

Comment on “Detecting Awareness in the Vegetative State”

Daniel L. Greenberg

Owen *et al.* (Brevia, 8 September 2006, p. 1402) claimed that a patient’s brain activity revealed that she was consciously responding to commands despite being in a vegetative state. However, several alternative explanations were not eliminated. Specifically, the activity could reflect unconscious reactions to the last word in the command, not conscious decisions to respond. A refined experimental design could clarify these issues.

Owen *et al.* (1) attempted to determine the level of awareness of a patient in a vegetative state. They claimed that their results “confirmed beyond any doubt that she was consciously aware.” Unfortunately, the study suffers from substantial flaws and does not merit such extraordinarily strong conclusions.

Department of Psychology, University of California, Los Angeles, CA 90095, USA. E-mail: dgreenberg@mednet.ucla.edu

In their experiment, Owen *et al.* gave their patient instructions (“Imagine playing tennis” or “Imagine visiting the rooms in your home”). Analyses showed that the resultant brain activation was no different from that of controls. The authors thus concluded that the patient made a “decision to cooperate” that “represents a clear act of intention.” Yet it is unclear whether she made any conscious decisions whatsoever. How do the authors know that she interpreted the stimulus as instructions rather than as a simple

sentence? Could it be that the brain activity was unconsciously triggered by the last word of the instructions, which always referred to the item to be imagined, and that no decision was involved at all? As the authors acknowledged, words and sentences can induce activation in people who are clearly unconscious. These ambiguities could be addressed empirically. For example, what would happen if they presented a similar noninstructive sentence such as “Sharleen was playing tennis”? Alternatively, suppose they presented a sentence such as “Imagine visiting the rooms in your home after playing tennis.” Would the patient show activation associated with home (suggesting she had understood the instructions), activation associated with tennis (suggesting she had not), or something else entirely? Would her results differ from those of controls on these tasks? Without answers to such questions, the Owen *et al.* study is difficult to interpret. Although the authors have examined an important issue, a more detailed study is required to determine the extent of awareness in the vegetative state.

References

1. A. M. Owen *et al.*, *Science* **313**, 1402 (2006).
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