

# Auditory Hallucinations Predict Likelihood of Out-of-Body Experience

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Abstract: An Out of Body Experience (OBE) occurs when the centre of a person's awareness appears to temporarily occupy a position which is spatially remote from their body. Prior research suggests that fantasy proneness factors are predictors of OBE likelihood, specifically prior auditory, visual, and kinaesthetic hallucinations. Three hundred and seventy participants completed an online questionnaire investigating variables that, potentially, contributed to their OBEs. Binary Logistic Regression identified one item that predicted whether or not a person had experienced an OBE: whether a participant had, or had not, previously experienced an auditory hallucination.

Approximately 10% of the general population have experienced an altered state of consciousness which included "leaving the body [and] seeing it as from another point in space" (Ellison, 1998, p. 68). Researchers have often termed this phenomenon an 'out of body experience', or OBE. Although individuals from varying ages and different genders have reported such phenomena, the observation that many experience multiple OBEs implies that personality or genetic factors might make some individuals more susceptible than others (Irwin, 1990; 2007).

Other factors correlated with predispositions to OBE susceptibility have been explored, such as proneness to hallucination or mental illness. Blackmore (1986) considered perceptual distortions and diagnostically significant markers of schizophrenia (including thought interference, auditory and visual hallucinations) as criteria for measuring schizophrenia symptoms among individuals who have had an OBE. Blackmore's research found no difference in OBE accounts between a group of 71 people suffering from schizophrenia (who were residents of a hospital ward and had been diagnosed with the condition) and a control group of 40 individuals. However, hallucinations are not only experienced by those who suffer from schizophrenia, and the literature indicates that research has continued examining potential connections between hallucinations and OBEs.

Previous research into OBEs and hallucination types has utilised Barrett and Etheridge's (1992; 1993; 1994) auditory, visual and kinaesthetic hallucination scales, among other criteria, to consider the potential link between OBE and prior hallucinations (Parra, 2009). Markers for auditory hallucination considered in Barrett and Etheridge's research (1992; 1994) consisted of 13 variables including "[hearing] own name in house alone", "[hearing] own name falling asleep", "[hearing] phrase, rear of car" (i.e., hearing a voice or conversation originating from the back seat while sitting in a car), "[hearing] absent friend", "[hearing]

God's voice", and "[hearing] voice of dead relative" (p. 381). In Parra's (2009) study, these factors were considered, in addition to visual and kinaesthetic hallucinations based on 'Betts QMI Vividness of Imagery Scale', which consists of 35 short, verbal descriptions (Richardson, 1969 as cited in Barrett & Etheridge, 1993). Specifically, this scale considered five description criteria, which relate to each of seven sensory modalities for measuring hallucination type: visual (e.g. perceptual aberrations), auditory, cutaneous (e.g., sensation of the sand upon one's hand), kinaesthetic (e.g. the feeling of reaching upwards), gustatory, olfactory, and organic (e.g. the feeling of a sore throat).

Upon examining these three hallucination types, Parra (2009) found that those who are fantasy-prone, i.e. having experienced auditory, visual or kinaesthetic hallucinations, are more likely to have OBEs. Related research into fantasy proneness by Levin and Young (2002) found a connection between waking fantasies and vivid dreams, where an individual experiences the same level of 'lucidity' in dreaming as reported in OBE accounts, suggesting a deeper level of visual immersion in a dreaming environment. Levin and Young also found that fantasy proneness variables including absorption and hallucinations were significant predictors of fantasy proneness, and argued that absorption in daydreams could be linked to altered states of consciousness. Parra's (2009) study showed that at least some of the factors that Schupak and Rosenthal (2009) described as important in defining fantasy proneness (e.g. confusion between fantasies and actual memories, heightened distraction or absorption in daydreams) are significant in predicting OBE likelihood.

