

Self-awareness, self-recognition, & Theory of Mind: Conceptual distinctions & neuroanatomical localization

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- **Widespread claim:** Self-awareness (SA) is primarily located in the right hemisphere (RH) (e.g., Decety & Sommerville, 2003; Stuss, Picton & Alexander, 2001).
- **Rational behind claim** (Keenan, 2003): Since self-recognition (SR) & Theory of Mind (TOM) are located in areas of the RH, then SA too involves RH activation.

→ This reasoning is misleading & potentially inaccurate. *WHY?*

(1) SR & TOM should NOT be equated with SA.

SA represents the capacity to become the object of one's own attention (Duval & Wicklund, 1972). It involves an awareness of one's own mental states & public self-aspects.

A- SR only requires a kinesthetic representation of one's body (Mitchell, 2002). The organism "matches" what it sees in the mirror with an internal image of its own body & concludes that the secular image is the self. This does NOT require awareness of one's mental states. Thus: SR is only superficially related to fully mature human SA.

B- SA makes it possible to infer mental states in others (TOM). But:

- Not all forms of SA lead to TOM—only "self-reflection" (Joireman et al., 2002).
- Once fully developed, TOM probably stops directly involving SA & takes a life of its own (Morin, 2003). Thus: TOM & SA are relatively independent.

(2) SR & TOM tasks activate structures of the left hemisphere (LH) as well. E.g.,

- SR has been shown to involve activation of right limbic & left prefrontal regions (Kircher & al, 2001; also see Turk & al, 2002).
- TOM has been shown to involve bilateral (Gallagher & Frith, 2003) & left frontal activity (Sabbagh & Taylor, 2000).

(3) Other SA tasks are associated with *bilateral* activity. E.g.,

- Self-description activates bilateral frontal areas (Gusnard & al., 2001; Johnson et al., 2002; Kjaer & al., 2002).
- Autobiographical retrieval activates the left frontal lobe (Conway & al., 2001).

(4) The LH of split-brain patients is SA (Sperry & al., 1979). This hemisphere can verbally describe the name it collectively shares with the RH, its current feelings, future goals, aspirations, etc.

More realistic claim:

Both hemispheres of the brain are involved in SA.