Beyond Phineas Gage: Analyzing Morality in Frontal Lesion Patients

P. Molina-Luna, M. Christen, P. Brugger, M. Regard

Introduction

Neuroscientific research on human moral behavior has been historically based on studies with frontal lesion patients. Although there is increasing interest in imaging studies on healthy subjects, the use of frontal lesion patients remains important in experimental studies. We performed a comprehensive literature search of papers presenting cases and/or experimental studies on changes in moral and social behavior following frontal lesions (205 papers reviewed until May 2013). This search indicated that cases in which rare lesions result in alterations of moral behavior are uncommon, and that the prevalence of moral behavior alterations following frontal lesions is unclear (Christen et al. 2012, included 169 papers until 2010). Nevertheless, current literature emphasizes clear-cut examples – such as the classical case of Phineas Gage – claiming aberrations in moral behavior despite relatively intact cognition. This leads us to conjecture that lesion patients’ changes in moral behavior have been presented in a simplified way, tilting the balance towards a neurodeterministic view of human moral behavior. In the context of frontal lesions, this gives rise to questions regarding how we perceive human morality. Importantly, it also leads us to examine how – in the context of moral behavior studies – frontal lesion patients are regarded and treated in clinical settings.

Methods

We designed an anonymized survey directed to researchers identified in our literature search. First/last authors and authors with more than one publication in the field were included. The survey assesses two key points:
- Using case vignettes, the researchers’ subjective concept of morality.
- Using this concept, the extent to which moral aberrations in frontal lesion patients are expected.

The survey is divided in the following topics:
- Basic demographics
- Professional role and duties
- Experience with lesion patients
- Brain lesions and moral/social behavior
- Opinions

Case Vignettes

Case vignettes were designed based on behavior observed in patients. Each vignette depicts a situation in which a patient presents dubious or unacceptable moral/social behavior after a brain lesion. Authors were asked to rate the (a)morality of the behavior along three dimensions (society, community, personal) along a 1-6 scale. Values along the three dimensions were summed, resulting in a scale from 3 to 18. Higher values indicate behaviors that are regarded as socially unacceptable or morally aberrant.

Moral/Social Behavior

Moral aberrations and lesion location

Authors were asked to assess, according to experience, the percentage of patients that present moral aberrations after lesions of the left/right OFC or left/right vmPFC. They were also asked to estimate the prevalence of right OFC and right vmPFC lesions.

Selected References

This poster results from a research project started during the 2013 Zürich Spring and Summer School In Neuroethics