

Documents

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Inhalation boosts perceptual awareness and decision speed

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Abstract

The emergence of consciousness is one of biology's biggest mysteries. During the past two decades, a major effort has been made to identify the neural correlates of consciousness, but in comparison, little is known about the physiological mechanisms underlying first-person subjective experience. Attention is considered the gateway of information to consciousness. Recent work suggests that the breathing phase (i.e., inhalation vs. exhalation) modulates attention, in such a way that attention directed toward exteroceptive information would increase during inhalation. One key hypothesis emerging from this work is that inhalation would improve perceptual awareness and near-threshold decision-making. The present study directly tested this hypothesis. We recorded the breathing rhythms of 30 humans performing a near-threshold decision-making task, in which they had to decide whether a liminal Gabor was tilted to the right or the left (objective decision task) and then to rate their perceptual awareness of the Gabor orientation (subjective decision task). In line with our hypothesis, the data revealed that, relative to exhalation, inhalation improves perceptual awareness and speeds up objective decision-making, without impairing accuracy. Overall, the present study builds on timely questions regarding the physiological mechanisms underlying consciousness and shows that breathing shapes the emergence of subjective experience and decision-making. Copyright © 2023 the American Physiological Society.

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attention; consciousness; decision-making; respiration

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