

Proposal for a consistent definition of aphantasia and hyperphantasia:

A response to Lambert and Sibley (2022)

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We thank Lambert and Sibley (2022) for their thoughtful and thought-provoking response to our commentary. Their response challenges us to reconsider our advocacy of unifying terms for the study of extreme imagery – aphantasia for the absence of imagery, hyperphantasia for its super-abundance (Monzel et al., 2022). Although we are enthusiastic about diversity in general, and the phenomena and scientific study of human mental diversity in particular, we continue to believe that the science of imagery extremes will be best served by keeping its terminology simple and avoiding a proliferation of potentially confusing, novel, terms.

We will consider their three arguments in turn:

i) Consistency in use of terms: It is true that the term ‘aphantasia’ was initially coined in the context of visual imagery, but it soon became clear that a subjective reduction of imagery in other senses was common in people with who lacked a mind’s eye. Zeman et al. (2020) reported that 54.2% of aphantasic participants and 47.8% of hyperphantasic participants described all modalities of imagery as faint or vivid respectively; Dawes et al. (2020) reported

multisensory aphantasia in 26% of those with visual aphantasia using the Questionnaire upon Mental Imagery. We agree with Lambert and Sibley (2022) that both modality-specific and modality-general processes are likely to be involved in sensory imagery: the use of a single core term, aphantasia, to refer to the absence of imagery recognises the modality-general processes while the addition of a qualifier – ‘visual’, ‘auditory’ – highlights the particular sense modality in question. Given the currency of the terms ‘aphantasia’ and ‘hyperphantasia’, particularly among those reporting these phenomena (see for example The Aphantasia Network at ‘aphantasia.com’), we feel that the introduction of multiple, novel, terms will not benefit the community.

ii) Dissociations between varieties of imagery: We agree with Lambert and Sibley (2022) that dissociations within participants between, for example, visual aphantasia and auditory hyperphantasia, are of great interest, but we don’t see any internal contradiction in using these terms. Given the possibility of the lack of imagery in one sense combined with its presence in another, any term will require some elaboration, as, for example, when Lambert and Sibley (2022) speak of ‘pure anauralia’ to refer to ‘anauralia in the context of hyperphantasia or typical visual imagery’. We believe that use of ‘multisensory’ or ‘global’ aphantasia to refer to absence of sensory imagery across the board, and of e.g. ‘visual aphantasia’ to refer specifically to the absence of the mind’s eye, offers the simplest and most transparent terminology.

iii) Visuocentrism: We agree that visual imagery has received more attention than imagery in other modalities, and that research on imagery in these other modalities should be encouraged. This mirrors the state of perception research and can be traced back to the greater range of brain areas and scientific methodologies dedicated to visual processing. We disagree, however, that the encouragement of research on imagery in other modalities requires a proliferation of terms. Just as the phrase ‘mental imagery’ itself refers to imagery across the whole spectrum of sensory or experiential modalities, so the term ‘aphantasia’ can be conveniently used to refer to its absence – with qualification, in the case of both terms, as required. It is a positive advantage of the term ‘aphantasia’ that it can be extended widely, for example to the domains of touch (‘tactile aphantasia’), movement (‘motor aphantasia’)

and emotion ('emotional aphantasia') without the creation of a difficult new vocabulary and the multiplication of terms.

Time will tell which terms survive, as future empirical work clarifies and enriches our understanding of mental imagery extremes. For the present, we suggest the following working definitions:

Aphantasia should be understood as the 'absence or marked reduction of voluntary sensory imagery' where imagery is defined as 'the quasi-sensory experience of items, typically in their absence'. The definition specifies that '*voluntary* imagery' is absent, or markedly reduced, in view of the observation that many people with aphantasia report rare spontaneous 'flashes' of imagery in wakefulness (it is noteworthy, also, that many people with aphantasia report sensory experience similar to wakeful imagery during dreams and in the hypnagogic state) (Dawes et al., 2020; Zeman et al., 2020). Aphantasia can be *acquired* or *lifelong*: the latter appears to be more common than the former, and often runs in families (Knowles et al., 2021; Zeman et al., 2020). In acquired cases the aetiology may be neurological or psychiatric. Aphantasia can be restricted to a single sense modality (e.g. 'visual' or 'auditory aphantasia') or affect all sensory modalities ('multisensory aphantasia') (Dawes et al., 2020; Zeman et al., 2020).

Hyperphantasia is the converse of aphantasia, the prefix 'hyper' denoting an unusually strong manifestation of mental imagery (Zeman et al., 2020). People with hyperphantasia describe imagery that is said to rival the vividness of perceptual experience. Further work is required to characterise the nature of imagery in hyperphantasia. Like aphantasia, it may be restricted to a single sense or involve several or all sensory modalities.

We thank Simner and Dance (2022), also, for their equally stimulating response. In brief reply to their four key arguments: a) we acknowledge that as a coinage from an English word with a Greek root, 'dysikonesia' is well-formed; b) as indicated above in response to Lambert and Sibley's (2022) first argument, while the term 'aphantasia' indeed had a visual connotation in our first paper (Zeman et al., 2015), it rapidly became clear that other senses were often involved. The definition of aphantasia in our 2015 paper refers to 'a condition of reduced or

absent voluntary imagery', and we continue to believe that a broad, multimodal, interpretation of the term is appropriate and useful; c) unlike 'aphantasia', which is not directly tied to a particular sense modality, 'audition colorée' clearly is: the analogy with the history of terms in synaesthesia is therefore at most partial; d) we fully endorse the final point that aphantasia does not in the least imply an absence of imagination broadly construed: there are now numerous examples of highly creative individuals with aphantasia (Zeman, 2021). We had not intended that the term should have this implication, and believe that the advantages of its continued use outweigh the small risk of a mistaken inference.

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