

## Rating the Persuasiveness of Empirical Evidence for the Survival of Consciousness After Bodily Death: A Cross-Sectional Study

### Among Academics<sup>1</sup>

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**Abstract:** *Objective.* Throughout history and across all cultures, many people have believed in some form of afterlife. Recent surveys show that most people worldwide believe they will survive after bodily death. Those who do not believe would require substantial empirical evidence to influence their skepticism. This study's objective was to evaluate what types of evidence might persuade academic professionals that some aspect of consciousness survives after bodily death. *Method.* We surveyed academic professionals and collected demographic and professional background data, personal confidence in survival, and paranormal belief ratings. Respondents also rated the persuasiveness of 10 relevant experiments and the likelihood of their success. These data were analyzed over all participants and partitioned by confidence in survival. *Results.* Professional academics (N = 442) completed the survey. Gender was a significant predictor of confidence in survival, paranormal belief, and many persuasiveness ratings, with females having higher scores than males. Older age was a positive predictor for persuasiveness ratings of a proposed experiment involving after-death communication. Confidence in survival and paranormal beliefs were highly correlated. The highest persuasiveness ratings were for a controlled, prospective experiment that resulted in veridical out-of-body perceptions during a near-death experience, a mediumship experiment, and a reincarnation experiment. The least persuasive proposed experiment was survival in the form of computer-based artificial intelligence. *Conclusion.* Academics hold a wide range of beliefs and confidence in survival. Successful experiments designed to test for survival may influence skeptics' prior beliefs.

**Keywords:** after-death communication, near-death experience, mediumship, skepticism, survival of consciousness, paranormal belief, contact with the dead, out-of-body experience

### Highlights

- Over 400 academics rated their confidence in survival and paranormal beliefs.
- They also judged whether successful experiments designed to test for survival would persuade them to reassess their prior beliefs and the likelihood of these experiment's positive results.

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- A veridical out-of-body perception during a near-death experience was the most frequently selected controlled, prospective experiment.
- Mediumship and reincarnation studies were also rated as potentially persuasive.

Surveys among adults worldwide show that most believe they will survive after bodily death. "Survival" in this context means they will retain their personal sense of self. For example, of 18,000 people from 23 countries surveyed, over half said they believed in an afterlife, 23% said, "you simply cease to exist," and 26% said they were not sure (Ipsos, 2011). Other extensive global surveys show that 21% to 78% of respondents believe in survival after bodily death (Haraldsson, 2011; Sigelman, 1977). This belief may arise for psychological or sociological reasons, including existential angst, comfort in the face of a loved one's death, faith in religious doctrine, or cultural dictates.

People with first-hand experiences suggestive of survival, such as near-death experiences (NDEs), are often thoroughly convinced that they will survive (Lindsay & Tassell-Matamua, 2020). After-death communications (ADCs) are another such experience, suggesting that a deceased person can intentionally communicate with the living. Out of thousands of people questioned worldwide, 25% to 66% have reported that they have "felt as though [they] were really in touch with someone who died" (Wahbeh et al., 2018). A dissertation review of 35 studies collating data from more than 50,000 participants in 24 countries and spanning 102 years found that people of all ages, nationalities, ethnicities, education levels, incomes, and religious affiliations report ADCs (Streit-Horn, 2011).

ADCs can take many forms, including sensory perception, dreams, symbolic means (e.g., a meaningful song on the radio or an unexpected appearance of a favorite animal), telephone calls, and apparitional phenomena (Streit-Horn, 2011). A recent study that characterized the sensory nature of 991 ADCs reported that 48% included touch, 46% were

visual, 44% were auditory, and 28% were olfactory, with 34% sensing the presence of the deceased without any input from the five ordinary senses (Woollacott et al., 2021).

Many people benefit from ADC experiences (Moreira-Almeida & Cardeña, 2011; Sagher et al., 2019; Wahbeh & Butzer, 2020; Wahbeh & Radin, 2018). For example, contact with the dead through mediumship sessions can help the grief process (Beischel, 2019). Such experiences also support the growing de-pathologizing of contact with the dead in the Western world. Rather than being perceived as having hallucinations, ADCs may provide a way for people to share their experiences and gain a sense of understanding from their community (Kwilecki, 2009). In another study, ADCs are perceived as positive life experiences resulting in an increased sense of spirituality (Kalelioglu et al., 2021). Similarly, multiple studies demonstrate that long-lasting positive transformation is a critical characteristic of NDEs, which are often accompanied by an unshakable confidence in survival after death (Blanke et al., 2016; Lindsay & Tassell-Matamua, 2020) and loss of fear of death (Pehlivanova et al., 2022).

Substantial anecdotal and several classes of experimental evidence suggest that some aspect of consciousness survives bodily death, but the evidence is far from conclusive from a scientific perspective (Delorme et al., 2021). Important evidence includes: a) mental mediumship providing information about deceased persons not obtainable through traditional means (Braude, 2003; Fontana, 2005; Sarraf et al., 2021); b) *xenoglossy*, using a foreign language not acquired by natural means (Haraldsson, 2012; Stevenson & Pasricha, 1979, 1980); c) claims of reincarnation (Stevenson, 1997, 2015); and d) demonstration of high-level specialized skills such as extraordinary art production (de Oliveira Maraldi & de Fátima Fernandes, 2020) or grandmaster level chess by mental mediums not having those skills (Wehrstein, 2018). Individually such cases are often not persuasive, but as a whole, they provide intriguing evidence supporting the concept of survival.

Although most people purportedly believe in some form of survival, some are uncertain or strongly disbelieve (Haraldsson, 2011; Ipsos, 2011; Sigelman, 1977). Atheism and a conviction that philosophical materialism is the only correct way to understand reality are two of many reasons for uncertainty. Those who hold the latter stance maintain doubt because the scientific doctrine of materialism assumes that you—all aspects of yourself, including consciousness and memory—emerge from brain activity (Crick, 1994). If the brain dies, nothing remains. Survival of consciousness is impossible if one holds this view. Academics instilled with materialistic philosophy throughout their education and careers often maintain this position (Lorimer, 2019; Walach, 2018).

