Visual Spatial Cognition Laboratory

The VSC laboratory is dedicated to the study of the role of organisational factors in the encoding and retention of spatial information as acquired mainly through the visual modality. As we subscribe to the notion that the understanding of adult human cognition can be better achieved by observing how its components are fractionated during cognitive growth and how they are partitioned in less complex cognitive systems, we integrate traditional methods of experimental psychology with comparative, developmental, neuropsychological and modelling perspectives.

The laboratory is equipped with fixed and portable testing stations for testing serial-spatial cognitive skills in small scale environments and with experimental set-ups enabling the collection of data regarding spatial

memory, search and foraging in larger scale environments. The testing stations feature touch sensitive screens as well as traditional response boxes and other peripherals for recording participants' responses. The laboratory also features a library of neuropsychological diagnostic tools and computerised systems for the study of the integration of visual and auditory stimuli.

Current and former staff and students

[Dr. Carlo De Lillo](#) (Lab curator)

Benjamin E. Holmes (Research assistant)

Dr. Valerie Lesk (Research associate)

Jacqueline Mizha-Murira (Research assistant)

Rebecca Ashton (PhD student)

Current and former funded students and bursars

Josephine E. Marson (Nuffield Foundation 2006)

Jacqueline Mizha-Murira (Wellcome Trust 2006)

Benjamin E. Holmes (Nuffield foundation, 2005)

Leah Storer (University of Leicester, 2005)

Paul Hoffman (Experimental Psychology Society, 2004)

Mark Hurlstone (University of Leicester, 2004-2005)

Lauren Hesketh (Nuffield foundation, 2004)

Externally Funded projects

Determinants of global and local visual processing advantage in humans and capuchins (Leverhulme Trust), 2008-2011

Executive functions and hierarchical organisation in short-term memory for spatial locations. Biotechnology and Biological Sciences Research Council

(BBSRC). 2005-2006.

Contrasting hierarchical coding and movement length as determinants of recall improvement in serial spatial memory. Nuffield Foundation. 2006

Schizotypy and the encoding of structure in spatial working memory: are individual differences mediated by executive functions and perceptual grouping skills? Wellcome Trust. 2006.

Executive functions and cross-modality binding in serial temporary memory. Nuffield Foundation. 2005

Spatial Grouping, executive functions and data-reduction in spatial working memory. Experimental Psychology Society. 2004

Executive functions and hierarchical organisation in serial-spatial working memory: a study based on structured versions of the Corsi task. Nuffield Foundation. 2004.

External collaborations

Non-human primate research is conducted in collaboration with the C.N.R.-ICST which hosts a centre of international excellence in Rome for the study of behaviour, cognition, conservation and welfare of capuchin monkeys. The animals hosted there live in large social groups and are not exposed to any form of deprivation or physical restriction. They come spontaneously to the testing stations where they are rewarded with highly preferred food.

PhD opportunities.

Students interested in carrying out doctoral research in this laboratory should contact Dr. Carlo De Lillo.

Sample publications

De Lillo, C., Spinozzi, G. & Truppa, V. (2007). Pattern recognition in tufted capuchin monkeys (*Cebus apella*): the role of the spatial organisation of stimulus parts. *Behavioural Brain Research, 181: 96-109*

Spinozzi, G., De Lillo, C., & Salvi, V. (2006). Local advantage in the visual processing of hierarchical stimuli following manipulations of stimulus size and element numerosity in monkeys (*Cebus apella*). *Behavioural Brain Research, 166: 45-54*

De Lillo, C., Spinozzi, G., Truppa, V. & Naylor, D.M. (2005). A comparative analysis of global and local processing of hierarchical visual stimuli in young children and monkeys (*Cebus apella*). *Journal of Comparative Psychology, 119(2): 155-165*

Spinozzi G., De Lillo, C. & Castelli, S. (2004). Detection of "Grouped and "Ungrouped" parts in visual patterns by tufted capuchin monkeys (*Cebus apella*). *Journal of Comparative Psychology, 118(3): 297-308*

De Lillo, C. (2004). Imposing structure on a Corsi-type task: evidence for hierarchical organisation based on spatial proximity in serial spatial memory. *Brain and Cognition, 55(3): 415-426*

Spinozzi, G., De Lillo, C. & Truppa, V. (2003). Global and local processing of hierarchical visual stimuli in tufted capuchin monkeys (*Cebus apella*). *Journal of Comparative Psychology, 117: 15-23*

De Lillo, C. (2001). Robotic search: what's in it for comparative cognition? *The Behavioral and Brain Sciences, 24(6): 1057*

De Lillo, C., Floreano, D. & Antinucci, F. (2001) Transitive choices by a simple, fully connected, backpropagation neural network: implications for the comparative study of transitive inference. *Animal Cognition, 4: 61-68*.