CLINICAL CONTRIBUTIONS TO CONSCIOUSNESS STUDIES

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Abstract

Consciousness is a multidisciplinary subject of inquiry. The extent of clinical contributions to the field of consciousness studies has yet to be investigated. The goal of this study was to assess the degree of clinically related articles in the literature of consciousness studies through a systematic evaluation. Three journals systematically identified (Consciousness and Cognition, Journal of Consciousness Studies, and Anthropology of Consciousness) were reviewed from the first issue through December 2008. All original articles related to anesthesiology, general clinical medicine, neurology, neurosurgery, and psychiatry were identified. Of the 1,805 articles reviewed for the three journals, a total of 149 clinically relevant articles were identified; this represented an average contribution of 8% to the total articles. Psychiatry was the discipline most consistently represented in the three journals; neurosurgery was the least represented. There is a relative paucity of clinical articles in the literature of consciousness studies. Clinical perspectives may thus be underrepresented in the field.

Key words: Consciousness; Consciousness studies; Meta-analysis

INTRODUCTION

The study of consciousness is a richly interdisciplinary endeavor, involving philosophy, psychology, cognitive science, neuroscience, physics, and numerous other fields. Clinical disciplines such as neurology, psychiatry, neurosurgery, and anesthesiology all deal with the disturbance or disruption of consciousness. As such, studies and reports related to these disciplines may potentially enrich the discourse of consciousness studies. For example, anesthesiologists regularly initiate a deep state of reversible unconsciousness, providing a unique opportunity for understanding the molecular and neurophysiologic mechanisms of consciousness. Similarly, the hallucinatory experiences of neuropsychiatric patients or cognitive deficits of neurosurgical patients may yield insight into the neural substrates of consciousness through clinicopathologic correlation. Thus, the clinical perspective is vital to the progress of consciousness studies, but the extent of clinical contributions to the field has yet to be investigated. The goal of this study was therefore to assess the degree of clinically related articles in the literature of consciousness studies through a systematic evaluation.

METHODS

Journals devoted primarily to the publication of original articles on consciousness studies were identified systematically. A journal search on PubMed using the term “consciousness” yielded only Consciousness and Cognition. An internet search (Google) using the terms “consciousness journal” and “consciousness journals” further yielded Journal of Consciousness Studies, Psyche, Anthropology of Consciousness, International Journal of Machine Consciousness, and Science and Consciousness Review. Psyche was excluded because it did not have a continuous publication history, with no articles published in Volumes 2, 6, 7 or the year 2008. International Journal of Machine Consciousness was excluded, as the first volume was not scheduled to appear until 2009. Science and Consciousness Review was excluded because it publishes summaries rather than original articles. Thus, the journals Consciousness and Cognition (C&C), Journal of Consciousness Studies (JCS), and Anthropology of Consciousness (AoC) were deemed appropriate for analysis. All volumes of C&C (1992-), JCS (1994-), and AoC (1990- ) were reviewed from the first issue through December, 2008. All titles and abstracts were evaluated.

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for elements related to anesthesiology, neurology, neurosurgery, psychiatry (and related disciplines such as psychoanalysis) or general clinical medicine. If such elements appeared to be central, the article was deemed to be clinical. The text of the articles themselves was reviewed if ambiguity existed.

“Commentary” was determined by an explicit statement in the title of the article, or based on the categorization of the journal. The percentage of clinically related articles in the target journals was assessed and compared; the representation of fields comprising the clinical articles was also assessed.

RESULTS
C&C had the most clinical articles in absolute numbers (96 clinical/746 total), as well as the highest percentage of clinical articles (13%) (Figure 1a). JCS had 43 clinical/888 total articles, representing 5% of total articles in that journal (Figure 1b). AoC had only 10 clinical/171 total articles, representing 6% of total articles in that journal (Figure 1c). Please see the Appendix for full listing of clinical articles from the three journals analyzed. Psychiatry and related disciplines had the best representation in the three journals; neurosurgery had the worst (Figure 2).

DISCUSSION
This is the first study to evaluate the degree of clinically related contributions to the literature of consciousness studies. Consciousness and Cognition had the largest percentage of clinically related articles, as well as the largest absolute number. This may be attributable to the fact that it is the only journal focused on consciousness that is indexed in PubMed. Of the clinical fields, psychiatry and related disciplines were most consistently represented among the three journals analyzed.