Sometimes personal experiences can sway skeptics. However, strong skeptics may require repeated, substantial evidence to permanently influence their skepticism. For example, science historian and skeptic Michael Shermer (2014) admitted that he experienced a startling ADC involving his fiancée's deceased grandfather that "shook his skepticism to the core," as described in his *Scientific American* column. However, in his column two years later Shermer (2016) wrote, "Where the known meets the unknown we are tempted to inject paranormal and supernatural forces to explain unsolved mysteries. We must resist the temptation because such efforts can never succeed, not even in principle." Evidently, two years after Shermer's "core shaking" had settled down, his former skepticism returned. For some, no evidence—not even personal experience—is sufficient to budge their prior beliefs.

Beyond the firm believers and committed skeptics, many others have yet to make up their minds about survival. This study aimed to discover what type of evidence might persuade these agnostics, nudging them from a position of uncertainty to greater certainty. We wanted to understand what evidence would help *persuade someone* that human consciousness survives after permanent bodily death. To do this, we devised 10 experiments relevant to survival and surveyed academic professionals to see which of

these, if successful, would be most persuasive. Our research questions and exploratory hypotheses were:

What is the confidence for the survival of consciousness after bodily death among academics, and their average level of paranormal belief? We hypothesized that both would be greater than zero, reflecting average levels in the general population, and that there would be a positive correlation between these two variables.

Which is the most persuasive potential experiment testing for survival? Do these results vary by a) current spiritual affiliation, b) academic discipline, or c) confidence in survival? We predicted variations in persuasiveness ratings by these factors, but made no a priori hypothesis about which experiments would score higher or lower than the others because of the lack of previous studies.

How do participants rate the likelihood that these experiments could have positive results? We predicted increased likelihood scores in already conducted or popularized experiments (i.e., mediumship, ADC, and out-of-body experiences during an NDE).

### Method

This cross-sectional study recruited a convenience sample of people working in science, engineering, and other professional fields. Respondents rated how persuasive the positive results of 10 proposed experiments would be to convince them that consciousness survives bodily death and how likely they thought each of those experiments might be successful.

We previously reported a preliminary description of these survey results in a non-peer-reviewed essay submitted to the 2021 Bigelow Institute for Consciousness Studies (BICS) Essay Contest for the Best Evidence for Afterlife (Delorme et al., 2021) with the same authors. That essay contained a subset of the research methodology and results; here, we report those fully. Although some text presented here is similar to the BICS essay, we

avoided duplication of large text sections and referenced the original essay where appropriate. The new author order reflects the contribution to the present study.

### Participants

We selected academics as likely to represent a subpopulation that would be more agnostic about survival than the general population due to their immersion in the Western scientific worldview. We sent an email invitation to a list of scientists and engineers from the National Data Group (Omaha, NE) that we used in a previous study (Wahbeh et al., 2018). We also used the website Hunter.io to obtain emails from top universities worldwide, including Brown, California Institute of Technology, Cambridge, Columbia, Cornell, Dartmouth, Duke, Georgia Technical, India Institute of Technology, John Hopkins, Harvard, Massachusetts Institute for Technology, Northwestern, Oxford, Princeton, Rice, Stanford, University of San Francisco, University of California Berkeley, University of Southern California, and the University of Texas Austin. Selection bias toward academics and related professionals, which was the study's objective, was accomplished through this recruitment method. There was no preferential recruitment for age, race, gender, or other demographic variables beyond those inherent to imbalances in academia.

All study activities were automated online without interactions between the study team and participants. Potential participants received an email with the subject line: "Do you think consciousness survives bodily death?" The email included the survey's consent form. Volunteers could click "Yes" or "No." If they clicked "Yes," they were directed to a survey online hosted by SurveyMonkey (2021). This screening question biased recruitment to volunteers interested in such topics, and thus perhaps toward believers.

Inclusion/exclusion criteria were: 1) answered "Yes" on the informed consent, 2) adults, 3) completed at least one experiment rating, and 4) completed professional information items. Participants completed surveys from April 28, 2021 to November 10,

2021. The sample size was determined by the number of participants who completed the survey during this predetermined period because no previous studies were available from which to form estimated outcomes. All study activities were approved and overseen by the Institutional Review Board (IRB) of the Institute of Noetic Sciences (IORG#0003743).

### Survey

The survey form can be sent by the authors and includes demographic questions, professional information, confidence in survival ratings, paranormal beliefs questionnaire, and experiment persuasiveness and likelihood ratings. The experiments were displayed in randomized order for each participant to avoid order bias. Age, education, gender, race, country, state, and childhood and current spiritual affiliation were collected.

*Professional Information.* This item included the individual's primary field of training, current or past occupation, years of experience in the occupation, and the number of peer-reviewed scientific or technical papers they had read. Primary field of training choices were Basic Sciences, Engineering and Technology, Medical and Health Sciences, Agricultural Sciences, Social Sciences, Humanities, and Other (Delorme et al., 2021).

*Confidence in Survival.* Respondents rated the question, "How sure are you that some form of consciousness survives the death of the physical body?" on a sliding scale anchored by Very sure it does not (-50), Don't know (0), and Very sure it does (+50).

Participants completed the 10 belief items of the *Noetic Experience and Belief Scale* (Wahbeh et al., 2020) to evaluate pre-existing belief in paranormal phenomena such as survival of consciousness. Each item in that scale is a belief that the respondent rates on a scale of 0 to 100, anchored by disagree strongly and agree strongly. Items are averaged for the total score and the scale is reliable (Wahbeh et al., 2020). The paranormal belief

score was subtracted by 50, so values were comparable to the persuasiveness ratings (i.e., range -50 to +50).

### Experiment Ratings

The experiment rating section began with an introduction (available on request from the first author). For each of the 10 experiments, participants were asked, "How persuasive would this experiment's positive results be for you to believe in the survival of consciousness after death?" Responses were rated on a sliding scale anchored by Not at all persuasive (-50), Neutral (0), and Very persuasive (+50). The participants did not see the values associated with the anchoring words. They were also asked, "What is your assessment of how likely this experiment would have positive results?" Answer choices were Too unlikely to even assign an odds (Impossible), About 1 in a million, About 1 in a thousand, About 1 in ten, and About 1 in 1 (Very likely).

