

The Relationship Between Aphantasia and Embodied Cognition

Abstract

Aphantasia is a not-so-widely known phenomenon that is rapidly gaining speed within popular science. Embodied cognition, on the other hand, is a theory of cognition that has stayed tried-and-true across the years in cognitive science. We probe the idea that we can learn more about aphantasia through an embodied cognition perspective and discuss if there is a relationship between the two phenomena. We mention potential benefits from this perspective as well as some of the implications we must accept if this relationship were to be accepted.

Introduction

Within cognitive science, there exist many theories of how our minds, and thus, cognition, function. One major theory that goes against the traditional cognitive science perspective, called cognitivism, is the idea of embodied cognition. This means that we experience the world not through the mind interacting with the environment (as the cognitivist would see it), but through the brain, body, and environment interacting with each other (Tibbets, 2014). We have further expanded embodied cognition (EC) into other realms that are influenced by our cognition, such as listening to music and using our mental imagery to imagine things (Rucińska and Gallagher, 2020; Gibbs et al., 2002; Palermio et al., 2019). In this paper, we will be focusing on the latter, with special consideration of a condition called aphantasia.

Aphantasia is a newly-named condition (Zeman et al., 2015) which describes one extreme on the spectrum of mental imagery vividness. Not much is known about the nature

of aphantasia, but what is known is that the condition affects the way people imagine things – those with aphantasia have a lack of at least one kind of sensory mental imagery (Keogh and Pearson, 2018; Takahashi et al., 2022; Dawes et al., 2020). This lack of mental imagery may be complete, with absolutely no imagery at all in their mind’s eye, or a severe deficiency in the ability to imagine within the sensory modalities (Zeman et al., 2015; Keogh and Pearson, 2018).

The relationship between embodied cognition and mental imagery has been widely studied and thought about (Schendan and Ganis, 2012; Rucińska and Gallagher, 2020; Gibbs et al., 2002; Palermio et al., 2019), however it has not been well hashed out the relationship between EC and aphantasia. **In this paper, we seek to answer the questions of if aphantasia and embodied cognition are related, and how we can use pre-existing theories of EC to learn more about the condition. We** will do this by using already existing theories and scholarly knowledge on embodied cognition, mental imagery, and aphantasia to synthesize new literature on the subject.

The Details of Embodied Cognition

- Talk about the existing theories of embodied cognition – citing the classic paper.
- Discuss its relevance within cognitive science.
 - Cite six views of embodied cognition by Wilson.
- Bring in views of EC on mental imagery to segue into aphantasia.

Implications of Embodied Cognition

- If we accept EC, what else do we have to know and thus accept?
- What are some of the discrepancies and skepticisms of embodied cognition?

- What are some of the different viewpoints and interpretations of EC?

The Details of Aphantasia

- What is aphantasia – in details?
- Aphantasic individuals use different strategies than non-aphantasic individuals to conduct tasks that require mental imagery, which from an embodied cognition perspective can be shaped from the body and mind interacting with the environment.
- What are some discrepancies of aphantasia that have been noted– cite Ganczarek, Dance, Takahashi, and Keogh & Pearson.

Why Aphantasia?

- Dispel the skepticisms of me-search, and about why I am choosing aphantasia over something more well-known and studied.
- Draw in EC to bring up a point about how by synthesizing new literature with something already well known and well-studied we can better understand the less well-known condition.
- Bring up potential ways that aphantasics can use different strategies than using mental imagery.

Mental Imagery in Sensory Modalities

- Mental imagery in aphantasia is not solely based on visual imagery, but also sensorimotor experiences gained from the environment through embodied cognition.
 - Cite QMI, Takahashi et al., and the papers which only discuss aphantasia as visual mental imagery.

- Discuss the controversies of multisensory mental imagery in regards to aphantasia.
- Talk about the inherently multisensory nature of mental imagery, relating to embodied cognition.

Mental Imagery and Embodied Cognition

- Review literature on the relationship between mental imagery and embodied cognition.
- Mental imagery stems from perception of the senses stored in memory, which in embodied cognition is grounded in brain/body/environment interaction.
 - Cite Iachini
- Bring up the different ways that EC and MI are related.

How are EC and Aphantasia Related?

- Talk about previous reasons and relate EC and aphantasia.
- Bring in evidence about EC/mental imagery and tie into facts known about aphantasia.
 - Cite Gallagher, Gibbs and Berg.
- Synthesize new literature on aphantasia and EC relationship.

The Lessons from Aphantasia and EC

- Start to conclude by tying in the info from above that has already been synthesized.
- Draw conclusions about the new information that was learned.
- What do we now know about aphantasia because of EC?

Conclusion

- Restate questions of introduction.
- Restate answers (simplified) to answers of introduction.
- Invite future research to be done with this perspective (aphantasia + EC).

References

- Dawes, A.J., Keogh, R., Andrillon, T. *et al.* A cognitive profile of multi-sensory imagery, memory and dreaming in aphantasia. *Sci Rep* 10, 10022 (2020).
- Ganczarek, Joanna & Żurawska-Żyła, Renata & Rolek, Aleksandra. (2020). "I remember things, but I can't picture them." What can a case of aphantasia tell us about imagery and memory?. *Psychiatria i Psychologia Kliniczna*. 20. 134-141.
- Gibbs, R. W., Jr., & Berg, E. A. (2002). Mental imagery and embodied activity. *Journal of Mental Imagery*, 26(1–2), 1–30.
- Takahashi, J., Saito, G., Omura, K., Yasunaga, D., Sugimura, S., Sakamoto, S., ... Gyoba, J. (2022, May 25). Diversity of aphantasia revealed by multiple assessments of the capability for multi-sensory imagery.
- Palmiero, M., Piccardi, L., Giancola, M., Nori, R., D'Amico, S., & Olivetti Belardinelli, M. (2019). The format of mental imagery: from a critical review to an integrated embodied representation approach. *Cognitive Processing*.
- Gallagher, S. (2011). Interpretations of embodied cognition.
- Zeman, A., Dewar, M., & Della Sala, S. (2015). Lives without imagery - Congenital aphantasia. *Cortex; a journal devoted to the study of the nervous system and behavior*, 73, 378–380.
- Keogh, R., & Pearson, J. (2018). The blind mind: No sensory visual imagery in aphantasia. *Cortex*, 105, 53–60.

Tibbets P. E. (2014). Where does cognition occur: in one's head or in one's embodied/extended environment?. *The Quarterly review of biology*, 89(4), 359–368.

Rucińska, Z., & Gallagher, S. (2021). Making imagination even more embodied: imagination, constraint and epistemic relevance. *Synthese*.