

## THE ORIGIN OF THE SOCIAL BRAIN

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Detecting and discriminating humans from objects is critical for adaptive behaviour. How and when do humans identify and separate social agents from all the rest? Is there any innate mechanism present at birth that allow humans to discriminate social stimuli from non social objects?

Many vertebrates have primitive neural pathways that ensures a bias to attend toward or preferentially process sensory information about member of other species. Newly hatched chicks attend to pattern that correspond the head region of their caregivers ( Morton and Johnson 1991) similarly newborns humans preferentially orient toward faces ( Valenza at al 1996). Recently newly hatched dark-reared chicks has provided evidence of the presence of a mechanism that detects biological motion prior to any visual experience. This finding supports the idea of the existence of evolutionary ancient neural mechanisms for detecting social stimuli that could be present in humans as well as in other species before any visual experience ( Jonhson 2007).

In addition evidence from behavioral, brain lesion and neuro-imaging studies suggests that, in adults, both face processing and biological motion perception involve specific processes carried out by dedicated brain areas. A question still open concerns the origin of brain specialization for social stimuli and how innate mechanisms and perceptual experience contribute to the development of the social brain. From this perspective a developmental approach becomes crucial to disentangle these questions. Two lines of convergent evidence on face and biological motion detection will be presented to demonstrate the innate predispositions of the human system to detect social stimuli at birth.

As for face detection some experiments will be presented to demonstrate that, by virtue of non specific attentional biases a very coarse template of faces become active at birth.

As for biological motion detection some studies will be presented to demonstrate that, since birth, the human system is able to detect social stimuli on the basis of their properties such as the presence of a semi-rigid motion named biological motion.

Overall the empirical evidence supports the notion that the human system begins life broadly tuned to detect social stimuli and that the narrowing of the system is a function of development.