### Proposed Experiments

The 10 experiments were devised by the research team and informed by existing evidence for the survival of consciousness (Delorme et al., 2021). The goal was to design *prospective* experiments that, if they had not been conducted already, could potentially be conducted in the future and might provide robust evidence. The experiments were:

The *Apparition in the Lab (Apparitions)* experiment tests whether a deceased person could influence a physical system to reveal their presence. The physical system would be a controlled source of steam (or smoke) recorded by a high-quality camera. Steam would be used to provide a presumably easily manipulated substance that an apparition might be able to influence. A medium would be asked to invite a deceased person to influence the steam so that it appeared in the form of their face, or someone else's face, or any recognizable shape. The picture frames of the resulting video would be analyzed using machine vision techniques to identify frames in which faces or shapes

appeared automatically. Those video frames would be compared to control session frames, in which the medium did not summon a deceased person. Positive results would include reliably produced faces or shapes in the mediumistic conditions as compared to control sessions.

*The Deceased Person Communicating through Artificial Intelligence (Communication AI)* experiment tests whether a deceased person could influence a truly random number generator (RNG) and use it to communicate in a meaningful way. A participant would provide the name of a deceased person. A medium would ask the deceased person to respond through an AI chatbot designed to generate natural language. The sentences generated by the chatbot would be randomly selected by the RNG. To judge the results, participants requesting a communication would blindly judge (1) sentences associated with the requested deceased person and (2) sentences generated purely at random. Positive results would include statistically more meaningful sentences judged in condition (1) as compared to (2).

*Glossolalia/Xenoglossy.* Glossolalia refers to speaking in tongues (i.e., producing sounds that resemble speech but are not part of an existing language) and xenoglossy to the apparent ability to speak in a language unknown to the speaker. This distinction was not highlighted for the survey and the words glossolalia and xenoglossy were used interchangeably. Subsequent mentions of this experiment will be designated by the more accurate term xenoglossy. In this study, researchers would evaluate trance channelers (trance channelers go into altered states and believe that they use their bodies as a “vehicle” for an apparent nonphysical entity to incorporate into and communicate directly via speaking, writing, or movement) who claim the ability of glossolalia/xenoglossy. If they spoke any known foreign language during their trance (i.e., xenoglossy), the channelers would be investigated to assess if they already knew the foreign language they claim to speak, and then their trance sessions would be observed,

and their utterances evaluated for language accuracy and fluency. A team of linguists would evaluate unknown spoken languages. Cases in which languages from a previous era are spoken would be prioritized (e.g., third-century German, ancient Aramaic). Positive results would include at least five rigorously vetted cases of xenoglossy.

In the *Channeling Specialized Expertise* experiment, trance mediums would channel (the experience of communication with or incorporation of an apparent non-physical entity) deceased persons who had highly specialized skills while alive. The channelers’ personal, educational, and professional history would be investigated to confirm that they have no background in the skill. For example, a medium might channel a deceased chess grandmaster and then play a living grandmaster who would rate their skill level. Multiple trance mediums claiming different skill types would ultimately be tested, including skills in games such as Chess and Go, music performance, mathematical knowledge, and fine art. In each case, independent experts would rate the channeled performance or product. Positive results would include at least five rigorously vetted cases where skeptical judges confirmed that there was no ordinary way for the channelers to demonstrate the skill through ordinary means.

In the *Mediumship* experiment, ten people in hospice who agreed to contact five or more mediums after they passed away would be recruited. None of those mediums would be aware of this experiment. After each person died, they would request that the mediums contact the researchers within the next 30 days. Positive results would include at least five mediums contacting the researchers within 30 days for each deceased person, giving that person’s name, and saying that the deceased person told them to contact the researchers.

In the *Reincarnation experiment*, a dying person would be asked to assemble a collection of their unique favorite objects and place them into a sealed box, which would then be given to researchers. No living individual would know about the box’s content

(barring the possibility of clairvoyance or via telepathy while the dying person was still alive). A child claiming to be the reincarnated person would be located and asked to describe the objects in the sealed box. Only then would the sealed box be opened. Positive results for this experiment would include an accurate description of the deceased person's objects.

In the *After Death Communication (ADC)* experiment, participants who claimed to experience after-death synchronicities would be recruited. They would wear body cameras continuously while awake, and they would indicate when they experienced a synchronicity. A panel of judges would review the videos and rate the likelihood that a given observation recorded by the participants could be interpreted as an ADC. Positive results for this experiment would include agreement among the judges that the reported synchronicities were not likely due to chance.

*Physical Mediumship in a Daylight Setting.* Historical physical mediumship studies have been conducted without light. However, some cases have been observed in daylight, including Daniel Dunglas Home (Home, 1874), Henry Slade (Zöllner, 1882), Carlos Mirabelli (Braude, 2020) and with more recent technologies in red light (Vandersande, 2008). It is not inconceivable that future physical mediumship studies could be conducted in daylight or at least in red light settings. For this experiment, physical mediumship experiments would be conducted in a highly controlled environment designed to prevent and detect fraud, and in full lighting, with skeptical judges in attendance and multiple cameras continuously recording the phenomena. Positive results of this study would include observation and recordings of deceased persons speaking or materializing.

*Out-of-Body Experiences During Near-Death Experiences (OBE in NDE).* This study would investigate claims of OBE visions said to occur during some NDEs. Randomly selected images would be displayed on a computer screen near the ceiling and pointed

upwards so that no one at the floor level could see them. Patients scheduled for a cardiac arrest as part of a medical procedure would be asked to float up to the ceiling and observe the computer screen if they have an OBE during their procedure. Upon resuscitation, the patient would be asked if they had an OBE and were able to see a picture on the screen. If so, they would be asked to indicate which of 20 possible pictures was the one they saw (i.e., that one being the actual target). A positive result for this experiment would include a majority of the participants accurately describing and selecting the correct target image shown on the screen.

