

Does Research on Near-Death Experiences Fulfil the Quality Criteria of Medical Studies?

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Abstract

So-called near-death experiences (NDE) have been a broadly discussed phenomenon for eons. Since the 19th century, spiritual views have been brought more and more into question. However, spiritual approaches still prevail in the NDE literature, even though a significant number of studies now scrutinize NDE's by scientific means. The criteria of scientific research are well known. Firstly, validity: are the things measured by a certain test appropriate aspects of the real world? Secondly, objectivity: the independence of a test from "outside" influences, e.g., in our topic, from the ideological world views of the investigators. And thirdly, reliability (or repeatability): each new measurement, even with new tools or different investigators, leads to the same result. In the light of these preconditions, and in particular the criterion of objectivity, much NDE research cannot be described as scientific. The present article thus critically reviews some of the more widely discussed studies of recent years.

Keywords: near-death experiences, validity, objectivity, reliability

A difficult precondition for research: Is there such a thing as an NDE?

NDEs comprise a variety of experiences from simple structured visual phenomena to scenic experiences and auditory phenomena. The most impressive and widespread experiences in the NDE literature are visions of light, out-of body experiences, the feeling of being in a tunnel, visions of people, and feelings of warmth. On the other hand, there are no core symptoms of NDEs; and the more one browses through NDE case histories in the abundant NDE literature, the more

extensive the variety of experiences becomes. These experiences cover so many different things, from experiencing a cross between Pegasus and a centaur identified as Jesus [1; p.116] to experiencing "magnificent carriages with horses, followed by horrible spiders and spider webs, together with flashes of light" [2; p. 82].

Another often neglected point is the multiple realization of mental states. For instance, NDEs are much more frequent in ketamine abuse or ether anaesthesia [2; p.53] than in cardiac arrest. This suggests that most NDEs occur in circumstances which are far removed from "near death", or indeed clinical death! This situation is observed in the blockbuster book "Proof of heaven" by Alexander Eben, in which the author describes his experiences in a comatose state, but not in a clinical death [3]. From this point of view, the term NDE is superfluous, because it does not describe an entity in itself. But in the esoteric literature, this argument is neglected, because it is widely accepted that some people may already get insights into the "last things" while they are still actually living. Here we have already crossed the border between science and belief. Nonetheless, a large proportion of studies do not scrutinize this problem, but simply neglect it. For example, most transcultural NDE studies [4, 5, 6] give no consideration to the multiple realization of mental states. This considerably weakens conclusions about the origin of experiences.

The search for unusual experiences

In 2014, the AWARE study had a deep resonance in the media. In this multicentre study, fifteen hospitals in different countries analysed 2060 cardiac arrest survivors over 4 years [7]. At least, 140 of them underwent interviews. There were both in-hospital interviews 3 days to 4 weeks after the event and out-of-hospital interviews by telephone 3 months to 1 year after the event. The first striking thing here is the large variation in the time to interview. The authors made no distinction between interviews carried out soon after the event and those conducted much later. However, secondary reprocessing of experiences like NDEs, like those in everyday life, is an important factor which alters descriptions of our experiences to fit them into the world view of the experiencer. Let us compare this with Mobbs & Watt [8], who considered a much higher number of NDE reports in retrospective studies than in prospective studies. Alas, the elaborate AWARE study threw away a chance for deeper elucidation of secondary reprocessing in NDE reports. Furthermore, measurements of blood gases soon after successful resuscitation were not made, even though an influential study [9] revealed a significant correlation between high carbon dioxide pressure and occurrence of NDEs as an indicator of a prolonged re-convalescence and thus the severity of the event. In this sense, observations by van Lommel et al. [10] could also be interpreted. In that study, the occurrence of an NDE was associated with memory disorders after resuscitation. Finally, the AWARE study merely searched for odd experiences, such as the recollection of elements of one's own resuscitation [7; p.

