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Alpha-band Suppression in the Visual Word Form Area As a Functional Bottleneck to Consciousness

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1. Abstract

The current state of empirical investigations refers to consciousness as an all-or-none phenomenon. However, a recent theoretical account opens up this perspective by proposing a partial level (between nil and full) of conscious perception. In the well-studied case of single-word reading, short-lived exposure can trigger incomplete word-form recognition wherein letters fall short of forming a whole word in one's conscious perception thereby hindering word-meaning access and report. Hence, the processing from incomplete to complete word-form recognition straightforwardly mirrors a transition from partial to full-blown consciousness. We therefore hypothesized that this putative functional bottleneck to consciousness (i.e. the perceptual boundary between partial and full conscious perception) would emerge at a major key hub region for word-form recognition during reading, namely the left occipito-temporal junction. We applied a real-time staircase procedure and titrated subjective reports at the threshold between partial (letters) and full (whole word) conscious perception. This experimental approach allowed us to collect trials with identical physical stimulation, yet reflecting distinct perceptual experience levels. Oscillatory brain