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## REVIEW ARTICLE

# Phantasia, Aphantasia and the Spectrum Subtypes of Imagination

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## ABSTRACT

Imagination remains one of the few uncharted complex terrains of the human mind. The original word for imagination comes from the Greek word *phantasia*. When the prefix *a-* (which means 'without') is added to the Greek word, the term *aphantasia* comes into existence. In fact, *aphantasia* was first coined by one of the world's few foremost experts on imagery extremes, Adam Zeman, who is currently a professor of cognitive and behavioral neurology at the University of Exeter, UK. Aphantasia is described as a handicapping condition in which an individual is unable to visualize. The opposite of aphantasia is hyperphantasia (known as image-free thinking), which is the condition of having extremely vivid mental imagery. Between them, there is a spectrum of imagination-related types or subtypes.

**Keywords:** Aphantasia, Imagination, Mental imagery, Phantasia, Spectrum subtypes

## 1. INTRODUCTION

There is still no consensus among those working on the topic of *imagination* or *imagining* which is too broad to allow simple taxonomy or definition. In this short paper, the author's focus is on *imagination* as a cognitive ability and/or *imagining* as a cognitive process.

Before moving ahead to delve on the topic of imagination, there is something more to it that needs to be addressed: i.e., the thoughts and ideas involved in imagination. According to Byrne (2007),

“[I]maginative thoughts are guided by the same principles that underlie rational thoughts” (p. xi). Byrne (2007) went on to add that “[R]ationality and imagination have been viewed as complete opposites. At best, logic and creativity have been thought to have little in common. At worst, they have been considered to be each other’s nemesis. But they may share more than has been suspected” (p. xi). This is indeed an interesting proposition, and to use Byrne’s own words: “Rational thought has turned out to be more imaginative than cognitive scientists previously supposed” (Byrne, 2007, p. xi).

There are three subdomains of imaginative thoughts: (1) factual; (ii) non-factual; and (iii) counterfactual (see Figure 1). The word *factual*, in its dictionary meaning, refers to ‘being restricted to or based on fact’ (e.g., kangaroos can jump 10 feet high and 30 feet far), while the other word *non-factual* represents the total opposite of *factual*, of course, its dictionary meaning is ‘not using or consisting of facts’ (e.g., a kangaroo’s tail used to be its additional leg, but after millions of years, evolved into a tail to make the hop - a classic and unique kangaroo maneuver - more efficient). The third word *counterfactual*, by its dictionary meaning, is ‘relating to or expressing what has not happened or is not the case’ (e.g., if a kangaroo had no tail, it would topple over) (see Lewis, 1973, for detail).

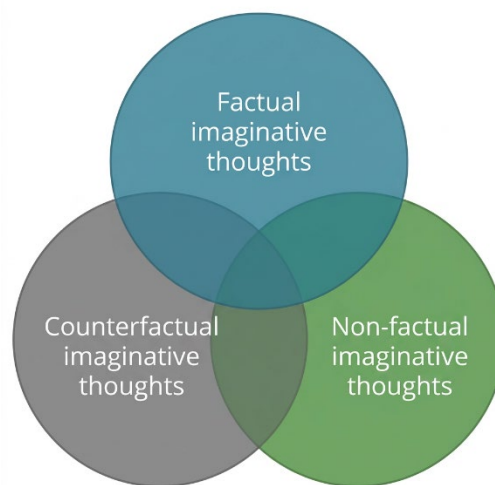


Figure 1. Three Subdomains of Imaginative Thoughts

One important point to take note is about the manifestation of imagination (be it factual, non-factual or counterfactual) and it is found in the emotions that individuals experience, “or that they judge other people to experience” (Byrne, 2007, p. 9). According to Kahneman and Miller (1986) as well as Roeser (1997), thoughts about what might have been seem to amplify emotions (e.g., anticipation, guilt, hope, relief and shame) and they could also be counterfactual emotions (Landman, 1993; Niedenthal, Tangney, & Gavanski, 1994). By thinking about counterfactual or even non-factual possibilities, emotions are elicited, but these emotions themselves are real. “The emotions elicited seem to depend on a comparison between how the event actually turned out and how it could have or should have turned out differently” (Byrne, 2007, p. 9). Interestingly, the same can be expected for social attributions of culpability (e.g., blame, fault and responsibility) as in the case of “if you had pulled your brakes on time, the car would not have knocked down the old pedestrian crossing the road” (see Branscombe et al., 1996, and Mandel, 2003, for detail).

