The Visual Agnosic: Lacking Recognition

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Abstract

The ability to perceive and recognize ourselves, and the environment around us, are determining factors in understanding the self and identifying selfhood. This paper presents the impairment known as visual agnosia, with an emphasis on prosopagnosia or "face-blindness," which hinder one's ability to perceive crucial elements of the social environment, particularly the identities of other people. Based on neurological case studies and anecdotal accounts of agnosia, this paper will demonstrate the fundamental ways in which identity is affected and show that visual agnostics are able to create adaptive selves through means of living day-by-day with the condition.

Oliver Sacks describes his personal experience with the neuropsychological condition known as prosopagnosia in his novel, *The Mind's Eye* following his cancer diagnosis and vision loss to one side. He emphasizes that face recognition is crucial for social interaction and his inability to recognize faces at a glance results in the alternative: taking note of details such as a favorite handbag or the way in which someone spoke or walked to help identify who that individual was. His alternatives to recognizing faces are indicating objects affiliated with that individual or the way in which a person speaks, which are the everyday adaptive mechanisms to dealing with prosopagnosia. "I avoid conferences, parties and large gatherings as much as I can, knowing that they will lead to anxiety and embarrassing situations-not only failing to recognize people I know well, but greeting strangers as old friends (Sacks, page 92)."

Before starting this research, I attempted at a diagnosis for myself. It wasn't that I believed that there was something drastically wrong with my brain but I sometimes find it difficult to recognize new faces, even following a brief introduction that could have been just weeks prior. The slightest manipulation, whether a guy grew out his facial hair or a girl changed her hair color, triggers an uncertainty that makes it embarrassing for me to figure out if I remember this individual or not. Is there a recognition malfunction in my brain that I'm not aware of? Or is it merely that my memory is playing tricks on me?

After a bit of educational investigation and reading about Sack's lack of recognition, I became intrigued with the phenomenon of prosopagnosia, which involves the inability of a personal to recognize faces even though the visual processing and intellectual functioning of the brain are intact. This is nothing close to what I thought I experienced, as the impairment is, quite frankly, very severe. The condition falls under a larger category known as visual

agnosia where the brain lacks the ability to recognize objects (in addition to faces), and the individual has no idea what the object is or how it is used despite being able to describe it's physicality (Humphreys & Riddoch, page 7). I came to realize that my forgetfulness was merely a matter of selective attention, and therefore, selective memory but knowing that there are others who experience these severe deficiencies influenced the curiosity to know more about these psychological disruptions and the impact that they have on individuals' day-to-day lives.

The purpose of this piece is to tell a story of a psychological phenomenon from both empirical and anecdotal perspectives. The empirical discussion will allow for a concrete and tangible illustration of agnosia through research and patient study. As a contrast, the anecdotal accounts present the emotional qualities that are undefined with empirical representation in the paper, because as human beings it is important to have an emotive connection. In addition to those representations, the goal is to address the issue of visual agnosia and it's affect on selfhood and identity, as well as the treatments available to help support visual agnostics on their journey to recovery. The first step of the process is determining the means to which we (psychology's normative group) determine our sense of self and how this differentiates with agnostics (the non-normative).

As individuals, much of how we identify the 'self' stems through our ability to perceive both physical and emotional features and qualities. Professor of neuroscience, Antonio Damasio whose focus is on the study of the conscious mind, emphasized in *The Self Comes to Mind* that the idea of knowing the self is also dependent on how the mind constructs it's 'mapping' of the body and the ability to interpret the objects/environment. In order for an

individual to have an understanding of their position in the environment and to what extent the contents of their surroundings influences their personality and the fundamentals of how they consider 'self," and mentions the following in his text:

"Consciousness is not merely about images in the mind. It is, in the very least, about an organization of mind contents centered on the organism that produces and motivates these contents (Damasio, page 10)."

Further, Damasio interjects that "sensory portal maps play a dual role in the building of perspective (which is a major aspect of consciousness) and then in the construction of qualitative aspects of the mind." Specifically the way in which an individual establishes a relationship between mental components, which are describing the object, and the reaction to that visual experience is an intriguing experience. "We know what we see with our eyes, but we also feel ourselves seeing with our eyes (Damasio, page 208)." For individuals lacking the capability to have a familial sense with the objects to which they come in contact with contrasts the normative idea of visual imaging that is an important factor of our consciousness. But does this hindrance take away from an individual's connectivity to consciousness?