*Survival Through Artificial Intelligence.* If an AI absorbed an individual's memories and personality while alive (as portrayed in movies based on this theme), when that person died, would you consider that the person has survived within the AI? The responses and perceived personality of the AI would be indistinguishable from the original person, although the AI would be portrayed on a screen or in an android body and not in a living body. A positive result from this experiment would be agreement by people who intimately knew the living person that the AI was identical to that person.

### Data Analysis

All statistical analyses were conducted in Stata 15.0. Means and standard deviations for continuous variables and the number and percentage of the total were calculated for categorical variables. Variables of interest were assessed for normal distribution using the Shapiro-Wilk test. The variables were non-normally distributed so non-parametric statistical analyses were conducted. The *npregress* function was used with kernel-epanechnikov and bootstrap replications for estimation parameters options to evaluate the relation between each experiment's persuasiveness rating and the demographic variables age (continuous), education (continuous), gender (categorical), race (categorical). Twelve regression models were conducted to evaluate the potential prediction of demographic variables on confidence in survival (1 model), paranormal

belief (1 model), and persuasiveness ratings (10 models). Effect estimates reported are derivative averages for continuous covariates and contrast averages for factor covariates. The Spearman's rank-order correlation evaluated the relation between confidence in survival and paranormal belief.

There were three subgroup analyses: confidence in survival level, religious or spiritual affiliation, and primary training field. The confidence in survival level subgroups consisted of 1) those who did not believe in survival (non-believers: scores less than -20); 2) those who are uncertain about their beliefs (uncertain: scores between -20 and +20); and 3) those who do believe in survival (believers: scores greater than +20). Religion subgroup analyses included respondents who endorsed *currently practicing religious or spiritual but not religious* and those who endorsed *not religious*. Participants who endorsed *minimally practicing religious* and *non-practicing religious* were not included in the religion subgroup analysis.

Kruskal-Wallis ANOVAs were used to evaluate persuasiveness rating differences by non-believers/uncertain/believers, current religious or spiritual affiliation, and primary field of training. Results are reported for respondents overall and also by confidence in the survival subgroup. A Wilcoxon signed-rank test was used to evaluate if confidence in survival and paranormal belief were statistically above zero. Chi-squared tests were used to evaluate if likelihood rating categories differed within the experiments. Multiple comparisons were corrected for all applicable analyses using the False Discovery Rate (Benjamini & Hochberg, 1995). Missing data were left as is in the dataset. Participant numbers for each variable are noted in the results indicating where participants skipped items they did not want to answer.

## Results

A total of 27,607 people opened their recruitment emails. Of those, 631 responded to the consent, 45 clicked "No," and 586 clicked "Yes." Ninety-six people did not rate any experiments, and 48 did not include professional information and were excluded. In total, 442 people responded to the survey, rated at least one experiment, included their professional information, and were included in the analysis.

Participants were older ( $M = 57.24$ ,  $SD = 13.75$  years), mostly male (56%), Caucasian (77%), and with 19.48 average years of education ( $SD = 3.86$ ). They could check more than one race and were mostly Caucasian (77%, Asian 6%, Latino 5%, Native American 5%, African 4%, Middle Eastern 2%, and Native Pacific Islander, 0.2%). Most participants were from the United States (98%), with two respondents from Australia and one each from Bahrain, Canada, France, Ghana, India, and Mexico. Participants made, on average, 17.9 experiment ratings ( $SD = 5.1$ ) out of 20 possible (persuasiveness and likelihood ratings for each of the 10 experiments).

The primary fields of training were medical and health sciences (38%), social sciences (19%), other (13%), basic sciences (12%), engineering and technology (9%), humanities (9%), and agricultural sciences (1%). Current and past occupations were Healthcare Practitioners and Technical (34%); Other (19%); Education, Training, and Library (15%); Life, Physical, and Social Science (11%); Management (6%); Computer and Mathematical (5%); Healthcare Support (5%); and Business and Financial Operations (4%). On average, participants had spent 25.60 years ( $SD = 13.08$ ) in these occupations, and 49% had read over 100 peer-reviewed scientific or technical papers (0 papers 10%; 1-10 papers 17%, 11-100 papers 24%).

Most participants' childhood religious or spiritual affiliation had been "practicing religious" (60%, minimally practicing religious 24%, not religious or spiritual 7%, non-practicing religious 6%, spiritual but not religious 3%), whereas their current religious or spiritual affiliation was "spiritual but not religious" (35%, practicing religious 29%, not religious or spiritual 19%, minimally practicing religious 11%, non-practicing religious 7%).

Gender was a significant predictor for: 1) confidence in survival (Effect estimate = -10.42, 95% Confidence Interval = [-17.83 to -4.60],  $p = .001$ ), 2) paranormal belief scores (-15.0 [-19.04 to -10.11],  $p < .000005$ ), and 3) persuasiveness ratings for xenoglossy (-11.24 [-16.86 to -4.93],  $p = .001$ ), reincarnation (-9.27 [-15.73 to -3.95],  $p = .004$ ), ADC (-11.94 [-17.72 to -4.65],  $p < .000005$ ), and OBE in NDE (-8.1 [-13.86 to -2.97],  $p = .004$ ). Statistical details are available from the first author upon request. On average, males had lower scores for confidence in survival, paranormal belief, and persuasiveness ratings for xenoglossy, reincarnation, ADC, and OBE in NDE.

Age was a significant predictor for ADC persuasiveness ratings (0.50 [0.29 to 0.79],  $p < .000005$ ). For every 0.50 year increase in age, there was a one-point increase in persuasiveness rating for ADC; in other words, the older one is, the more one is persuaded by the positive results of an ADC experiment. Education and race were not significant for any of the models.

**Confidence in Survival and Paranormal Beliefs.** Confidence in survival ( $p < .0001$ ) and in paranormal belief ( $p < .0001$ ) were statistically above zero (Table 1). They were also highly correlated ( $r_s = .70$ ,  $p < .000005$ ). There were significant differences by non-believers/uncertain/believers category, with believers having higher confidence/belief values than uncertain, who had higher confidence/beliefs than non-believers.

