

# Response to Greyson *et al.*: there is nothing paranormal about near-death experiences

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Greyson and colleagues make several arguments [1] against the proposition that near-death experiences (NDEs) can be explained on the basis of currently available neuroscientific and psychological evidence [2]. I must provide several clarifications. First, I remind the reader that our brief Science & Society article set out to examine the core features of NDEs, rather than provide an exhaustive discussion of the literature. Second the goal of our article was to present evidence that the brain can evoke 'similar' experiences that are observed under more controlled and less psychologically distressing circumstances – a point explicitly made by others [3,4]. Third, given the overwhelming media coverage and non-scientific literature in favour of paranormal (i.e., beyond scientific investigation) accounts, our goal was to put forward an alternative, scientific account of NDEs. Finally, I must also make it clear that we extensively examined the extant literature and found no convincing evidence (beyond anecdotes or questionnaires) that contradicted explanations based on current neuroscientific evidence.

The evidence marshalled in support of the argument that NDEs cannot be explained on the basis of currently known facts about the brain is highly questionable. For example, the citation [5] used in support of the following argument from Greyson *et al.*'s letter is based on anecdotal reports and does not pose a challenge to the explanation we provided: 'The accurate information acquired about the deaths of these deceased persons challenges the interpretation of these visions as hallucinations'. I am equally critical of the research reported in [6], showing that 91% of people have accurate recollections of events during NDEs. As pointed out by the author, only 18 of the 107 interviews were conducted within two days of the NDE, leaving the majority open to memory errors, source confusion, and post-hoc reinterpretation. Furthermore, the majority of research in Holden's chapter [6], presents only one case study (and is prone to sampling bias), several studies are over 100 years old and none have used empirically 'gold standard' techniques (e.g., a double blind study with random lottery numbers presented out of view of every one except for those having out-of-body experiences). I suggest that the study of NDEs should be as rigorous as

conventional empirical approaches and not immune to the same standards of scrutiny.

The valid conclusion propounded by Greyson and colleagues is that '[NDEs] should be studied by scientific methods, rather than dismissed without investigation', a conclusion that mirrors ours [1]. Greyson and colleagues are to be congratulated for their highly respected research in documenting these experiences [7], yet in my view they, and others, have not provided any compelling evidence concerning NDEs that contradicts what we already know about the brain. Greyson *et al.*, also point out that '[NDEs] may be paranormal in the sense of being difficult to explain in terms of the currently prevailing reductionist framework'. The use of the word 'paranormal' in this context, however, is misleading. Indeed, using 'paranormal' in a non-standard way, whereas the standard understanding of the term is to mean 'phenomena beyond scientific investigation', does nothing to help the stated aim of Greyson *et al.*, that is, the scientific investigation of NDEs – quite the contrary, it will most likely be harmful and keep the study of NDEs outside the realm of science.

## References

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