It is difficult to make hard conclusions or recommendations based on these findings, as the degree to which clinical disciplines should contribute to the literature of consciousness is unclear. That being said, the pathology observed in the clinical setting may provide significant insight to the study of consciousness—the fact that less than 10% of articles in
C&C, JCS and AoC are clinically relevant suggests that such insights may be underrepresented. There are several possible reasons to account for this. First, clinicians or clinical researchers may not perceive their work under the rubric of “consciousness studies” and may thus submit their research to primary journals in their own field. Second, the paucity of clinically related articles may reflect a lack of interest or knowledge of clinical topics by researchers primarily interested in consciousness. Third, these data may suggest that the lack of academic legitimacy of consciousness studies characteristic of the 20th century still persists in the clinical realm. Although not assessed in the current study, it would be of further interest to investigate how many authors of these clinical studies were actually clinicians.

In terms of the fields represented, it was surprising to see the small contribution of anesthesiology to the total clinical articles. Unlike psychiatrists, neurologists, or neurosurgeons, the primary clinical activity of anesthesiologists is the manipulation of normal human consciousness—it is thus unclear why there has not been better representation in the field of consciousness studies proper. Perhaps the recent high-profile discussion of consciousness and anesthesia in the literature (Alkire, Hudetz, Tononi, 2008) will stimulate further interest and academic activity. There are several limitations to the current study. First, the determination of clinical relevance can be subjective. Certain subjects are unambiguously clinical (such as blindsight or schizophrenia for example), whereas others require interpretation. Although some choices in the present study could be subject to discussion, it is likely that the primary results would be unchanged. Another limitation relates to the category of commentaries. Some articles or journal classifications clearly denote an article as a commentary, while others do not. In general, if the target article is theoretical, the commentary may be just as “original” in nature and should therefore be included as such. To avoid ambiguity, the decision was made to exclude as commentaries only articles that were explicitly labeled as such. There may thus be instances in which incorrect inclusion or exclusion would alter the outcome. Again, we do not think that such instances would significantly alter the primary results. Finally, this study addresses only the presence, rather than the overall impact, of a clinical contribution. We are still in the early methodological stages of consciousness studies. The present data indicate that clinical fields directly related to the investigation of consciousness may not yet be fully integrated. Further work on the role of the clinical sciences in the study of consciousness is warranted.

Appendix: Clinical articles identified in AoC (1990 through December, 2008), C&C (1992 through December, 2008), and JCS (1994 through December, 2008), listed alphabetically for each journal.

Anthropology of Consciousness
1. Budden A: Pathologizing Possession: An Essay on Mind, Self, and Experience in Dissociation. Anthropology of Consciousness 2003; 14: 27-59
2. Calabrese JD: The Supreme Court versus Peyote: Consciousness Alteration, Cultural Psychiatry and the Dilemma of Contemporary Subcultures. Anthropology of Consciousness 2001; 12: 4-18
3. Jervis LL: Finding Order in David’s Disorder. Anthropology of Consciousness 1997; 8: 97-105
4. Lynch D: Patient Preparation and Perceived Outcomes of Spiritist Healing in Brazil. Anthropology of Consciousness 2004; 15: 10-41
5. Lynn CD: Adaptive and Maladaptive Dissociation: An Epidemiological and Anthropological Comparison and Proposition for an Expanded Dissociation Model. Anthropology of Consciousness 2005; 16: 16-49
6. Ostlund SK: Doctors, Nurses, & Patients: Who Has Control Over Death And Dying? Anthropology of Consciousness 2000; 11: 78-89
7. Peters LG: Rites of Passage and the Borderline Syndrome: Perspectives in Transpersonal Anthropology. Anthropology of Consciousness 1994; 5: 1-15
8. Saxton K, Govertsen E: Field Play: The Normalization of an Alternate Cognizance in Seriously Ill Children. Anthropology of Consciousness 2000; 11: 14-23
9. Winkelman M: Therapeutic Effects of Hallucinogens. Anthropology of Consciousness 1991; 2: 15-19
10. Wright PA: Rhythmic Drumming in Contemporary Shamanism and Its Relationship to Auditory Driving and Risk of Seizure Precipitation in Epileptics. Anthropology of Consciousness 1991; 2: 7-14