**Persuasiveness Ratings.** Persuasiveness ratings for the 10 experiments overall and by confidence in survival subgroups are displayed in Table 1. OBE in NDE was the highest-rated overall and for all non-believers/uncertain/believers groups. Mediumship was the

second-highest-rated overall and for the believers but was third-highest for uncertain and non-believers. Reincarnation was rated the third most persuasive overall for the believers and the second-highest for uncertain and non-believers. Survival through AI was rated as the least persuasive experimental result overall and by all three groups.

There were significant differences in the persuasiveness ratings by non-believers/uncertain/believers subgroups, with believers having higher ratings than uncertain, who had higher ratings than non-believers. Figure 1 displays a graphical representation of the persuasiveness ratings overall and by non-believers/uncertain/believers subgroups.

**Table 1**

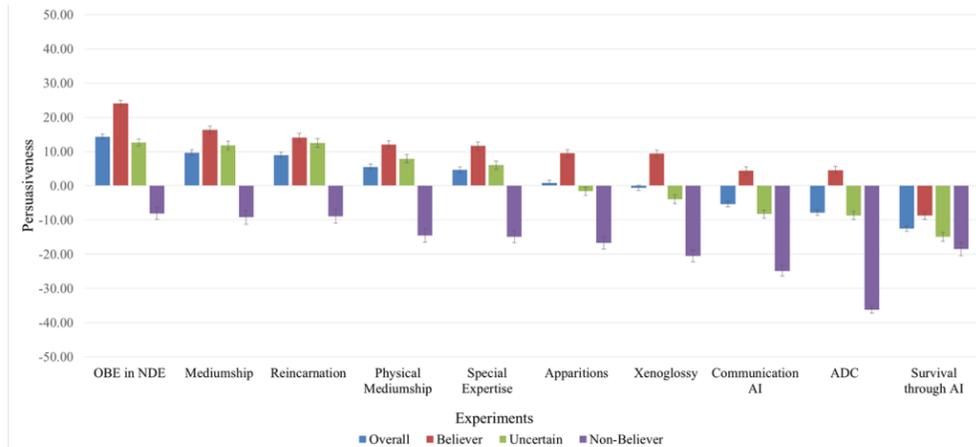
**Persuasiveness Experiment Ratings Overall and by Belief in Survival or the Paranormal**

Variable	Overall			Believer			Uncertain			Non-believer			Statistics	
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>H</i>	<i>p</i>
Confidence in Survival	442	14.34	32.54	217	42.75	8.46	139	2.73	8.04	86	-38.56	9.81	371.85	.0001
Paranormal Beliefs	372	10.99	24.21	187	26.02	16.94	108	7.73	13.85	77	-20.92	16.88	196.76	.0001
9. OBE in NDE	396	<b>14.34</b>	<b>28.30</b>	202	<b>24.09</b>	<b>25.12</b>	115	<b>12.59</b>	<b>21.40</b>	79	<b>-8.08</b>	<b>31.64</b>	68.50	.0001
5. Mediumship	399	<b>9.67</b>	<b>32.92</b>	196	<b>16.35</b>	<b>31.68</b>	120	<b>11.83</b>	<b>27.15</b>	83	<b>-9.22</b>	<b>36.46</b>	30.46	.0001
6. Reincarnation	395	<b>8.97</b>	<b>33.39</b>	198	<b>14.04</b>	<b>34.48</b>	118	<b>12.48</b>	<b>26.37</b>	79	<b>-8.96</b>	<b>34.32</b>	27.81	.0001
8. Physical Mediumship	388	5.51	32.15	193	12.02	31.16	118	7.92	27.05	77	-14.52	34.06	30.14	.0001
4. Special Expertise	395	4.70	32.07	195	11.68	32.13	122	6.05	26.75	78	-14.87	31.99	37.49	.0001
1. Apparitions	392	0.81	31.10	193	9.48	30.64	120	-1.59	26.02	79	-16.75	31.57	41.73	.0001
3. Xenoglossy	400	-0.63	31.63	199	9.38	30.70	121	-3.94	27.18	80	-20.51	29.97	51.49	.0001
2. Communication AI	399	-5.33	30.88	196	4.39	30.54	124	-8.25	26.51	79	-24.87	28.08	53.06	.0001
7. ADC	399	-7.87	31.03	195	4.57	30.55	122	-8.66	25.61	82	-36.28	18.01	102.85	.0001
10. Survival through AI	402	-12.56	31.57	198	-8.68	31.78	124	-14.94	28.93	80	-18.50	34.00	8.70	.013

**Notes.** Means and standard deviations of persuasiveness ratings for the 10 experiments overall and by the subgroups of non-believers (confidence in survival scores less than -20), uncertain (confidence in survival scores between -20 and +20), and believers (confidence in survival scores greater than +20). Mean values range from -50 to +50. Experiments are listed in terms of largest to smallest ratings for all participants. All comparisons are significant after correction for multiple comparisons. Confidence in survival and paranormal belief scores are also displayed. Bold and underline font corresponds to the first choice; bold corresponds to the second choice; underline corresponds to the third choice for the non-believer/uncertain/believer categories.

**Figure 1**

*Persuasiveness of Ten Experiments Positive Results*



Notes. Persuasiveness ratings for the participants overall and by non-believers/uncertain/believers subgroups. Means and one standard error bars are displayed.

*Persuasiveness Results by Current Religious or Spiritual Affiliation 1.* Participants' confidence in survival, paranormal belief, and persuasiveness ratings by religious or spiritual affiliation are displayed in Table 2. The non-religious respondents showed low confidence in survival and paranormal belief. Non-religious respondents selected the OBE in NDE experiment as the most persuasive, followed by the reincarnation and then the mediumship experiment. Religious or spiritual respondents had high survival and paranormal belief levels. They, too, selected OBE in NDE as the most persuasive experiment, followed by mediumship, then reincarnation. All of the comparisons by religious or spiritual affiliation were significant after correction for multiple comparisons except for the ratings on the Survival through AI experiment. Both religious and non-religious participants rated this experiment as not very persuasive.