1802). But one must inevitably take into consideration the fact that all successfully reanimated patients have never been dead! Indeed, they were all alive. It was just that the organs, including the brain, were in a severe state of malfunction. But malfunction does not mean no function at all. Moreover, in other states of malfunction, such as apallic syndrome, for instance, there are reports of recollections including topics prior to recovery. The next step in the chain of reasoning is this: if a person is not dead in a NDE, it is not possible to get insights into the state of being dead. Here we face two different categories which do not overlap. So it is obvious that at this point we once again reach the boundary between science and belief, and we abandon any hope for validity of the research.

NDE - an impossible definition

In many studies, including AWARE, the 16 point scale due to Greyson [11] is used in an attempt to distinguish "real" NDEs from other experiences which are declared not to be NDEs. This scale inquires after cognitive, affective, paranormal, and transcendent aspects, but also carries with it the problem of suggestive questions. And those who refer to experiences like "understanding of everything", "sense of harmony or unity with the universe", or "entering some other unearthly world" are more likely to have NDEs than those who do not. But why should the presumed life in the afterworld be associated with such extrasensory aspects? Why should the afterworld not be constructed like the pattern of a bright spider's web? Why should the world spirit not appear as Pegasus, thereby proving the veracity of pagan Greek religion? Who among the investigators would dare to judge how the netherworld should appear? And conversely, why are reports that do not fulfil the criteria of Greyson's scale so often tossed out? There is a clear lack of objectivity in such a study.

Another problem is to circumscribe "real" near-death experiences, i.e., in clinical death, rather than similar experiences in other situations or diseases. This was done in the already quoted AWARE study, which therefore excluded most of the cardiac arrest survivors, but the problem also occurred in a study by Thonnard et al. [12], who described "characteristics of near-death experience memories as compared to real and imagined event memories". All in all, the authors wanted to elaborate NDEs as having an outstanding and extraordinary sensorial quality. The authors investigated 21 patients who "suffered from an acute brain insult and recovered from a coma" (p.5). Using Greyson's near-death experience scale, they divided their sample into three subgroups and a control group of healthy subjects. The three subgroups of patients were as follows: those who reported memories of a near-death experience, those who reported memories associated with their coma and intensive care period, but without near-death experiences, and those without any memories of their coma. After assessment of these groups by the Memory Characteristics Questionnaire (MCQ), the authors described "a significantly higher amount of memory characteristics for sensory, clarity, self-referential information (SRI) and emotion categories for NDEs..." (p.3). The authors concluded that "what makes the NDEs 'unique' is not being 'near death' but rather

the perception of the experience itself.” (p.4) So far, so good. But the question arises as to why the term “near-death experiences” was used when it was obvious that none of the patients had suffered a clinical death? They “only” suffered from a stroke and ensuing coma! Worse, if we look more closely at how the subgroups were selected, yet more doubts arise. The modified version of the Memory Characteristics Questionnaire which was used by the authors inquires about the senses, clarity, and self-referential information. In conclusion, there is a high degree of overlap between the items in the MCQ and Greyson's scale with respect to extrasensory and exceptional experiences. As a consequence, patients who had been defined as having had a near-death experience by the Greyson scale would necessarily have higher scores in the memory questionnaire! So the authors used erroneous circular reasoning. They found certain characteristics in a subgroup, but they established the subgroup using those very same characteristics! What does the study tell us about near-death experiences? Nothing! Again, the study carried out with patients who never underwent a resuscitation reveals that experiences with clarity and an emotional content occur under quite different circumstances, such as after a stroke and a coma! But those experiences are not necessarily connected with a certain kind of event (disease), and nor do they have to occur in all subjects. The study reveals how an initial mistake beginning with an uncritical categorisation or definition of the term “near-death experience” leads to bias! Another thing that research could learn from this is that it is worth scrutinizing such popular terms as “near-death experiences” before starting a study.

