CONSPEC, CONLEARN, and the Inversion Effect in Biological Motion Perception

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According to a classic theory by Morton and Johnson [1], humans and chicks (and probably other animals as well) share an important principle in the design of the developing face and conspecific recognition system. In humans, an innate mechanism (CONSPEC) based on a very coarse template of a face is responsible for guiding attention to face-like stimuli, ensuring that a second mechanism (CONLEARN) receives ample input to learn about the subtle cues that carry information about the identity of another person. In newly hatched chicks, the two mechanisms have similar roles and control filial imprinting on their mothers.

Based on experiments investigating the inversion effect in biological motion [2], I will present evidence for the dissociation of two mechanisms for biological motion perception. One of them attracts attention to a particular signature in biological motion that is largely independent of the particular nature of the animal generating it. This mechanism works well in the visual periphery and functions as a general “life detector”. I will argue that it is evolutionary old and that humans share it with other animals (including chicks [3]). The other mechanism is based on learning. It relies on the first one, which makes sure that sufficient visual input is provided for this learning process. Evolutionary, it is a more recent acquisition and its particular implementation might strongly vary between species.