**Table 2**

*Beliefs and Persuasiveness Ratings by Current Religious or Spiritual Affiliation*

	Religious or Spiritual			Not Religious			Statistics	
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>H</i>	<i>p</i>
<b>Beliefs</b>								
Confidence in Survival	276	25.19	27.67	84	11.79	28.04	94.62	.0001
Paranormal Beliefs	232	18.06	20.16	69	12.83	22.30	81.24	.0001
<b>Experiments</b>								
9. OBE in NDE	250	<b>18.31</b>	26.78	73	<b>17.45</b>	24.85	29.40	.0001
5. Mediumship	246	<b>11.91</b>	31.71	75	<u>13.73</u>	32.66	9.82	.0017
6. Reincarnation	248	<u>10.75</u>	33.74	72	<b>15.14</b>	29.70	10.53	.0012
4. Special Expertise	246	9.45	31.59	76	4.86	29.77	23.63	.0001
8. Physical Mediumship	242	8.19	30.65	75	6.53	33.72	7.11	.0077
1. Apparitions	241	4.80	30.29	76	0.80	29.25	17.00	.0001
3. Xenoglossy	250	3.89	30.40	74	-0.85	32.13	21.27	.0001
2. Communication AI	246	-0.69	29.78	78	-3.29	32.24	30.36	.0001
7. ADC	247	-2.94	30.08	75	-6.67	32.39	31.92	.0001
10. Survival through AI	251	-12.25	31.21	75	-7.99	32.31	2.3	.13

Notes. Means and standard deviations of persuasiveness ratings for the 10 experiments by religious or spiritual affiliation. *P*-values are shown after correction for multiple comparisons. Bold and underline font corresponds to the first choice; bold corresponds to the second choice; underline corresponds to the third choice for the non-believer/uncertain/believer categories. ADC – After Death Communication.

The OBE in NDE was rated the highest for all disciplinary subgroups except for the basic sciences. That group rated the mediumship experiment the highest, followed by the OBE in NDE experiment (see Supplemental Data Table 1). When a correction for multiple comparisons was applied, there were no significant differences between these groups on any of the experiment ratings. The analysis did not include the agricultural sciences group because only four participants selected that discipline.

*Likelihood Ratings.* OBE in NDE's highest count rating was in the *About 1 in a thousand* category (Table 3). Xenoglossy's highest count rating was in the *About 1 in a million* category. The other eight experiments were all rated *Too unlikely to even assign an odds (Impossible)* for their highest count. Chi-squared analyses within experiments across the five answer choices revealed significant differences for all 10 experiments. The

likelihood ratings were also significantly different across all experiments ( $\chi^2 = 127.7, p < .00005$ ). ADC, Apparitions, Xenoglossy, OBE in NDE, Reincarnation, and Survival in AI experiments had absolute residual values greater than 2, suggesting that they had a major influence on the significant chi-square test statistic (Statistical details available from the first author upon request). Examining likelihood ratings within each experiment, Reincarnation, ADC, and OBE in NDE had significant differences across likelihood rating levels after correction for multiple comparisons.

### Discussion

Confidence in the survival of consciousness and paranormal beliefs were greater than zero and were highly correlated. These beliefs are common worldwide, and their strong correlation was not surprising. Other studies have found similar associations (Dagnall et al., 2010; Thalbourne, 1995).

**Table 3**

*Likelihood Rating That the Experiment Would Have Positive Results*

Experiment	N	Percent (%) of Respondents					X <sup>2</sup>	p
		1/1	1/10	1/1,000	1/million	Impossible		
Apparitions	390	3	12	22	27	<b>36</b>	4.9	.30
Communication AI	397	5	9	20	25	<b>41</b>	7.3	.12
Xenoglossy	397	6	11	21	<b>33</b>	29	8.6	.07
Special Expertise	393	5	10	23	27	<b>35</b>	1.6	.81
Mediumship	396	6	11	21	27	<b>35</b>	0	1.00
Reincarnation	393	6	7	15	29	<b>42</b>	20.9	<.000005
ADC	397	7	15	24	26	<b>28</b>	13.1	.01
Physical Mediumship	385	5	9	19	28	<b>39</b>	5.4	.25
OBE in NDE	394	7	19	<b>30</b>	24	21	57.3	<.000005
Survival through AI	398	7	11	19	23	<b>41</b>	8.5	.08

For our sample, about 50% indicated some confidence in survival and paranormal belief according to our classifications (30% uncertain, 20% non-believers). These values are roughly proportional to results found in global surveys (Ipsos, 2011).

Spiritual affiliation did not predict persuasiveness ratings, but there were some differences in values by affiliation, and religious people had higher confidence in survival and paranormal beliefs, as well as higher persuasiveness rating scores. The primary field of training did not predict any of these variables. Confidence in survival subgroups did not predict the topmost persuasive experiment ratings, but there were significant differences in values, with believers having higher scores than those who were uncertain, which were, in turn, higher than non-believers. Although lower than believers' scores, persuasiveness scores for uncertain participants were still positive, indicating the possibility that the evidence would be persuasive to them. However, the non-believers' scores were slightly negative (i.e., towards the end of the scale, indicating that they would not be persuaded). Earlier studies inquiring about belief in psi among scientists reported that their belief was inversely correlated with their knowledge of psi research. In general, a personal experience most often explains their belief (McClenon, 1982). Our results suggest that among academics scientific evidence may persuade those who are uncertain or who have not yet made up their mind about the survival of consciousness, but scientific evidence may not be able to persuade non-believers.

In general, most did not think that the proposed experiments would be completed with positive outcomes. The proposed experiments were chosen based on the existing evidence for the survival of consciousness. Overall, the experiments were selected as plausible, and we did not exclude experiments that may be challenging to undertake given current technologies. This choice may partly explain the low likelihood ratings. Thus, these results are not completely unexpected, given that the prospective systematic study of the nature of consciousness is still a growing field.



Gender was a significant predictor of paranormal beliefs, with women having higher paranormal beliefs than men, confirming previous similar findings (Drinkwater, 2017; Irwin, 2009; Spinelli et al., 2002). Because confidence in survival and paranormal belief were strongly correlated, it is not surprising that gender also predicted confidence in survival. Studies support that women believe in survival more strongly than men (Pew Research Center, 2021; Rose & O'Sullivan, 2002). Women also had higher persuasive ratings for xenoglossy, reincarnation, ADC, and OBE in NDE. If gender were the primary reason, then one would expect significantly higher scores on all 10 experiments for women. However, this was not the case. We speculate that the increased ratings were associated with personal experience. Studies have demonstrated that women have (or report) more paranormal experiences than men in general (Castro et al., 2014; Palmer & Braud, 2002). For example, a review examining the incidence of ADCs reported that in 13 of 17 studies with gender data, ADCs were more common in women than men (Streit-Horn, 2011).

