

Perceptual consciousness

The problem of perceptual [consciousness](#)—the question of how our subjective experiences (colors as we see them; sounds as we hear them; tastes, etc., as we feel them) could be accounted for in terms of brain processes—is often regarded as the greatest unsolved mystery of our times.

A fundamental scientific question concerns the [neural basis](#) of perceptual consciousness and perceptual monitoring resulting from the processing of sensory events. Although recent studies identified neurons reflecting stimulus visibility, their functional role remains unknown.

Pereira et al. from [Geneva](#) showed that perceptual consciousness and monitoring involve evidence accumulation. They performed [single-unit recording](#) in a participant with a [microelectrode](#) in the [posterior parietal cortex](#), while they detected vibrotactile stimuli around the detection threshold and provided confidence estimates. They find that detected stimuli elicited neuronal responses resembling evidence accumulation during [decision-making](#), irrespective of motor confounds or task demands. They generalized these findings in healthy volunteers using [electroencephalography](#). Behavioral and neural responses are reproduced with a computational model considering a stimulus as detected if accumulated [evidence](#) reaches a bound, and [confidence](#) as the distance between maximal evidence and that bound. They concluded that gradual changes in neuronal dynamics during evidence accumulation relates to perceptual consciousness and perceptual monitoring in humans ¹⁾

¹⁾

Pereira M, Megevand P, Tan MX, Chang W, Wang S, Rezai A, Seeck M, Corniola M, Momjian S, Bernasconi F, Blanke O, Faivre N. [Evidence accumulation](#) relates to perceptual consciousness and monitoring. Nat Commun. 2021 May 31;12(1):3261. doi: 10.1038/s41467-021-23540-y. PMID: 34059682.

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Last update: **2024/06/07 02:50**