Parra (2009) and Gow, Lang and Chant (2004) found a correlation between numerous fantasy proneness factors and OBE likelihood, including belief in the paranormal, psychological absorption, psychological dissociation, somatoform dissociation, as well as auditory, visual and kinaesthetic hallucinations. Although these studies focused on fantasy proneness factors such as absorption, dissociation and belief in the paranormal, additional research is needed to explore the hallucination variables associated with fantasy proneness. Specifically, as previous studies have only alluded to auditory, visual and kinaesthetic hallucination factors, the particular link between such factors and OBEs should be explored further.

Preliminary work by Gow et al. (2004) found that somatoform dissociation was linked to the number of instances of OBE in participants, thus suggesting that kinaesthetic hallucinations are a predictor of OBEs. This correlation could have been explored further by assessing the contribution of factors often associated with kinaesthetic hallucinations, such as physiological sensations of floating, tingling or paralysis. Parra (2009) conducted a broader study by assessing the predictive value of a number of fantasy proneness factors, including all three main hallucination vectors (auditory, visual and kinaesthetic). Parra's study utilised a combination of questions from various inventories which assessed prior instances of hallucination, but only visual and auditory hallucinations were significant predictors of OBE.

Although Parra (2009) has suggested that visual and auditory hallucinations play a role in OBE likelihood, Gow et al. (2004) pointed out that kinaesthetic hallucinations could be as relevant. The gap in knowledge noted in these findings suggests that further research is required in order to evaluate the significance of various fantasy proneness factors. The present pilot study evaluates each of the three main hallucination types by asking participants a series of questions related to auditory, visual and kinaesthetic hallucination and previous OBEs.

## **Method**

### **Participants**

A total of 398 individuals anonymously completed an online questionnaire. Of these, the responses of 28 participants were excluded because it was deemed that their text-based responses were deceptive or not relevant to the question prompts. The final dataset consisted of responses from 370 participants (159 men and 211 women) aged between 18 and 65 years ( $M= 37$  years,  $SD= 13$  years).

### **Materials**

The 20-item online questionnaire was developed using a combination of original questions and questions from established inventories. It contained questions relating to the

participant's previous experiences of OBE, personality characteristics, demographics, and questions specific to fantasy proneness. Five questions were adapted from a questionnaire devised by Alvarado and Nancy (1999). These were: 1) 'How religious do you consider yourself to be?', 2) 'Can you have this experience at will?', which was adapted to 'Can you experience an OBE at will?', 3) "Did you have a sensation of leaving the body at the beginning of the experience?", which was adapted to 'In recalling your previous OBE(s), did you have a distinct sensation of leaving your body at the beginning of the experience?', 4) 'How would you describe your surroundings during your experience?', which was adapted to 'In recalling your previous OBE(s), how would you describe your surroundings during most of your experience(s)?', and 5) 'Did you have the sensation of returning to the body at the end of the experience?', which was adapted to 'In recalling your previous OBE(s), did you have the sensation of returning to your body at the end of the experience?'

In addition, four questions pertaining to hallucination types (Qs. 1215) were used from Barrett and Etheridge's (1992; 1993; 1994) questionnaires on visual, tactile and verbal hallucinations.

The questionnaire was promoted via three main avenues: (1) a number of parapsychology-related newsletters and websites, including the Australian Institute of Parapsychological Research page, (2) Social media, including Facebook pages focused on OBEs and paranormal phenomena, mystical experiences and psychology, in addition to the Monash University Facebook page, and (3) text-based advertising under key terms such as 'psychology survey' and 'OBE research' through the 'Google AdWords' advertising service.

## **Procedure**

Participants completed the survey online, which was hosted on the Survey Monkey™ website. The process of completing the survey took participants around 10 to 15 minutes. Responses were stored on the Survey Monkey™ server until the closure of the survey, upon which data from the responses was exported to the statistical software 'SPSS' for analysis.