Participants of older age had higher persuasive rating scores for the ADC experiment. Perhaps this is because older adults have more experience with death. However, a review evaluating the role of age in ADC prevalence found that 9 of 14 studies observed no substantial difference in age groups (Streit-Horn, 2011). The five studies that did observe substantial differences had mixed age association results.

OBEs in NDEs are not uncommon. A large prospective study found that 24% of people who reported NDEs also experienced an OBE (van Lommel et al., 2001). Prospective studies have been conducted similar to the experiment proposed with, for example, surgical patients being asked to describe a face-up image located near the operation room's ceiling if they experienced an OBE during the procedure. Other studies, such as the Awareness during Resuscitation (AWARE) investigations, have explored end-of-life cognitive processes and recalled death experiences (Parnia et al., 2014). These

experiments have not demonstrated consistent evidence to date (Fox, 2017; Parnia et al., 2001; Sartori et al., 2006). Conducting the OBE during an NDE experiment in multiple centers worldwide would generate more data to examine the nuances required for a veridical OBE in NDE. Are there similarities in favorable cases, such as the participants' health, drugs used during the procedures of these experiences, focused attention practice (e.g., meditation), or some other factor that influences the phenomena?

As far as we know, no prospective mediumship experiments similar to the one we proposed have been conducted. The closest cases are the so-called "cross-correspondences," where segments of a communication from the same deceased person were purportedly distributed among many mediums. Critics have found it challenging to propose mundane explanations for many of these cases, although because the messages were unplanned, questions about their interpretations remain unresolved (Fontana, 2005). Similar cases involving planned communications, such as combination lock or code experiments, have not revealed consistent results either (Berger, 1984; Levin, 1994; Mulacz, 1997; Stevenson, 1968).

On the other hand, evidence for reincarnation is quite extensive. Notable among the investigations of numerous researchers (e.g., Hassler, 2018; Matlock, 2019; Wehrstein, 2019) is the work of Ian Stevenson (1997), who collected thousands of verified cases. Stevenson's work has been continued by Jim Tucker (2008). Our proposed reincarnation experiment would be prospective, removing some of the issues with these retrospective studies (e.g., recall bias), and many reincarnation cases are reportedly found early enough to address some of these issues.

The likelihood ratings for the success of these experiments were very low. Only two experiments had higher likelihood ratings, xenoglossy, and OBE in NDE. Xenoglossy was selected even though it was not rated very high for persuasiveness. Perhaps participants misunderstood the spiritual tradition of "speaking in tongues." However, most of the

proposed experiments were associated with moderately well-known spontaneous cases (e.g., xenoglossy and skilled mediumship cases reported in popular books and documentaries). Because the proposed experiments were designed as controlled, prospective studies, a positive result may have been more challenging to imagine. (A table of belief and persuasiveness and persuasiveness ratings by primary field of study, as well as information to the participants can be obtained from the authors).

*Limitations.* Several study limitations should be considered. The research questions and hypotheses were exploratory, and future research will be required to confirm these findings. Also, the study's population was a convenience sample of academic professionals. Many people who received the recruitment email may not have been interested in this topic. This study could be repeated using randomized sampling techniques with academic professionals, but potential volunteers may not participate when the topic is revealed. Of course, this is an issue for any anonymous recruitment survey study. The convenience sample thus limits the generalizability of the results to all academic professionals or the general population.

Another limitation is that the study did not attempt to provide evidence for the survival of consciousness but only assessed what kinds of evidence professionals might find most compelling. In addition, the proposed experiments were designed to provide evidence for but not definitive proof of survival of consciousness after bodily death. Rigorous experiments can improve evidence quality, but interpretations are challenging. Even the experiment indicated in this study to be most persuasive (an OBE in NDE) does not provide definitive evidence for the survival of consciousness and could even be interpreted in ways that do not support the survival of the consciousness. For example, the experience could be a clairvoyant impression from a living person during an altered state of consciousness. A veridical perception during an NDE could also be attributed to a perception that occurred before or after the apparent period of physical death (i.e., precognition or retrocausation). Because these kinds of experiments involve information

presumably gained from outside the ordinary limits of space and time, evidence for survival is inextricably entangled with psi interpretations – at least with our current conceptualizations and understanding (see Delorme et al., 2021 for further discussion on this point).

The current study suggests that scientific evidence (at least as provided by the proposed experiments) would not be strong enough to persuade academics that currently do not believe in the survival of consciousness or psychic phenomena. For those that already believe or are uncertain, prospective studies involving an OBE in NDE, mediumship, and reincarnation may be persuasive. The prospective, systematic study of consciousness is still growing. This subtype of research has largely remained outside the mainstream as a scientific and scholarly discipline, a state of affairs that appears to be slowly changing. The question of survival lies at the heart of our most basic existential questions and warrants continued research.

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### Einschätzung der Überzeugungskraft empirischer Beweise für das Überleben des Bewusstseins nach dem Tode: Eine Querschnittsstudie unter Akademikern

