larger the size of the brain, the more intelligence the species, and throughout primate evolution, the size of primate brain has grown in size.

Most mammals display some asymmetry between the right and left side of the brain in size and morphology. According to Prince Charles Lucien Bonaparte who in 1837 divided mammals into two groups namely Educability and Indubitable. One group, with brain surface that must be reflective of at least some intelligence, Bonaparte called Educability. The second and obviously inferior group he referred to as Indubitable. Bonaparte's Educability consisted of the carnivores, ungulates, manatees and other sealants, whales and of course primates.

Educable was characterized by having the large portion of the brain, the cerebrum, subdivided by a crease or fissure into two or three lifelike segments. "The other group had only a single-lobed, undifferentiated cerebrum. Not only do the large hominids have large brains, their brains differ from those of other primates in having more distinct asymmetries to them, where features of the right and left cerebral hemispheres are unequal in size or extent of expression.

Humans have long been known to develop extreme cerebral asymmetries, which are supposed to be correlated with language and handedness of information from the different senses. The brain of anthropoids is larger, relative to body weight, than that of promising and is characterized by a complicated pattern of folds and fissures on the surface. The encounter that has the functions to receive, analyzes, and synthesize is the most recently evolved brain region, does what we regard as the clever stuff: learning, language and making sense of the world.

It takes up about 80% of the human brain but less than 60% of a New World monkey's brain. Humans have long been known to develop extreme cerebral asymmetries, which are supposed to be correlated with language and handedness. The researchers believe that this could fleet an adaptation for living in larger groups with more complex social interactions. The reproductive cycle of copulation, gestation, birth, and lactation occupies the higher female primates for a year or more. The female does not usually come into estrus again until the offspring of the previous pregnancy is weaned.

Primate infants are generally born fully furred and with their eyes open. At birth, the infant embarks upon what will be a long period of growth and development in the care not only of its mother, but also often in that of other relatives or members of the same social group. The complex and relatively stable societies of primates provide, a degree of protection that enables the young to have a long period of learning. Except in the case of man, chimpanzee, and gorilla, the newborns are able to cling to the mother's fur and need no support.

Physical dependency ends when the young are weaned, but it is followed by an extended period of psychological maternal dependency lasting from 2 1/2 years in lemurs to 14 years or so in human. This educational period is crucial for animals that specialize in sophisticated reactions to immediate circumstances rather than in stereotyped patterns of behavior. In general gestation periods for primates are relatively long, allowing for the development of a more complex brain. Also the more sophisticated species exhibit longer infant and Juvenile stages, which are related to the time required for a more advanced mental development.

Primates usually have a closer infant/mother bond and a longer childhood than other animals. During the time a primate is an infant and child it learns from its mother of how to survive in the environment. Primates also learn what to eat, where to find food, how to eat different foods, mating rituals, social structure, and females also learn maternal behavior. While still in the uterus, the brain starts growing. Thus the longer the gestation period, the larger the relative size of the brain will be in the infant.

It is assumed that the more time spent in infancy and childhood, the more an animal learns. There is a direct correlation to length of the gestation period, infancy and childhood development, and lifespan in primates. Due to the higher degree of intelligence, different types of primates engage in different complex social groups. The three main ways to group primate societies are monogamous, polygons and multi male multi female groups. Monogamous System An example of the monogamous system is gibbons. Monogamous system consists of one male and one female Join to rear at least a single brood.

There is little opportunity to form relationship besides the one with the mate, so there's not much complexity in choosing who to mate with and who to hang out with. People have done preference experiments in the lab and it has been shown that monogamous animals even when given a choice, choose their usual partner to associate with. Primates that live in monogamous societies exhibit the following features: a lack of sexual dimorphism in size and coloration; a lack of specialized defense roles against of young by the adult male; and closely fashioned activities by adult female and male.

Polygons System Gorilla belongs to the polygons system in which each male to mate with two or more females. The females are not related to each other and so have little to offer each other socially. The male protects the females from outside males. Long-term bond form between the dominant male and the female in his group- if he disappears, the females all disperse. The females are submissive to the male, and take more of the responsibility for staying near the male and maintaining proximity.

The subordinate males do tend to hang out with females more than other females, but these proprieties are the responsibility of the subordinate males, not of the females he's hanging out with. Primates that live in polygamous groups typically show the following characteristics: closely bonded adult females, somewhat peripheral or socially aloof reproductive male; strong intolerance by the reproductive males of other, potentially reproductive males; leadership shown by at least some males in many aspects of group life, while the adult male shows an outward-from- the-group orientation; some turnover in reproductive males.

Multi-male multi-female system Among non-human primates, the societies of chimpanzees appear to be the most complex and sophisticated of all, with their male alliances and individualistic female loyalties. The common chimpanzee is a classic example of the multi-multiple- female system, in which a group of animals in which several adult males and several adult females are reproductively active. The females in multi-male, multi-female systems are mostly solitary in the chimp, so they haven't been studied as much, since males and females don't have too much contact outside of estrous periods.

The common chimpanzee has a type of social organization in which individuals regularly form small subgroups for foraging but from time to time also join together in larger groups; the variation in grouping usually depends on the type of food, and the groups at any one time could be of the following types: all-male, adult females and offspring, bisexual, one female and her offspring, and single individual. This species has a promiscuous mating system. The core of the chimpanzee society is the male, who roam around and protect members of the group as well as hunt.

There is generally a dominance hierarchy amongst the males. Males will start to associate with adult males more as they become older, and they will be integrated into the hierarchy by adulthood. Male-male associations are the strongest in the group, with grooming and food sharing occurring between males. Within the male hierarchy, the highest-ranking individual within a dominance hierarchy known as alpha status is often gained through forming alliances with a brother or an older non-relative. The social environment in

order to meet preconceived goals, are an important factor in the evolution of primate intelligence.

One of the methods primates use to manipulate relationship is by alliance formation. Maintenance requires an animal to analyze a significant amount of information, including the relations between individuals involved in the alliance as well as their relations to other individuals. While many animals form alliances against individuals, primates form integrator alliances, which take the form of naturalistic or protective support. These integrator interactions allow for the manipulation of support – rank often corresponds to desirability as an ally including solicitation, coercion, reciprocation, and friendships.

The development of their intelligence has been particularly important to species in this group. Many species live in social groups that have a rather authoritarian internal organization, with bluff, violence and convenient alliances being brought into play to settle disputes. Primates such as apes, especially chimps “ human closest relatives”, have had their intelligence tested by humans for decades. We have them painting, we show them how to speak a few words, we had also instruct them in sign language and we tried coaching them to count.