Imagination that involves alternatives to reality is often counterfactual: only if ..., if only ... and even if ..., as if ..., and as it is ... These phrases are counterfactual. It is quite natural for people to “imagine how events might have turned out differently, ‘if only ...’. Often, such imaginative thoughts about what might have been can seem irresistible” (Byrne, 2007, p. 1). According to Byrne (2007), imaginative thoughts or alternative thoughts “emerge at a very young age ... exist in most cultures... existence demonstrates that thoughts are not tied to facts” (p. 1). In fact, thoughts go beyond facts to include all other possibilities and probabilities: the former having to do with fantasy (i.e., suspension of disbelief); the latter, phantasy

(i.e., immersion of disbelief). Once an individual has gone too deeply into his/her imagination to the point that s/he could not differentiate between what is real and what is not, the person is described to be in the state of phantasmagoria (Chia, 1996).

## 2. THE GREEK UNDERSTANDING OF PHANTASIA

The word *imagination* is translated from the Greek word *phantasia*, which retains its connection with the verb form *phainomai* that means 'I appear'. It is applied both to the psychological capacity to receive, interpret, and even produce appearances and also to those appearances themselves.

Plato (b.428/427-348/347 BCE), a Greek philosopher, did not have much to offer or say about *phantasia*, but in *Sophist* 264a he described it as "a blend of perception and judgement (*doxa*).” According to the Encyclopedia.com (2021), in its updated online article on *phantasia*, it mentions that “[E]lsewhere, in *Timaeus* 70eff., in a strange passage that locates parts of the soul in particular parts of the body, he describes the liver as functioning like a mirror that reflects images coming from the rational part of the soul, suggesting a link between imagination, dreams, and inspired prophecy” (para. 2).

Aristotle (b.384 BC-d.322 BC), another Greek philosopher, gave *phantasia* a specific place between perception and thought. In *De anima* 3.3 he offers an account of *phantasia* that includes mental images, dreams, and hallucinations. For Aristotle, *phantasia* is based on sense-perception and plays a crucial role in animal movement and desire, as he explains in *De anima* 3.9 and in the *De motu animalium* (see Encyclopedia.com, 2021, para. 3).

It was not until 2015, when Zeman et al. (2015) coined the term *aphantasia* to describe the absence of visual imagery. The essential role of visual imagery in memory, day-dreaming and creativity typically enables an individual to see absent items in the mind's eye<sup>1</sup>. Zeman et al. (2015) also coined the other condition known as *hyperphantasia* (a total opposite of aphantasia) to describe the abundance of visual imagery. More recently, Zeman et al. (2020) reported in their study the psychological significance of lifelong visual imagery vividness extremes of phantasia: “Participants with aphantasia report an elevated rate of difficulty with face recognition and autobiographical memory, whereas participants with hyperphantasia report an elevated rate of synaesthesia. Around half those with aphantasia describe an absence of wakeful imagery in all sense modalities, while a majority dream visually. Aphantasia appears to run within families more often than would be expected by chance. Aphantasia and hyperphantasia appear to be widespread but neglected features of human experience with informative psychological associations” (p. 426).

With the introduction of the Cattell-Horn-Carroll theory<sup>2</sup> (abbreviated to CHC) of cognitive abilities based on the contributing efforts of three psychologists - Raymond Cattell (b.1905-d.1998), John Horn (b.1928-d.2006) and John Carroll (b.1916-d.2003) - in the 1990s, and also the later expansion of the CHC model by McGrew (2011) and Schneider and McGrew (2012), imagination or imagination quotient (ImQ) can be treated as a probable broad cognitive ability within the CHC theory. The imaginative ideas, which are generated from within the mind and often unconsciously influenced by memories and feelings, can go hand-in-hand with creativity. In other words, this author proposed that imaginative ideas could come under the CHC broad cognitive ability of Gr (Retrieved Fluency), which, in turn, can be further subcategorized into several narrow cognitive abilities placed under the following two subheadings (see Figure 2): (1) *Ideas* that include three narrow cognitive abilities, i.e., (i) Ideational Fluency (Gr-FI), (ii) Associational Fluency (Gr-FA), and (iii) Expressional Fluency (Gr-FE); and (2) *Creativity* that include

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<sup>1</sup> *Mind's eye* refers to that mental faculty that can conceive imaginary or recollected scenes; the mental picture so conceived.