In *What is Consciousness?*, Norton Nelkin mentions that the structure of our consciousness is representative of three elements: phenomenality, intentionality and introspectability and our normal experience depend on these components. They are the entities that make us human beings, which incorporate the ability to create meaning through the senses, create representation of appearance and/objects and to examine and interpret feeling and emotion for oneself and others. But what happens to the perception of self when those mind contents cannot produce the semantic importance centered on the organism (i.e.

body and environment)? What exactly occurs when these processes do not function normally?

Visual agnosia is a rare condition that occurs following brain impairment due to head trauma, stroke or other injury to the head, which specifically affect lesions to the parietal and temporal lobes where semantic information is stored. Based on her detailed research in the scholarly work *Visual Agnosia: Disorders of Object Recognition and What They Tell Us about Normal Vision*, cognitive neuroscientist Martha Farah reports that visual agnosia falls under two types of psychological explanation: apperceptive and associative agnosias. Apperceptive involves the brain's lack of ability to perceive shape and individuals cannot match, name or shift their attention to a names shape (Farah, page 35). Associative agnosia involves impairment of semantic knowledge not confined to the naming (as opposed to the recognition) of visually presented objects (Farah, page 57) and can be further broken down into three additional subcategories: a) associate visual object, b) pure alexia (individuals cannot read normally and c) prosopagnosia (the inability to recognize faces-which speaks directly to the discussion of agnosia and selfhood).

Studies of visual agnosia are analyzed through a clinical perspective, as the condition (similar to any psychological impairment) requires levels of interpretation and patients are tested on separate factors to give meaning to the many faces of VA. Humphreys and Riddoch provide a detailed overview of the "clinical picture" of visual agnosia and its relation to other visual processing disorders. In the 1800's German physiologist Munk, coined the term "mind-blindness" after his initially interaction with apperceptive agnosia. During his study of partial occipital cortical ablation in dogs, the animals were able to see and avoid objects, as well

as look at new stimuli but reacted with uncertainty as if they did not recognize those objects. For example, the dogs did not jump when "threatened" with sticks and they did not recognize basis elements, such as water, food or fire. In the late 1800's, German neurologist Heinrich Lissauer, made the distinction between apperceptive and associative mind-blindness and proposed the two-stage theory of recognition. During that same time, Freud coined the term "agnosia" which was later incorporated into naming the psychological restriction.

Further to Lissauer's apperception-association, psychologist E.K. Warrington categorized the apperceptive association further in three processes: shape coding, figure-ground segmentation and perceptual classification (Humphrey, Riddoch, Donnelly Freeman Boucart and Muller, page 66). Shape-coding is assessed using the "Efron-shape-matching" test where patients have to match shapes and figure-ground segmentation can be assessed by requiring patients to find a target figure against a background of random visuals. Perceptual classification is confirmed by tasks, which require individuals to match objects from different viewpoints. According to Humphrey et al., patients who have bilateral damage have shown impairment at the shape-matching test and unilateral damage results in failure to detect figures (figure-ground).

Among the studies of apperceptive and associative agnosia, psychological research suggests that the latter is most influence within the discussion of identity and self. The following case studies illustrate the affective nature of associative agnosia or 'prosopagnosia.'

In the scholarly text, *Neurological Evidence for Specialization within the Visual Object Recognition System,* Martha Farah and her colleagues recounted their attempt to determine whether prosopagnosia is "truly selective for faces" (Farah & Ratcliff, page 135) and if the