## Results

As the questionnaire was developed using a combination of original questions and questions extracted from pre-existing inventories, subscales were tested for internal consistency. The 'experience with OBEs' (i.e., prior knowledge of OBEs, belief in whether OBEs are possible) subscale consisted of 2 items ( $\alpha = 0.45$ ), while the 'daydreaming' subscale consisted of 2 items ( $\alpha = 0.53$ ) which examined the propensity for, and absorption level in, daydreams. Finally, the 'hallucinations' subscale consisted of 4 items ( $\alpha = 0.35$ ) which considered kinaesthetic hallucinations, auditory hallucinations, visual hallucination occurrences and visual hallucination frequency. It is not surprising that these alpha levels fall below what most deem to be acceptable for establishing good internal reliability, i.e.,  $\alpha = 0.70$  to  $0.80$ . The questionnaire was not developed to establish a set of items that measure the single, uni-dimensional construct 'OBE'. Instead, it was developed to assess people's experiences with a broad base of potential factors that could contribute to an OBE. Consistent with this idea, responses to individual questions were analysed as potential predictors of OBEs; bundles of predictors were not used. More importantly, collinearity tests were conducted to assess correlations between possible predictor variables. No issues were discovered, and thus there was no redundancy (i.e., each question assessed a unique factor that might contribute to an OBE).

### Frequency Rates of Out-of-Body Experience

Fourteen percent ( $N = 53$ ) of participants had not read about, or heard about, the term 'out of body experience' prior to commencing the questionnaire. A further 8% of participants ( $N = 31$ ) stated that they did not believe that an out-of-body experience was possible. Of the 194 participants (52% of the total) who responded 'yes' to having a prior OBE, 84 were men (which constituted 53% of all male responses to this question) and 110 were women (52% of all female responses). Of all participants, 138 (37%) had reported experiencing a floating sensation prior to sleep.

Based on an analysis of 'OBE types', 45% ( $N = 87$ ) of all participants who have had an OBE reported that on at least one occasion they had induced the experience. Twenty three (12% of all participants who have had an OBE) participants reported that most (if not all) of their

OBEs were induced, rather than spontaneous. Further, of those who reported having had an OBE, 39% ( $N = 75$ ) of participants reported a sensation of leaving their body prior to their OBE and 41% ( $N = 79$ ) reported a sensation of return to the body after their OBE. Data on the type of environment experienced during participant's OBE(s) was also collected. The variations in experiences are depicted in Figure 1 below.

### Fantasy Proneness

Eight percent ( $N = 31$ ) of participants reported experiencing daydreams that interrupted their everyday activities, responding 'Often I find it difficult to recall exactly what I was thinking or doing prior to a daydream' to the question 'How absorbed are you in your daydreams on average?' In total, 62% ( $N = 228$ ) of participants reported some level of daydreaming that did not necessarily distract them from everyday activities.