<sup>2</sup> The Cattell–Horn–Carroll theory is an integration of two previously established theoretical models of intelligence: the theory of fluid and crystallized intelligence (Gf-Gc) (Cattell, 1941; Horn 1965), and Carroll's three-stratum theory (1993), a hierarchical, three-stratum model of intelligence.

two narrow cognitive abilities, i.e., (i) Solution Fluency (Gr-FS) and (ii) Originality/Creativity (Gr-FO) (see Schneider & McGrew, 2018, for detail).

Briefly, extracted from the CHC list provided by Schneider and McGrew (2017), Retrieval fluency (Gr) refers to “the rate and fluency at which a person can access information stored in his/her long-term memory” (p. 3). At the time of pre-publication, Schneider and McGrew (2017) listed the following narrow cognitive abilities: Gr-FI is “the ability to rapidly produce a series of ideas, words, or phrases related to a specific condition or object” (p. 3); Gr-FE is “the ability to rapidly think of different ways of expressing an idea” (p. 3); and Gr-FA is “the ability to rapidly produce a series of original or useful ideas related to a particular concept” (p. 3). Gr-FS was not yet included in the CHC table then. Gr-FO is “the ability to rapidly produce original, clever, and insightful responses (expressions, interpretations) to a given topic, situation, or task” (Schneider & McGrew, 2017, p. 3). It is not within the scope of this paper to delve further into this specific topic of discussion.

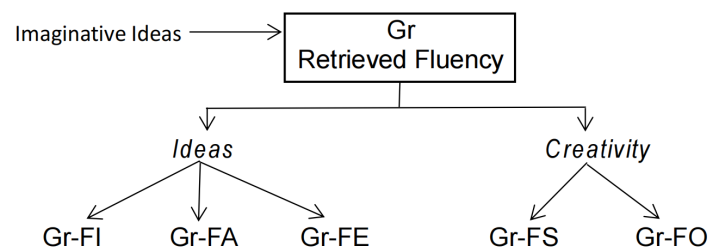


Figure 2. Imaginative Ideas under Gr Retrieval Fluency

## 2.1 Phantasia: The Spectrum of Imagination

For simplicity of discussion in this paper, the author has chosen to consider *phantasia* as typical or normal imagination that can be best understood as a spectrum or continuum (used interchangeably to mean the same thing in this paper) of imagination ranging from *phantasia* through *hypophantasia* to *aphantasia* on one end of the spectrum, and from *phantasia* to *hyperphantasia* or *metphantasia*, which is “*phainomai* about *phantasia*”, on the other opposite end of the spectrum. There are also two other offshoots above or below the continuum from *phantasia* to *allo-phantasia*, and *para-phantasia*, which can lead to some kind of a phantasmagoric encounter with a phantasm, which can be a doppelgänger or an illusion, apparition, or ghost. The term *para-* as used in *para-phantasia* is the same as it is used in *para-normal* describing a supernatural phenomenon, suggesting some kind of a figment of imagination (e.g., ghost or demon) that mediums and psychics believe are real coming from the spiritual dimension (Nickell, 2012; Rhode, 1984; Smajic, 2003). The Figure 3 below illustrates the spectrum of imagination types or subtypes (these two terms *types* and *subtypes* are used interchangeably throughout this paper) in what the author has described as within the context of the *mindspace*<sup>3</sup> (see Ng, Gou, & Xie, 2023, for detail).