brain has specialized mechanisms for recognizing faces as opposed to objects. The process began with a recognition task where the psychologists employed a recognition memory paradigm on a prosopagnosic patient and normal subjects, and the subject studied a set of photographs consisting of faces and nonface objects followed by the performance of "old/new" face judgment on a larger set of images. In the initial phase of the experiment, the recognition of face to the variety of non-face objects was compared and a favorable outcome occurred in the study of recognition memory since prosopagnosic was able to demonstrate performance disparity (Farah & Ratcliff, page 136). The next phase was geared to test the hypothesis that the interpretation of a face is much harder to recognize than objects. The patients were presented with face and glasses stimuli which were divided into sets of new and old items and data was collected in both study and test phases. The results of the study concluded that while the normal found face recognition considerably easier than eyeglass (object) recognition, the prosopagnosic individual showed "significantly less face superiority" with a ratio of 87:67 to 64:63 (Farah & Ratcliff, page 137). Based on this study and the finding of other psychologists such as McCarthy and Warrington of 1986, neuropsychological data suggest that the recognition of faces and common objects is carried out in subsystems of the entire visual system. The levels of object processing that consist of "early stages" or registration of visual features, intermediate processes involving segmentation of 'figure from ground' and "late" processes involving activation of stored object knowledge or simply the ability to identify what the object is (Humphrey, Riddoch, Donnelly Freeman Boucart and Muller, page 71).

In *Cognitive Neuropsychology and Philosophy of Mind*, Tony Stone and Marin Davies discussed recognition impairment and lack of awareness through a study conducted by Edward De Hanna, Andrew Young and Freda Newcombe in 1987. The patient, introduced as P.H. was observed in his performance of face matching where he was instructed to identify if the faces of in the photographs represent the same person or different individuals. In comparison to normal subjects, he takes a longer time to respond and make errors when it came hi face recognition system. Based on the data collected for this observation it is concluded that facilitated performance of recognition is dependent on recognition taking place and that is a common detail among prosopagnosics. P.H is not capable of putting the face into perspective within his mind with just his recognition alone, which brings on the idea that the prosopagnosic mind needs to have another reliable option in order to conform to the abilities of the 'normal' brain. This is reflected in the personal accounts of agnosics and their adaptive methods to surviving within normative means.

Professor and writer Heather Sellers is another testament to the idea of object pairing and facial recognition among prosopagnosics, since she finds cues such as articles of clothing, speech or hair structure as a way of identifying individuals. In her novel, *You Don't Look Like Anyone I Know*, Sellers narrates the moment in her life where she takes her fiancé (along with his children) to meet her family in Orlando for the first time, and at the beginning of the piece there is an episode where she fails to recognize the man she plans to marry. "I ran up to him and threw my arms around him and stretched up to kiss him; he drew back, pressing me away. It wasn't Dave. I had the wrong guy. Dave-my real Dave- came up a moment later; we laughed about my mistake (Sellers, page 4)."

Further, Sellers experiences another incident where she fails to recognize her own mother in front of her and only realized who she was after identifying something that she was used to seeing her wear. “She ran. She ran from the door back into the depths of the house. And then I saw her shoes. Those boxy white shoes. How could I have not recognized my own mother? (Sellers, page 36).” Based on Sellers’ story, it is observed that this agnosia not only hinders the mind, but also significantly interferes with an individual’s ability to pursue normal things, which are sometimes taken for granted. The fact that she is not capable of immediately knowing important people in her life exhibits both a neurological and emotional setback. Both Seller and Sacks also reveal the concern of the social impediments that resonate through lack of recognition because ‘normal’ individuals will also have a difficult time trying to cope with or understand this particular condition. For Seller, it was not as easy because she attributes some of her issues that occurred in her marriage with the condition that she has learned to deal with over time.

Interestingly there is another underlying (and perhaps theoretical) issue when it comes to agnostics. The lack of recognition is a determent, but there is also this concept of memory loss that has to be considered as well. At some point in their lives (and in some cases where inheritance is the factor this does not apply), agnosics were able to interpret and identify the environmental stimuli (faces and objects) but damage and/or growth of the “disease” in the brain ignited this inability. Memory, specifically recognition memory, is an important component for understanding the environment as we perceive and allow stimuli to become a part of our internal experience. The ability to reflect and return to those memories

through recognition is an advantage for analyzing self and identity, but is recognition memory the driving force behind interpretation of self?

