

Imagining Differences: An Exploration of the Visual Imagery Spectrum

Kay DeKock

Department of Social and Behavioral Sciences, Lindenwood University

What is Mental Imagery?

Mental imagery: an internal recreation of experiences without external sensory input (Jankowska & Karwowski, 2023)

- Visual Imagery (sight)
- Auditory Imagery (hearing)
- Olfactory Imagery (smell)
- Gustatory Imagery (taste)
- Tactile Imagery (touch)

Focus on **Visual Imagery:** the visual representation of events without experiencing them directly (Milton et al., 2021)

- Usually not as clear as real seeing
 - Major focus of imagery research (Pearson, 2019)
- Connections to other cognitive processes (Pearson, 2019)

- Working memory
- Episodic memory
- Autobiographical memory
- Comprehension and learning
- Spatial navigation
- Decision making and problem solving

Serves as a crucial tool in the learning process (Jankowska & Karwowski, 2023)

- Aids in both recall and encoding of information

Frontal Lobe

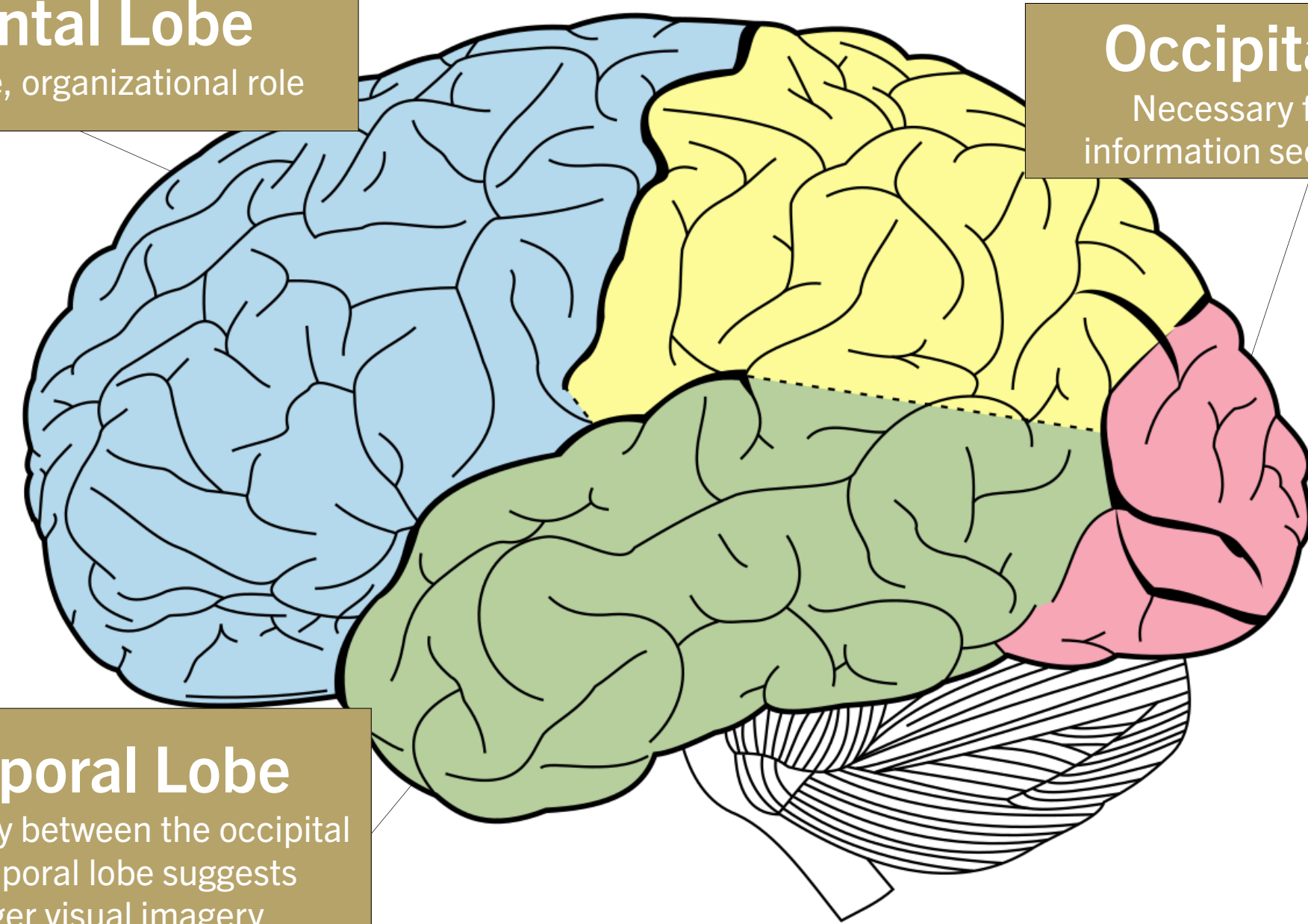
Executive, organizational role

Occipital Lobe

Necessary for recall of information seen by the eyes

Temporal Lobe

Connectivity between the occipital and temporal lobe suggests stronger visual imagery



Factors to Consider

Individual Differences

Individual differences relate to many areas of life (Jankowska & Karwowski, 2023).

