Title: Self-motion and self-generated motion perception in psychiatric patients

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Involved disciplines: Visual Perception, Psychiatry

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Objective: Finding early behavioural and neural precursors of defective sense of self-agency in obsessive-compulsive disorders by means of novel motion perception tests
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Background

Recent findings have highlighted that certain visual perception mechanisms may be faulty in obsessive-compulsive disorders (OCD). For example, the threshold to detect and discriminate biological motion is increased (Kim et al 2008), which suggests that OCD patients may have difficulties to decode visual events. Comorbidity between OCD and schizophrenia might account for the shared impairment of biological motion processing in these two pathologies (Kim et al 2011). The distinction between self-produced and externally-produced motion is among the most basic capabilities of visual events discrimination (Warren & Rushton 2007). Interestingly, while in schizophrenia a poor sense of self-agency is clearly recognized (Jeannerod 2009; Haggard et al 2003), for OCD only recently has such function been suggested to be defective (Gentsch 2012). Therefore, the first aim of this study is to assess whether the capability of distinguishing between self-produced and externally-generated motion is defective also in OCD patients. Because early defects in this visual function might become a useful prognostic index of OCD, as a second aim we will search for early markers of defective self-monitoring in young relatives of OCD patients, starting from infancy. Psychophysical, behavioural and brain imaging techniques will be used.

Goals and tasks

1. We will develop a task based on the assessment of self-produced visual motion as distinct from externally-produced visual motion. The assessment will be conducted on adult OCD patients and matched controls. We will use a protocol based on discrimination threshold and vection rivalry (Kleinshmidt et al 2002).
2. We will investigate the oculomotor and the fMRI brain correlates of vection in OCD patients.
3. We will test young relatives (including infants) of OCD patients for the capability of distinguishing self-produced visual motion from externally-produced visual motion. An ad-hoc procedure for preverbal observers will be developed, based on eye movement and pupillary response recordings (Hupè et al 2009).
4. In the same children, we will search for associated defective biological motion perception. Assessment of optic flow perception will serve as positive control, as this capability is fully functional in OCD patients (Kim et al 2008).
5. Finally, we will start developing a new protocol for visual self-agency detection based on self-generated motion (contingency detection), which will allow us to include in the battery test also the assessment of the sense of self-agency.
References