In the article, *The Lockean Memory Theory of Personal Identity: Definition, Objection and Response* by Ryan Piccirillo published in the International Student Journal, Piccirillo discusses the memory theory of personal identity with philosopher John Locke's piece, *An Essay on Human Understanding*. According to Locke, the self is defined as a "thinking intelligent being" that is capable of reason and reflection and personal identity is, therefore, defined as "the sameness of a rational being." Piccirillo argues that due to this correlation, any change in personal identity implies change in self and extends on Locke's idea that consciousness (in this context) is 'equated' with memory, since the conscious mind is a mechanism that thinks and cognates. Locke's debatable view insists that memory is a necessary component of identity, for without it our consciousness is interrupted and we lose sight of how we define ourselves as individuals. I debated whether to include this controversial theoretical notion, but this ideology represents the kind of thought that makes it hard to imagine that agnosics can one day become almost 'cured' of their impairment. If we are led to believe that an individual can only consider themselves as part of the conversation of consciousness and self if they are able to recollect and recognize people and things in the space, we cannot truly explore the means which people like Sacks and Sellers can overcome their prosopagnosia.

Despite the memory theory that indirectly rejects the consideration that people lacking a sense of memory (ie. agnosics) can acquire a sense of self, due to lack of recognition

memory, present psychological study offers the opportunity for visual agnosics to take the next steps to retrain their brains to become capable of visual recognition.

One of the ways in which prosopagnosics attempt to recognize is by cues. For example, Sacks mentioned that although he was unable to recognize a particular face he was able to recognize various things about a face. "Such features become identifying markers by which I recognize people (Sacks, page 91)." A similar approach is used for visual agnosics, who match properties of an object to determine the figure. The study of *Behavorial Change and its Neural Correlates in Visual Agnosia after Expertise Training* addresses the idea of whether agnosic individuals can be retrained to perform visual recognition (Behrmann, Marotta, Gauthier, Tarr and McKeef, page 554).

The concept of functional reorganization acts as the foundation to which the retrain can begin and the psychologists mention studies of blind patients in which activation increases in the visual cortex and learning-dependent changes in the corresponding retinotopic area of the visual cortex are evident among individuals who have experienced monocular training (Behrmann et al., page 555) which suggests that similar functionality in changes to the brain are available to the agnosic mind. Another factor is the ventral temporal visual system and once this system is improved, the article insists that the "dynamic cortical reorganization in the human adult cortex (Behrmann et al., page 555)." The staudy also focuses on category-specific training and participants are trained to identify individual Greebles (based on an adoptive regimen by the neuroscientists) which are computer-generated novel objects used as stimuli in general psychological study of object and face recognition. The subject, S. M who is a 24-year old man with both agnosia and prosopagnosia

(the dichotomy of both conditions) was studied to show if the Greebles training would impact his ability to recognize other stimuli through the controlled set of faces. Following the review of his reaction time and accuracy among identification, it was discovered that S. M. improved his ability to identify and recognize objects but there was still unexpected setback when it came to recognizing faces. This emphasizes the fact that there is something uniquely intrusive when it comes to facial sensory. Overall, the psychologists were able to show that through a technique of consistent and conditioned training of the brain, the patients were able to improve recognition of their environment as it relates to objects and this is a significant step to determining venues of alternative psychological treatments that can propel the future of visual agnosic behavior.

As a way of describing his own 'visual' world within the confines of face -blindness, Sacks notes "While for the most part, I hate the flatness of everything and lament the loss of depth, I occasionally have a sense of appreciation for my two-dimensional world. Sometimes I see a room, a quiet room or a laid table as a still life, a beautiful visual composition, as I imagine it might have been seen by a painter or a photographer constrained to a flat canvas or film (Sacks, page 189)." Through his reflection and what we take away from Sellers account, we can see that although visual agnosia and prosopagnosia are psychological impediments to identifying self and the environment that is emphasized by Damasio and other scholars of the conscious mind, there is a sense of appreciation (or creative tolerance) that exists for individuals with the condition when they can envision a positive perspective. The camaraderie of individuals who have told their story like Sacks and Sellers not only contribute to the discussion of research and alternative method, but is also an emotionally healing mechanism.

Like other psychological conditions, the standard definition of selfhood is not found within the boundaries of these impairments, but the success comes from the ability to creative adaptive selves and environments and the prospects of improvement are well along the way.

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