Consciousness and Cognition
11. Alkire MT: The Power of Observation. Consciousness and Cognition 2001; 10: 236-240
12. Alkire MT, Haier RJ, Fallon JH: Toward a Unified Theory of Narcosis: Brain Imaging Evidence for a Thalamocortical Switch as the Neurophysiologic Basis of Anesthetic-Induced Unconsciousness. Consciousness and Cognition 2000; 9: 370-386
13. Hobson JA: Sleep and dream suppression following a lateral medullary infarct: A first-person account. Consciousness and Cognition 2002; 11: 377-390
14. Alpert JL: Trauma, Dissociation, and Clinical Study as a Responsible Beginning. Consciousness and Cognition 1995; 4: 125-129
15. Andrade J: Investigations of Hypesthesia: Using Anesthetics to Explore Relationships between...
Consciousness, Learning, and Memory. Consciousness and Cognition 1996; 5: 562-580
16. Andrade J, Munglani R, Jones JG, Baddeley AD: Cognitive Performance during Anesthesia. Consciousness and Cognition 1994; 3: 148-165
17. Asai T, Sugimori E, Tanno Y: Schizotypal personality traits and prediction of one's own movements in motor control: What causes an abnormal sense of agency? Consciousness and Cognition 2008; 17: 1131-1142
18. Baars BJ: The Brain Basis of a "Consciousness Monitor": Scientific and Medical Significance. Consciousness and Cognition 2001; 10: 159-164
19. Baars BJ, McGovern K: Steps toward Healing: False Memories and Traumagenic Amnesia May Coexist in Vulnerable Populations. Consciousness and Cognition 1992; 1: 148-151
20. Baars BJ, McGovern K: Steps toward Healing: False Memories and Traumagenic Amnesia May Coexist in Vulnerable Populations. Consciousness and Cognition 1992; 1: 148-151
21. Banks WP: Korsakoff and Amnesia. Consciousness and Cognition 1996; 5: 22-26
22. Ballard CG, Court JA, Piggott M, Johnson M, O'Brien J, McKeith I, Holmes C, Lantos P, Jaros E, Perry R, Perry E: Disturbances of consciousness in dementia with Lewy bodies associated with alteration in nicotinic receptor binding in the temporal cortex. Consciousness and Cognition 2002; 11: 461-474
23. Banks WP: Korsakoff and Amnesia. Consciousness and Cognition 1996; 5: 22-26
24. Barnett KJ, Kirk IJ, Corballis MC: Bilateral disadvantage: Lack of interhemispheric cooperation in schizophrenia. Consciousness and Cognition 2007; 16: 436-444
25. Barnett KJ, Newell FN: Synaesthesia is associated with enhanced, self-rated visual imagery. Consciousness and Cognition 2008; 17: 1032-1039
26. Becchio C, Bertone C: The ontology of neglect. Consciousness and Cognition 2005; 14: 483-494
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30. Blair RJR: Responding to the emotions of others: Dissociating forms of empathy through the study of typical and psychiatric populations. Consciousness and Cognition 2005; 14: 698-718
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33. Bonebakker AE, Jelicic M, Passchier J, Bonke B: Memory during General Anesthesia: Practical and Methodological Aspects. Consciousness and Cognition 1996; 5: 542-561
34. Bowler DM, Gardiner JM, Gaigg SB: Factors affecting conscious awareness in the recollective experience of adults with Asperger's syndrome. Consciousness and Cognition 2007; 16: 124-143
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37. Cariani P: Anesthesia, Neural Information Processing, and Conscious Awareness. Consciousness and Cognition 2000; 9: 387-395
38. Caseley-Rondi G, Merikle PM, Bowers KS: Unconscious Cognition in the Context of General Anesthesia. Consciousness and Cognition 1994; 3: 166-195
39. Cermolacce M, Naudin J, Parnas J: The "minimal self" in psychopathology: Re-examining the self-disorders in the schizophrenia spectrum. Consciousness and Cognition 2007; 16: 703-714
40. Cheyne JA, Girard TA: Paranoid delusions and threatening hallucinations: A prospective study of sleep paralysis experiences. Consciousness and Cognition 2007; 16: 959-974
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42. Danziger S, Fendrich R, Rafal RD: Inhibitory Tagging of Locations in the Blind Field of Hemianopic Patients. Consciousness and Cognition 1997; 6: 291-307
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