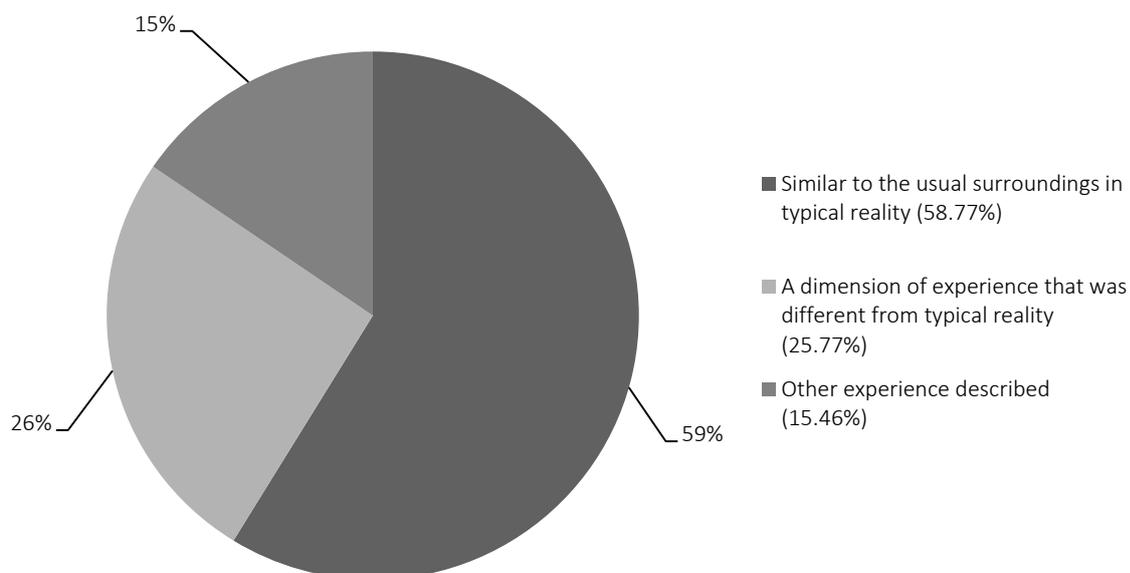


Figure 1. Percentage of responses ( $N = 194$ ) to the question 'In recalling your previous OBE(s), how would you describe your surroundings during most of your experience(s)?'

When asked about previous experiences of hallucination, 71% ( $N = 261$ ) of participants reported experiencing kinaesthetic hallucinations, i.e. having a non-physical kinaesthetic sensation such as something moving over the skin. Forty seven percent ( $N = 172$ ) of

participants reported experiencing verbal hallucinations, i.e. these participants heard a voice that seemed to originate from a non-physical external source, and 28% ( $N = 105$ ) reported having had visual hallucinations, i.e. having witnessed an object or people appear (or disappear) spontaneously. Additionally, 7% ( $N = 26$ ) of all participants indicated they have a direct relative (e.g. father or mother) who has been diagnosed with schizophrenia.

### **Binary Logistic Regression**

A Binary Logistic Regression was conducted using 19 variables: (1) gender, (2) age, (3) familiarity with the term 'OBE', (4) belief in OBEs, (5) experience of floating sensation, (6) occurrence of floating sensation based on minutes prior to sleep, (7) religious inclination, (8) daydreaming propensity, (9) daydreaming absorption, (10) relative who is diagnosed schizophrenia, (11) kinaesthetic hallucinations, (12) auditory hallucinations, (13) visual hallucinations, (14) visual hallucination frequency, (15) whether the participant has had an OBE, (16) whether the participant has induced an OBE, (17) sensation of leaving the body prior to an OBE, (18) environment type during OBE, and (19) sensation of returning to the body after an OBE. These variables were subjected to Forward Stepwise Entry in an attempt to establish factors that predicted whether or not a participant had experienced an OBE prior to completing the questionnaire. Text-entry variables (floating description, hallucination description, and OBE environment description) were excluded from the quantitative analysis due to the difficulty in coding these responses. As mentioned earlier, collinearity tests were conducted and no problems were discovered.

The analysis identified one item that predicted whether or not a person had previously experienced an OBE as a binary response (0 = *no*, 1 = *yes*). This item ('Auditory Hallucination') was the response to the question 'Have you ever heard a voice that seemed to originate from a nonphysical external source?' (see Table 1). Responses to two questions related to kinaesthetic and visual hallucinations ('Have you ever experienced a nonphysical kinaesthetic sensation such as something moving over your skin?' and 'Have you ever witnessed an object or people appear or disappear spontaneously?') did not predict whether a person had previously experienced an OBE.

Table 1

Binary Logistic Regression Analysis (Results for OBE Predictors)

	B (SE)	95% CI		Odds Ratio
		Lower	Upper	
Constant	-0.34 (0.41)			
Auditory Hallucination (Yes)	1.03* (0.51)	1.04	7.53	2.80

Note:  $R^2 = .05$  (Cox & Snell, 1989),  $.07$  (Nagelkerke, 1991);  $*p = .041$

Table 1 shows that the regression coefficient ( $B = 1.03$ ) for 'Auditory Hallucination' is significant ( $p = .041$ ), suggesting that having an auditory hallucination is a significant predictor of whether a person also had an OBE. The coefficient B indicates that for every one-unit increase in auditory hallucination score, a 1.03 increase in the log-odds of OBEs occurred, holding all other independent variables constant. Since the coefficient is in log-odds units, it can be easier to interpret the odds ratio; converted by exponentiating the coefficient. The odds ratio suggest that the likelihood of a person who has experienced auditory hallucinations also having an OBE is 2.8 times higher than that of a person who has not experienced auditory hallucinations.

