

## **Bridging the gap between low-level processing and high level behaviour: the case of autism.**

**N. Thompson and J. P. Levy**

**School of Psychology and Therapeutic Studies, University of Surrey Roehampton  
n.thompson@roehampton.ac.uk**

Autism is a pervasive developmental disorder affecting an individual's ability to interact socially and to communicate, and in which individuals display restricted repetitive and stereotyped patterns of behaviour. There are several rather high-level theoretical accounts for autism (Frith, 2003) as well as several proposals for computational mechanisms that may account for this condition (Levy, 2004). In common with other potential computational mechanisms of cognitive phenomena we need to find a satisfying way of using simple modelling tools to help explain complex behaviour. In common with others (Thomas & Karmiloff-Smith, 2003), we would argue that developmental disorders are likely to require a properly developmental explanation. This may be a way of using known simple processing differences in autistic people to explain the divergence of high-level behaviours during and after development.

An example of a low-level difference in the processing style of autism is the recent finding of relative weakness in dorsal visual mechanisms responsible for the perception of motion. We would like to explore the possibility that this kind of low level behaviour is, at least in part, responsible for the high level characteristics of autism through a chain of developmental processes (see Gepner, 2001).

We will review the research into visual perception of motion and autism and will discuss and illustrate the role that connectionist models may have in clarifying the nature of the relationship between dorsal mechanisms and the high level behaviours found in autism.

Frith, U. (2003). *Autism: Explaining the Enigma*. Oxford, UK: Blackwell.

Gepner, B. (2001). What role is played by troubles of movement vision in infantile autism? A new neuropathological, developmental approach. *Psychiatrie De L Enfant*, **44(1)**, 77-126.

Levy, J. P. (2004). Connectionist models of over-specific learning in autism. In C. Labiouse (Ed.), *Connectionist Models of Cognition and Perception II*: World Scientific.

Thomas, M. S. C., & Karmiloff-Smith, A. (2003). Modeling language acquisition in atypical phenotypes. *Psychological Review*, **110(4)**, 647-682.