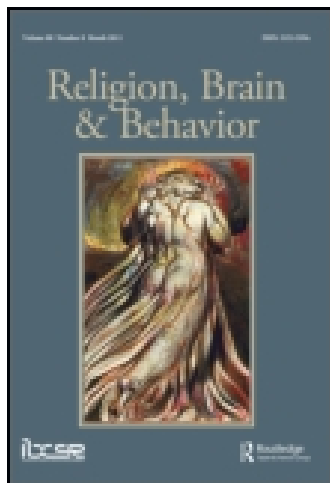


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Theoretical Neuroscience

Wesley J. Wildman, Richard Sosis, and Patrick McNamara

The target article in this issue presents an opportunity to discuss the role of theoretical neuroscience in the bio-cultural study of religion. Patricia E. Sharp's "Meditation-induced bliss viewed as release from conditioned neural (thought) patterns that block reward signals in the brain pleasure center" presents a theoretical neurocognitive model of bliss. The paper aims to explain how drugs of abuse produce blissful feelings in conjunction with down-regulation of the associated neurotransmitters, while some types of meditation are reported to produce similar blissful feelings without any such down-regulation.

The methodological and epistemological question for specialists in the neuroscience of religion concerns the validity and importance of such theoretical models. Two extreme situations mark the borders of the domain within which theoretical models can be genuinely useful.

On the one hand, the state of the art in many neurological research areas related to religion and spirituality is so underdeveloped that many theoretical models are virtually indistinguishable from mere speculation. Where there are insufficient constraints in existing empirically grounded research, speculative models are essentially arbitrary, and thus practically useless for guiding understanding. The rapid advance in the neurosciences sweeps experimental researchers right past these speculative proposals, trampling them underfoot and leaving them behind, rather than slowing down to test them.

On the other hand, we don't get very far when theoretical proposals make no more than micro-moves in extending beyond empirically already well-supported results. In this case, the theoretical model doesn't differ significantly from the kinds of interpretations that any experimental neuroscientific study would present in its discussion section. Being too much in thrall to existing knowledge rarely inspires novel thinking. A certain degree of adventurous risk is required.

It follows that speculative neurological models of genuine use to our field occupy a methodological "sweet spot" between the twin problems of "too much unconstrained speculation" and "unadventurous adherence to extant interpretations." So much for negative characterizations of that sweet spot.

What positive virtues should a theoretical neurological model possess in order to have an impact? It should propose a solution to a problem that is well known to bother researchers. It should be consistent with extant research findings from experimental neuroscience. It should be testable in future neuroscientific research studies. And it should inspire innovation in relation to the problem it purports to solve.

With slender funding and relatively few experts working in the area of neuroscience and religious cognition, there is a persistent concern about where the field stands and how it is progressing. Sharp's target article presents a bold hypothesis in contemplative studies, which is arguably the most developed area of the neurology of religious cognition. One measure of the state of development in the neuroscience of religious

cognition is that the commentators have different views about the target article's location in the sweet spot we have described, and also about the extent to which it expresses all four of the theoretical virtues that make a theoretical neuroscience model useful.

Construction of tentative theoretical models is necessary in any scientific field and to the extent that a given model leads to testable predictions it may or may not spur fruitful empirical studies. Therefore, both model construction and empirical tests of existing models have to proceed hand in hand if progress is to be made in the emerging field of the neuroscience of religious cognition and experience. Hopefully Sharp's theoretical model will be picked up in an empirical study very soon and we can all evaluate her creative proposal from a new angle.