Helané Wahbeh    Arnaud Delorme    Dean Radin

Zusammenfassung: *Zielsetzung*. Im Laufe der Geschichte und in allen Kulturen haben viele Menschen an eine Form des Lebens nach dem Tode geglaubt. Neuere Umfragen zeigen, dass die meisten Menschen weltweit glauben, dass sie nach dem körperlichen Tod weiterleben werden. Diejenigen, die nicht daran glauben, benötigen stichhaltige empirische Beweise, um von ihrer Skepsis abzurücken. Absicht dieser Studie war es, festzustellen, welche Arten von Beweisen akademisch Gebildete davon überzeugen könnten, dass ein bestimmter Teilaspekt des Bewusstseins nach dem körperlichen Tod weiterlebt. *Methode*. Wir befragten akademisches Personal und erhoben demografische und berufliche Hintergrunddaten, persönliches Für-Möglichkeit-Halten von Überleben und Einschätzungen des Glaubens an das Paranormale. Die Befragten bewerteten auch die Überzeugungskraft von 10 einschlägigen Experimenten und wie wahrscheinlich ihr Erfolg sei. Diese Daten wurden über alle Teilnehmer hinweg analysiert und nach der Wahrscheinlichkeit für das Überleben aufgeteilt. *Ergebnisse*. Professionelle Akademiker (N = 442) füllten die Umfrage aus. Das Geschlecht war ein signifikanter Prädiktor für das Vertrauen in das Überleben, den Glauben an paranormale Phänomene und viele Einschätzungen im Hinblick auf Überzeugungskraft, wobei Frauen höhere Werte erzielten als Männer. Fortgeschrittenes Alter war ein positiver Prädiktor für die Bewertung der Überzeugungskraft eines vorgeschlagenen Experiments über nachtödliche Kontakte. Das Vertrauen in das Überleben und der Glaube an paranormale Phänomene waren hoch korreliert. Die höchsten Überzeugungswerte wurden für ein kontrolliertes, prospektives Experiment, das zu verifizierten außerkörperlichen Wahrnehmungen während einer Nahtoderfahrung führte, für ein Experiment zur Medialität und für ein Reinkarnationsexperiment vergeben. Als am wenigsten überzeugend wurde ein Experiment eingestuft über das Überleben in Form einer computerbasierten künstlichen Intelligenz. *Schlussfolgerung*. Akademisch Gebildete weisen ein breites Spektrum an Überzeugungen und Vertrauen in das Überleben auf. Erfolgreiche Experimente zum Nachweis des Überlebens können vorherige skeptische Glaubenseinstellungen beeinflussen.

German Translation: Eberhard Bauer

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### Avaliando a Persuasão de Evidência Empírica sobre a Sobrevivência da Consciência Após a Morte Corporal: Um Estudo Transversal entre Acadêmicos

Helané Wahbeh    Arnaud Delorme    Dean Radin

**Resumo:** *Objetivo.* Por toda história, e em todas as culturas, muitas pessoas acreditaram em alguma forma de vida após a morte. Pesquisas recentes mostram que a maioria das pessoas ao redor do mundo acredita que sobreviverá após a morte corporal. Aqueles que não acreditam exigiriam evidências empíricas substanciais para rever seu ceticismo. O objetivo deste estudo foi avaliar quais tipos de evidências podem persuadir profissionais acadêmicos de que algum aspecto da consciência sobrevive após a morte corporal. *Método.* Pesquisamos profissionais acadêmicos e coletamos dados demográficos e profissionais, convicção pessoal na sobrevivência e classificações sobre crenças paranormais. Os entrevistados também classificaram a capacidade de persuasão de 10 experimentos relevantes e suas chances de sucesso. Os dados de todos os participantes foram analisados e divididos por confiança na sobrevivência. *Resultados.* Acadêmicos profissionais (N = 442) completaram a pesquisa. O sexo foi um preditor significativo de confiança na sobrevivência, crença paranormal e muitas classificações de persuasão, com as mulheres tendo pontuações mais altas do que os homens. A idade maior foi um preditor positivo para as classificações de persuasão de um experimento proposto envolvendo comunicação pós-morte. A confiança na sobrevivência e as crenças paranormais foram altamente correlacionadas. As classificações mais altas de persuasão foram para um experimento prospectivo controlado que resultou em percepções verídicas fora do corpo durante uma experiência de quase morte, um experimento mediúnico e um experimento de reencarnação. O experimento proposto menos persuasivo foi a sobrevivência na forma de inteligência artificial computadorizada. *Conclusão.* Os acadêmicos possuem um amplo espectro de crenças e de confiança na sobrevivência. Experimentos bem-sucedidos projetados para testar a sobrevivência podem influenciar convicções prévias de céticos.

Portuguese translation: Antônio Lima

### Una Evaluación de la capacidad Persuasiva de Pruebas Empíricas de Supervivencia de la Consciencia tras la Muerte Corporal: Un Estudio Transversal Entre Académicos

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**Resumen:** *Objetivo.* A lo largo de la historia y en todas las culturas muchas personas han creído en algún tipo de vida después de la muerte. Encuestas recientes muestran que la mayoría de las personas en todo el mundo creen que sobrevivirán después de la muerte corporal. Los que no creen necesitarían pruebas empíricas sustanciales para cambiar su escepticismo. El objetivo de este estudio fue evaluar qué tipos de pruebas podrían persuadir a académicos de que algún aspecto de la consciencia sobrevive después de la muerte corporal. *Método.* Encuestamos a profesionales del mundo académico y recogimos datos demográficos y profesionales, confianza personal en la supervivencia, y valoraciones de creencias paranormales. Los encuestados también valoraron la capacidad de persuasión de 10 experimentos relevantes y la probabilidad de que tuvieran éxito. Los datos se analizaron con toda la muestra y dividiéndola según la confianza en la supervivencia. *Resultados.* Académicos profesionales (N = 442) completaron la encuesta. El sexo fue un factor predictivo significativo de la confianza en la supervivencia, la creencia en lo paranormal, y muchas valoraciones de persuasión, con las mujeres obteniendo puntuaciones más altas que los hombres. Mayor edad predijo positivamente las puntuaciones de persuasión de un experimento propuesto que implicaba la comunicación después de la muerte. La confianza en la

supervivencia y las creencias paranormales se correlacionaron altamente. Las puntuaciones más altas de persuasión correspondieron a un experimento prospectivo controlado que daría lugar a percepciones extracorpóreas verídicas durante una experiencia cercana a la muerte, un experimento de mediumnidad, y un experimento de reencarnación. El experimento propuesto menos persuasivo fue el de la supervivencia en forma de inteligencia artificial basada en computadoras. *Conclusiones.* Los académicos tienen una amplia gama de creencias y confianza en la supervivencia. El éxito de los experimentos diseñados para probar la supervivencia puede influir creencias previas de los escépticos.

Spanish translation: Etzel Cardeña