



Forum

Computational cognitive neuroscience approaches to quantifying subjective experience



Megan Peters, Ph.D.

Assistant Professor - Cognitive Sciences, UC Irvine
CIFAR Global Scholar - Brain, Mind, & Consciousness



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Abstract

Computational and cognitive neuroscience techniques have made great strides towards describing the neural computations underlying perceptual inference and decision-making under uncertainty. These tools tell us how and why perceptual illusions occur, which brain areas may represent noisy information in a probabilistic manner, and so on. However, an understanding of the subjective, qualitative aspects of perception remains elusive: qualia, or the personal, intrinsic properties of phenomenal awareness, have remained out of reach of these computational analytic insights. Here, I propose that metacognitive computations, and the subjective feelings that go along with them, give us a solid starting point for understanding subjective experience in general. Specifically, perceptual metacognition possesses ontological and practical properties that provide a powerful and unique opportunity for studying the studying the neural and computational correlates of subjective experience using established tools of computational and cognitive neuroscience. By capitalizing on decades of developments in formal computational model comparisons as applied to the specific properties of perceptual metacognition, we are now in a privileged position to reveal new and exciting insights about how the brain constructs our subjective conscious experiences.

Host

Rei Akaishi, Social Value Decision Making Unit, RIKEN CBS-TOYOTA Collaboration Center (ext.7194)