Review of: "Growing Confidence and Remaining Uncertainty About Animal Consciousness"

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The target paper succinctly reviews what is currently known about consciousness in non-human animals. The author provides a clear definition of consciousness, discusses its phenomenological nature and neurological substrates, examines its evolutionary roots, and identifies unresolved issues.

One such remaining uncertainty pertains to the monitoring mechanisms of consciousness—that is, "What is the nature of the agent that focuses on only those neural events of which we are conscious, and where in the nervous system (or body) does it reside?" (p. 10). The author states that "… the 'witness' to the neural processes that give rise to phenomenological experience… *has not been determined for humans*, much less for any other animal" (p. 11, italics added).

I find this statement problematic. A large body of research in human social cognition suggests that one potential monitoring mechanism responsible for our sense of self and awareness of it is inner speech (e.g., Chella et al., 2020; Morin, 2018; Neuman & Nave, 2010; Schlinger, 2008; Skipper, 2020). Inner speech represents the activity of talking to oneself in silence (Brinthaupt & Morin, 2023). We talk to ourselves for multiple reasons, such as when thinking, planning, deciding, rehearsing, remembering, and so on (Alderson-Day & Fernyhough, 2015). Pertinent here in terms of possible monitoring devices, we also engage in inner speech to identify, organize, classify, consolidate, question, store, and retrieve information about ourselves, such as our thoughts, emotions, sensations, motives, desires, hopes, and behavioral patterns.

Representative evidence supporting this idea includes the following: (1) numerous studies report significant positive correlations between measures of self-related constructs and inner speech (e.g., Racy & Morin, 2023), (2) inner speech loss following brain injury leads to self-reflection deficits (Morin, 2009); (3) there is an increased activation of brain areas producing inner speech during completion of self-reflection tasks (Morin & Hamper, 2012); (4) studies employing thought-listing procedures report frequent inner speech about the self (Morin & Racy, 2022); and self-reflective skills in psychiatric populations are improved through the practice of internal dialogues (Lysaker et al., 2011).

The above allows for a tentative answer to the question: where in the nervous system does the monitoring mechanism reside? Most likely in the left inferior frontal gyrus, known to sustain inner speech activity (e.g., Geva et al., 2011). It is very unlikely that non-human animals possess inner speech, as the latter gradually emerges from—or follows—social speech (Vygotsky, 1934/1962), which the former lacks. This raises the possibility that animals are deprived of an important monitoring system unique to humans and thus probably exhibit a lower sense of self within their broader

consciousness experience.

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