University of Leicester — School of Psychology

Project title: Determinants of global and local visual processing advantage in humans and capuchins (*Cebus apella*).

Principal Investigators: Dr. Carlo De Lillo (Leicester) & Dr. Giovanna Spinozzi (Rome)

Participating laboratories: Human Visual Spatial Cognition Laboratory (Leicester); Unit of Cognitive Primatology C.N.R.-ISTC (Rome)

Funding body: Leverhulme Trust

Context and aim of the programme

The objective of this network is to explain some observed differences in the visual cognition of humans and capuchins.
Extensive research is conducted assuming the similarity of the visual system of human and non-human primates. Nevertheless, recent findings indicate unexpected differences in how humans and monkeys perceive the relationship between whole visual patterns and their component parts. A robust finding in human cognition is that the global shape of hierarchical patterns (patterns where a global shape, e.g. a square is formed by the configuration of local elements, e.g. a number of smaller circles) is processed faster and more accurately than the local elements. By contrast, monkeys are faster and better at the identification of the local elements. Chimpanzees, which are taxonomically closer to humans than monkeys, show an intermediate pattern of results suggesting that these processing dispositions may be relevant for understanding the evolution of human visual cognition.

Studies from our own and other laboratories show that these interspecies differences cannot be explained by the lack of familiarity that monkeys have with geometric shapes or a bias for processing stimuli of particular size or a deficit in the detection of the spatial relationship between parts. Moreover, it is unlikely that these differences could be due to variations in visual acuity or other lower perceptual functions. The proposed network will investigate possible higher level cognitive determinants of these interspecies differences. The proposed sets of experiments, to be carried out on humans and capuchins using comparable procedures. The project is purely behavioural and capuchins live in semi-natural settings in large social groups in Rome's Bioparco where they can be observed by the public. Individual capuchins spontaneously interact with experimenters and testing involves displacing wooden tassels in exchange for highly preferred food items. The animals are never food deprived or coerced in any way into taking part in the experiments.