The Standard Error ( $SE = 0.51$ ) indicates that the coefficient is significantly different from zero. It also helps establish that the 95% Confidence Interval (CI) is above 1.00, suggesting that the predictor variable (i.e., Auditory Hallucination) increases the chance of having an OBE. In fact, the 95% confidence interval indicates that those people who have experienced an auditory hallucination are between 1.04 and 7.53 times more likely to experience an OBE than those people who have not experienced an auditory hallucination. Further evidence supporting the link between previously experienced auditory hallucinations and OBEs is apparent when one compares the figures of Cox and Snell (1989), and Nagelkerke (1991),

which demonstrate “goodness of fit” in logistic regression (see the note under Table 1).

These tests calculate the improvement in prediction by the model from the base (null) model and suggest the model fits the data quite well. Note also that the chi-square test result indicates a good fit,  $\chi^2(1, N = 370) = 4.26, p = .039$ .

## Discussion

Respondents who had an auditory hallucination were more likely to have also had an OBE. No other predictors of OBE were found based on the Binary Logistic Regression analysis.

Although these results partly support the findings of Gow et al. (2004), Levin and Young (2002), and Parra (2009), in that there is a connection between auditory hallucinations and OBEs, our results also contrast with dissimilar findings in these three studies in that these authors also report a significant correlation between visual or kinaesthetic hallucinations and OBE; a finding we could not replicate. Responses to questions related to daydreaming were also expected to be predictors of OBE likelihood; these relate to fantasy proneness and were shown to be significant in Parra’s (2009) research. However, daydreaming absorption was not a significant predictor of OBE in the present study.

The type of auditory hallucination reported by OBE’ers is a factor worth considering. When exploring auditory hallucinations, the questionnaire used here asked participants whether they had ever heard a voice that seemed to originate from a nonphysical external source. Previous questionnaires utilised a greater range of items when examining the connection between auditory hallucination and OBE likelihood. Thus, although 172 participants in the present study reported hearing a voice that seemed to originate from an external, physical source (124 of these participants had also experienced prior OBEs) the nature of that voice was not assessed. Further studies are needed to interpret the effects of the quality of the auditory hallucination.

The finding that auditory hallucinations, in particular hearing a voice, were correlated with previous instances of OBE suggests that there is a reason to explore whether or not ‘hearing a voice’ is a better predictor than other auditory hallucinations, e.g. hearing particular sounds. Although Blackmore’s (1986) excluded a potential link between OBEs and schizophrenia, it is well known in medical literature that hearing a voice is utilised as a

diagnostic marker for schizophrenia (see Chapman & Eckblad, 1983; Gaser, Nenadic, Sauer, Schlosser & Smensy, 2010). The findings in the present study suggest that excluding the potential link between schizophrenia and OBE propensity would be premature, and as auditory hallucination was significant in predicting OBE here, the potential link between mental health disorders (specifically, schizophrenia and other disorders involving an auditory hallucination aspect) should be investigated further.

In conclusion, the present study found a link between auditory hallucinations and OBE likelihood. This finding partly substantiates previous research which has suggested a link between fantasy proneness and OBE. However, other fantasy proneness factors, e.g., daydream absorption and visual and kinaesthetic hallucinations were not found to be significant predictors of OBE. These results indicate that future research should focus on the role of auditory hallucinations in OBE. Future studies could also aim to determine potential factors where auditory hallucinations are more relevant in predicting the likelihood of OBEs than are other fantasy proneness factors. In particular, mental health disorders which include auditory hallucinations as part of the diagnostic criteria (such as schizophrenia) should be re-evaluated when considering the connection between fantasy proneness and OBE likelihood.

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