

Lucid dreaming: Reflections on the role of introspection

Commentary on “The neurobiology of consciousness: Lucid dreaming wakes up” by J. Allan Hobson

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1. Introduction

As the principal investigator on the quantitative EEG study on lucid dreaming, I am naturally supportive of the arguments portraying lucid dreaming as a valuable tool in consciousness research. As an experimental psychologist, I am convinced, for my own reasons, that lucid dreaming is, indeed, an experiment of nature that can and should be exploited. In the following commentary, I will briefly summarize the importance of lucid dreaming for consciousness research, discuss introspective methodology in the psychological investigation of consciousness and describe how lucid dreaming can be used to combine introspection with a third person approach.

2. Lucid dreaming in the context of consciousness research

Since the 1890's consciousness was understood via the concept of states (Ladd, 1887, James, 1890). Advances in sleep research, and in particular research on dreaming, has convincingly shown that consciousness is indeed state-dependent and is at least bimodal (Hobson, 2009, Hobson & Voss, 2010, Voss & Hobson, 2010). As described by Allan Hobson (2009, 2010), dreaming may be best understood as a state of consciousness that is akin to what Edelman (2005) refers to as primary consciousness. By primary, Edelman means a lower form of conscious awareness that includes perception and emotion but lacks reflection. As such, it is probably present in all animals that dream. Primates and humans are also able to reflect on their perceptions and emotions, which constitutes what Edelman refers to as secondary consciousness. Allan Hobson has speculated that secondary consciousness may be related to frontal lobe activation. Our quantitative EEG study on lucid dreaming has shown that this is indeed so. We have compared brain activation in dreaming lacking reflective awareness with lucid dreaming and waking both of which evince reflective aware-

ness. What we found was that the difference between these states was located frontally, and strongest in the 40 Hz frequency band of the EEG which was more potent in waking and lucid dreaming than it was in non-lucid dreaming. It was as if a critical brain power was essential to lucidity and waking and that brain power was not available to the non-lucid dreamer. These main effects were quite robust and present in all three subjects who became lucid in the laboratory.

In our study of lucidity we encountered several methodological problems and will now share our concerns about one of them: the use of introspection brought us into conflict with our understanding of objective scientific investigation. We are assured of the validity of introspection by the voluntary eye movements that our subjects were trained to make to signal out lucidity. We found these eye movements to be very large compared to REM eye movements but smaller and less clear-cut compared to waking. We feel confident that the coupling of first-person reports with objective measures such as voluntary eye movements represents an acceptable approach to access the phenomenology of the dreaming brain.

3. Consciousness and introspection

For William James, Hermann Ebbinghaus and Wilhelm Wundt, consciousness was the main interest of psychological investigation. Fully aware of the limitations of the introspective method, they considered it the only access to the conscious mind. The era of behaviorism brought an end to the study of subjective experiences because introspection, the major instrument of such study, was rightfully considered unstable and so entangled with philosophy and religion as to be scientifically problematic.

As a consequence, psychologists turned their investigative attention to those processes that were readily observable from a third person perspective and which could be operationalized as reaction time paradigms. Although we have transcended pure behaviorism and re-established a strong interest in brain science, we are still devout believers in the appropriateness of reaction times as valid measures of information processing. The major drawback of these studies is, of course, that we are bound to study a brain that is responding to an external environment. Awareness of awareness, the most conspicuous characteristic of human consciousness, is a subjective experience and an entirely internal percept.

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If we want to arrive at a better understanding and interdisciplinary definition of consciousness, we must return to our psychological roots in introspection and find a way to master its methodology. Lucid dreaming presents us with a unique opportunity to combine introspection with a third person approach to the study of reflective awareness in a state of known physiology, REM sleep dreaming.

To conclude, I feel that the scientific investigation of lucid dreaming – although still in its infancy – holds the promise of returning psychology to its base in introspectionism, now safeguarded with powerful 3rd person weapons, including quantitative rating scales, quantitative EEG, and fMRI.

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