According to Xie and Deng (2023), the first one on the spectrum of imagination types or subtypes is ***aphantasia***, which comes from two Greek words, *a-* which means without, and ***phantasia*** which means imagination. The term means that ‘without any imagination’ and cannot form mental images. According to Lerner (2016), it refers to “the inability to visualize mental images” (p. 29) or “not being able to picture something in one’s mind” (p. 30). Cherry (2020) called it “a phenomenon in which someone is unable to visualize imagery” (para. 1). A person with *aphantasia* finds it impossible to conjure an image of a scene or face in his/her mind. It seems to be quite impossible not see anything that comes so naturally to us, but those individuals with *aphantasia* describe what they see as nothing or totally black. Some of them

<sup>3</sup> *Mindspace* is defined by Ng, Gao, and Xie (2023) “as a psychological space (or mental space) where the **idea that a person’s perception of the world affects his/her internal thoughts and beliefs**, and how s/he rationalizes and organizes his/her thoughts and beliefs that can, in turn, affect his/her feelings and/or mood or in the other way round, emotions can impact on the person’s thoughts and beliefs” (p. 33).

even use the word “blank” or “void.” In other words, “[B]asically, when people without it picture what they ate, they can see it, but people with *aphantasia* cannot” (Paige, 2020, para. 3).

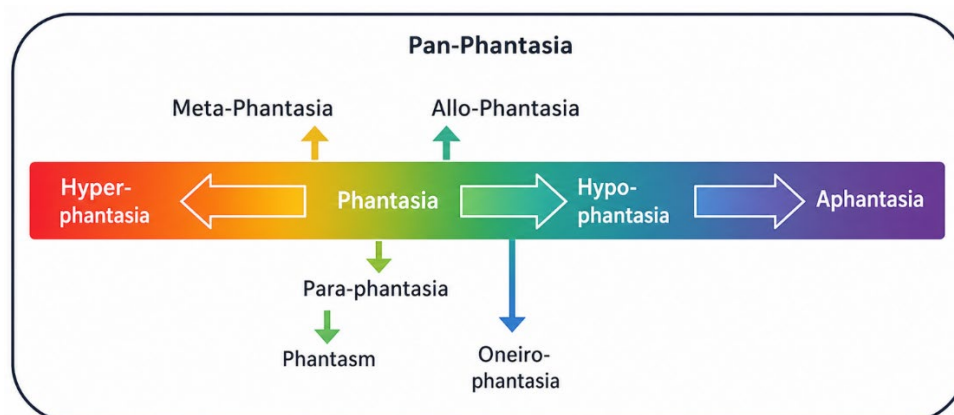


Figure 3. The Spectrum of Imagination Types

In fact, *aphantasia* was first described by Sir Francis Galton (b.1822-d.1911), **an English polymath in the Victorian era**, in 1880. With the publication of a study on congenital *aphantasia* conducted by Zeman, Dewar, and Della Sala (2015) in the journal of *Cortex*, interest in the phenomenon has been rekindled. As a result, it has led several more research studies (e.g., Blazhenkova & Pechenkova, 2019; Dawes et al., 2020; Jacobs, Schwarzkopf, & Silvanto, 2018) have been conducted and published. A study done by Keogh and Pearson (2018) using binocular rivalry technique found that it is not because those with *aphantasia* have poor recall of their imaginings. Instead, they do not even possess such visual imaginings to start with. However, research on the condition remains scarce and *aphantasia* is still not recognized with other learning disabilities.

Next is *hypophantasia*, which is the condition of impaired imagination of individuals with low or poor mental imagery. It can also be termed as partial *aphantasia* or borderline *aphantasia*, but certainly not a full *aphantasia*. Again, very little literature has been written or published about it.

