

# Visuospatial perception in subjects with out-body-experiences

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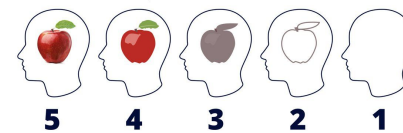
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## Abstract

**Introduction:** Visual imagery typically refers to the voluntary creation of the conscious visual experience of an object or scene in its absence, solely in the mind. There are individuals who have no experience of imagery at all—their minds are completely blind: aphantasia. Hyperphantasia is at the other end of the imagery spectrum: strong and often photo-like imagery. One of the key limitations to studying visual imagery has been its internal private and subjective nature. An intrinsic characteristic of the imagery experience is its degree of vividness, the clarity and richness of the mental representation. The most commonly used questionnaire is the vividness of visual imagery questionnaire (VVIQ).

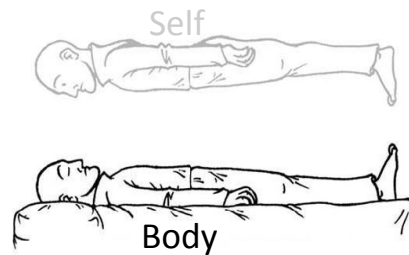
**Method:** We developed a novel way to study visual imagination through an auditory guided visualization exercise. After completing the exercise, participants solve tasks and questionnaires related to their visuospatial performance, episodic memory, and quality of the experience, correlated to their visualization skills as measured by the VVIQ. A handful of individuals from sleep paralysis have out-of-body experiences (OBE, the experience in which the observer perceives the world from a point of view outside of his physical body), described as "incredibly vivid and having the qualities of veridical perception".

We hypothesized that participants with frequent OBEs will have a distinct visual imagery strategy (and experience) not explained by their VVIQ score. We present preliminary results of this study.



1 = **Aphantasia**  
Absence of mental imagery, inability to visualize

5 = **Hyperphantasia**  
Abundance of mental imagery, extremely vivid sensory imagination



**Out-of-Body-Experience (OBE)**  
The experience of perceiving the world from a different perspective than the physical body

## METHODS

**Main goal:** Identify if there is any difference in the visual imagery capacity of subjects with and without out-of-body experiences

**First participants perform an auditory visualization exercise.**

The audio guides subjects through an *imaginary scenery* that details with sensory components (mainly visual, but also auditory, tactile and olfactory), and with precise spatial information, an environment with 8 elements highlighted in the story and precisely arranged.

**Complete a questionnaire about their experience**

After that they are asked to draw a map of the scene and their navigation through the map.

During the visualization exercise, a precise route is proposed to the participants with clear indications such as "now turn right" or "when you cross the door you walk straight to the left". Several measurements applied to the drawing to assess how well they performed.

**Finally, they perform an episodic memory task related to the visualization experience.**

It consists of the presentation of 10 incomplete sentences present in the visualization exercise, among which the subjects must select the options they recognize from the exercise for each sentence.

**They record an audio report of their experience with as much detail as they can remember.**

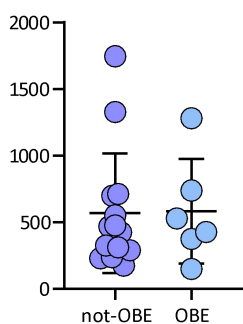
### Vividness of Visual Imagery Questionnaire (VVIQ)

It is the psychometric test for studying extreme imagination and is often used to identify aphantasia. Evaluates the intensity with which you can imagine characters, objects and scenarios. The VVIQ is composed of 16 items that ask the participant to imagine a series of scenes and to carefully consider the image formed in the imagination for each of these situations. The participant must estimate the vividness of certain aspects of the constructed image according to a 5-point scale, where a value of 1 means "no image" and 5 means "perfectly clear and as vivid as if he/she were seeing the object".

We used the test to estimate the "vividness of mental images" for our participants and to consider it as a variable against the different tasks presented from the visualization exercise.

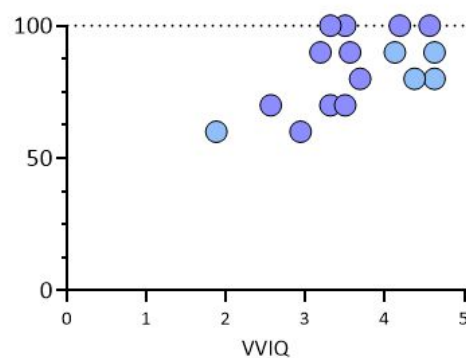
## RESULTS

### Words in free recall report

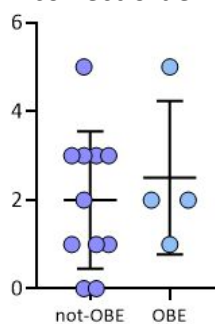


### Episodic memory test

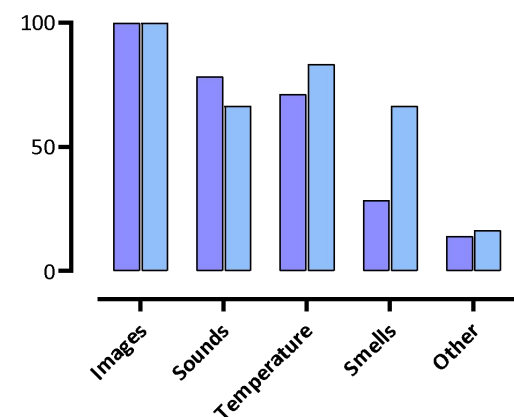
% Correct answers



Deviations from correct order



### Perceived stimuli



## Next steps

- More participants.
- Visual Object and Space Perception Battery (VOSP).
- Evaluate the spatial distribution of the imaginary objects at the end of the experience.