- Gender
- Personality
- Intelligence

Possible Relations

Differences in mental imagery may impact:

- Memory
- Creativity (Pearson et al., 2013).

Lack of visual imagery:

- Emotional memories (Ganczarek et al., 2020)

What is Measured?

Vividness: how similar visual imagery is to the actual experience (Jankowska & Karwowski, 2023).

- Most frequently measured ability

Clarity: the brightness of colors and the sharpness of details and shapes (Jankowska & Karwowski, 2023)

How is It Measured?

Self-report measures are most popular (Milton et al., 2021).

- Threat to validity (Jankowska & Karwowski, 2023)

Performance-based measures (Jankowska & Karwowski, 2023)

- Spatial abilities tests
- Check accuracy of self-report

The Spectrum of Visual Imagery

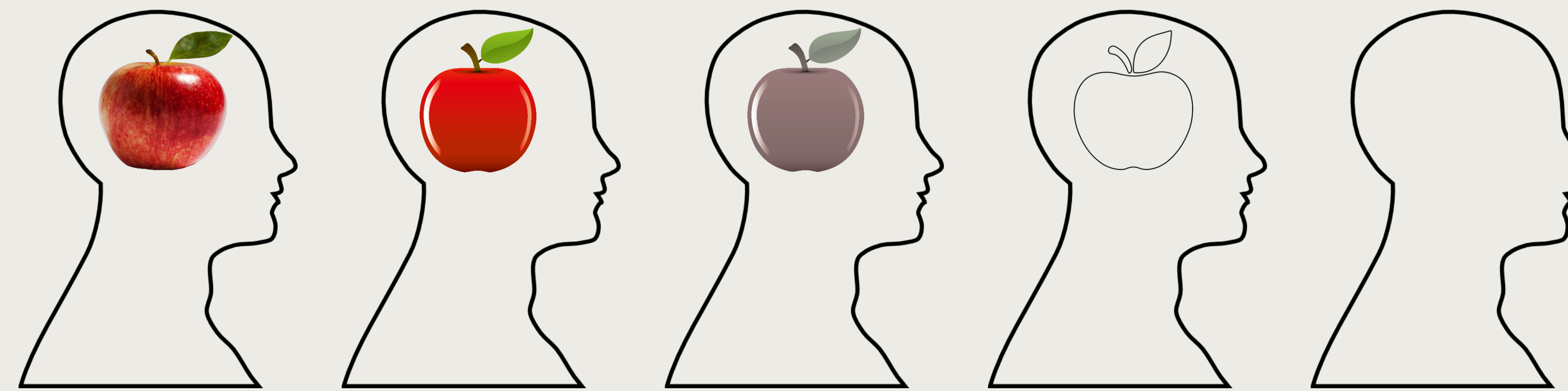


Fig. 1 Visual representation of the spectrum of visual imagery.

	Hyperphantasia	Aphantasia
Definition	Superior ability to produce vivid mental images (Milton et al., 2021)	Complete absence of visual imagery (Ganczarek et al., 2020)
Prevalence	<ul style="list-style-type: none"> • 3% of the population • 11% of children 	<ul style="list-style-type: none"> • 2-5% of the population
Characteristics	<ul style="list-style-type: none"> • Eidetic imagery or photographic memory (Pearson, 2019) • Less attention in research 	<ul style="list-style-type: none"> • Term coined in 2015 (Furman et al., 2022) • Most born are with aphantasia, though some may acquire aphantasia (Furman et al., 2022) • Breakfast Table Survey (Galton, as cited in Furman et al., 2022)
Correlates	<ul style="list-style-type: none"> • Schizophrenia and post-traumatic stress disorder (Pearson, 2019) • Depression and anxiety (Pearson, 2019) • Lower Intelligence and extraversion (Jankowska & Karwowski, 2023) 	<ul style="list-style-type: none"> • Autism and facial recognition issues (Milton et al., 2021) • Depression and anxiety (Pearson, 2019) • Higher intelligence and introversion (Jankowska & Karwowski, 2023)

Limitations

- Reliance on self-report data; could be unreliable
- Gaps in current research
 - Little to no research on individual differences outside of the extremes
 - Less research on hyperphantasia as compared to aphantasia
 - Little research on the impact of emotional state on visual imagery



Conclusion, Implications, and Future Research

Conclusion

- Visual imagery is important for cognition as well as daily life
 - Relations to memory and learning
 - Importance in recalling emotional memories
- Knowledge of underlying mechanisms and implications are limited
 - Focus on furthering understanding of individual differences

Implications and Applications

- Cognitive Psychology Research
- Clinical Settings
- Educational Settings

Future Research

- In depth research on hyperphantasia
- Comparative analysis of emotion and personality between individuals with aphantasia and hyperphantasia
- More research on **acquired aphantasia:** aphantasia developed following trauma or other experiences (Furman et al., 2022)
- More research on the visual imagery spectrum outside of the extremes

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