On the opposite end of the spectrum of imagination types or subtypes is *hyperphantasia*, which is described as “a condition where an individual can see extremely detailed and clear images in the mind with little effort” (Paige, 2020, para. 9). These images can be manipulated by the individual as if he/she is actually there. For example, a person with *hyperphantasia* is flown in a helicopter over New York City to get an aerial view of the city’s skyline. Back on ground in an art studio or any open space, he starts to draw or sketch the details of the cityscape from memory. This was what a British artist, Stephen Wiltshire, did when he was invited to Singapore to do just that. He drew the beautiful cityscape on the 4-meters by 1-meter blank canvas mounted on a wooden structure at Paragon’s main atrium in full view of the public. Stephen Wiltshire, “[D]iagnosed with autism (autistic savant) when he was three years old, ... is acclaimed for his astounding ability to draw detailed cityscapes from memory after viewing them once” (Lim, 2014, para. 8). The completed artwork was eventually presented as a gift to Singapore for the nation’s 50<sup>th</sup> year of independence in 2015. Interestingly, a question was asked during that time if autistic savant artists like Stephen Wiltshire also has *hyperphantasia*? Or could it possibly be his systemizing ability and superior eidetic memory that has enabled him to perform such a feat? There is no direct answer to it, but, hopefully, future research might be able to explain what actually goes in the mind of such an autistic savant artist.

## 2.2 The Offshoots of Phantasia

Other than the different imagination types or subtypes that are on the spectrum, Xie and Deng (2023)

have also identified several offshoots from *phantasia*: They are *meta-phantasia*, *allo-phantasia*, *para-phantasia* and *oneiro-phantasia*. Each of them is briefly described below:

- (i) *Meta-phantasia*: The prefix *meta-* is a loanword from Greek meaning “after” or “beyond.” *Meta-phantasia* indicates imagining after or beyond imagination, or “*phainomai* about *phantasia*.” One good example can be found in the eighth chapter of the book of Daniel in the Old Testament of the Holy Bible. It narrates Prophet Daniel’s vision of a two-horned ram destroyed by a one-horned goat, followed by the history of the little horn, which is Daniel’s code-word for the Antiochus IV Epiphanes, a Greek [Hellenistic king](#) who ruled the [Seleucid Empire](#) from 175 BC until his death in 164 BC.
- (ii) *Allo-phantasia*: The prefix *allo-* means other or different. *Allo-phantasia* refers to other forms of imagination not found on the spectrum of imagination types (Xie & Deng, 2023). An example of *allo-phantasia* is autistic imagination (see Xie & Deng, 2023, for detail) which can be divided into sympathetic imagination and perceptual imagination that can happen propositionally or objectively (Nagel, 1974).
- (iii) *Para-phantasia*: The prefix *para-* means close, beside or beyond. *Para-phantasia* refers to a subconscious form of imagination that is also known as a Third Man Factor (also known as the Third Man Syndrome), which has been reported in situations where an unseen presence (e.g., a spirit) provides comfort or support during traumatic experiences (Geiger, 2009).
- (iv) *Oneiro-phantasia*: This refers to an unconscious form of imagination consisting of images, ideas, emotions and sensations all jumbled up to form *interobjects*<sup>4</sup> (Blechner, 2001) during certain stages of sleep. Hunter (2013) called it *dreams* and listed it as one of the eight types of imagination.

### 3. CONCLUSION

Imagination is a powerful psychological tool which many, if not all, people can deliberately use mental imagery to visualize desired outcomes (e.g., like winning a contest or solving a problem) or mentalize in order to understand the mental state of oneself or others that underlies overt behaviour (e.g., beliefs, desires, feelings, goals, needs, purposes, and reasons) (see Fonagy et al., 2002, for detail). In addition, imagination can be harnessed by counselors and therapists to access and process prior experiences, manage complex emotions, or relax the mind and body through meditation. While still not fully understood, there is a strong association between the mind (*noos*) and the body (*soma*) known as *noosoma* (see Xie, 2023, for detail) that can be tapped on to raise the awareness of mindfulness and bodyfulness, respectively. Professionals trained in cognitive health or wellness may employ imagination in the form of facilitated therapeutic imagery to help their clients address a number of challenging issues related to social emotional concerns (e.g., anxiety, depression, grief, shame and stress), social relationship problems (including boy-girl relations, family dynamics and parenting concerns), trauma and substance abuse.

### 4. ACKNOWLEDGEMENT

None.

### 5. COMPETING INTERESTS

Author has declared that no competing interests exist.

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<sup>4</sup> The term *interobject* (first coined by Dr Mark J. Blechner in 2001 in his book *The Dream Frontier*) refers to a dream phenomenon of an object intermediate or in-between two other known objects.

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