The EEG paradoxes

Another way to get inside what happens in the brain during resuscitation is to record brain activity. The available data derives mainly from intensive care patients who were under EEG surveillance when heart arrest suddenly occurred. To my mind, other attempts aiming merely to elucidate philosophical questions are forbidden in any emergency case, because all forces must be used for successful resuscitation! Taken together, EEG reports about NDEs over the last few years could be divided into two kinds. Some studies discuss flatline EEG under resuscitation [7] and raise the question as to how consciousness - literally the NDE - could exist despite a functionless brain? Other studies point out uncommon EEG discharges which are supposed to be a correlate of NDEs. Chlawa et al. [13] measured increased EEG activity in 7 dying patients and speculated on a connection with NDEs, notwithstanding the fact that the patients would never have been able to report on their experience. Borjigin et al. [14] detected high (gamma) activity in rat EEGs after experimental cardiac arrest. But it should be stressed that the rats were put to death under anaesthesia (ketamine and xylazina) (p.14437) which was of course the right decision with regard to animal welfare. On the other hand, anaesthetics are well known to alter EEG charges. With regard to the "flatline EEG" argument, it is important to bear in mind that EEGs only record the surface activity of the brain. Moreover, contrary to standard EEG recording conditions, only a few electrodes are used for monitor-

ing in intensive care units, mostly on the forehead. Besides, EEG is not the only approved means to detect brain death. A brain could also function (to a lower degree) in the case of a flatline EEG.

To sum up, even these two lines of reasoning cannot provide us with a proof of the origin of NDEs. Instead, they reveal a lack of validity. We do not know whether the investigated subjects actually had an NDE, and even if they did, there would be no way to figure out whether the point of time of the flatline EEG or, respectively, discharges actually corresponded to the NDE. It could just as well be that NDEs, or most of them, develop in the relatively long phase of re-convalescence, not forgetting the long time often available for secondary reprocessing until the point of time of when the patient is interviewed, often days, weeks, months, or even years later.

Are NDEs explainable?

The above remarks reveal that NDEs are a complex problem. To my mind, NDEs could be explained by a kind of "diathesis-stress model". Such a model, often used to describe different influence factors in the development of psychic diseases, could also be used to gain insight into the risk of developing NDEs in clinical death. As an aside, most survivors of a clinical death do not have any NDE. The literature contains hints that people with NDEs often have personality traits which "allow" them to develop abnormal experiences more often than other people who do not have such traits. In other words, they have a diathesis to develop NDEs. For instance, different studies reveal a higher risk of developing NDEs in people who have rotatory imagination abilities in dreams, in those who often have hypnagogic and hypnopompic hallucinations, or those whose EEGs show temporal discharges. It should be stressed that I am not referring to the mentally ill here! And, secondly, not all factors need inevitably occur together. The other conditions concern the circumstances of the clinical death itself, for which I frankly prefer to use the word "stress". These are a prolonged disturbance in blood gases after resuscitation, persistent memory disorders, or a long and difficult resuscitation. Each alone indicates a high degree of severity of the event. In short, people with an inclination to abnormal experiences in daily life (diathesis) and a high degree of severity of the clinical death ("stress") have a high risk of developing an NDE. A third criterion is secondary reprocessing. The longer ago the clinical death event, the more embroidered and different will be the narrative. People make sense of their experiences and bring them into line with their world view.

Two necessities

Due to the wide range of different experiences, multiple realization of mental states, and uncertainty regarding the time of origin in clinical death, further research should focus on the following two points:

1. In each study, a clarification of the circumstances in which the NDE originated is needed. Moreover, NDE stories without any link to a clinical death are at least interesting, because their narrative content reveals a person's world view embedded in their cultural background. NDEs which are linked to clinical death could be investigated with regard to the frequency of certain experiences. A certain frequency of some features of NDEs could be a hint of a higher vulnerability of some regions of the brain in clinical death.

2. NDEs do not constitute a specific category or entity. The term does not comprise experiences which are a unique characteristic of clinical death. For this reason, if one investigates the "target variable", clinical death, all "values" of the target variable have to be investigated. Otherwise, it would signal a lack of objectivity to exclude certain values or experiences by declaring them to be "non-NDEs", merely on the basis of the world view of the investigator.

Conclusion

A significant number of current research projects on NDEs does not fulfil the criteria of scientific studies. However, NDEs are explainable by scientific means. Structured and self-critical research can still deliver more insights into NDEs. But there is one limitation: research can never solve the question of existence or non-existence of the supernatural. Nevertheless, research in general enables us to take a critical look at such world views.

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