

A Qualitative Viewpoint of the Perception and Imagination in Persons with Visual Impairment

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Abstract

The contribution provides an insight into the area of the perception and imagination in relation to visual impairment. People with visual impairment are limited in the visual perception. Their imagination depends on the etiology of the impairment and its progression. Imagination is also dependent on psychological or social specifics. We used qualitative research, especially the descriptive design and the comparative design. A comparison of the cases revealed characteristics which are individual in each case. Finally, the area of our interest offers a large number of scientific as well as practical issues. Persons with visual impairment use the perception and imagination in their everyday life for orientation and mobility, study, work, during their leisure time. The potential of the perception and imagination in the persons should be supported by an appropriate learning environment.

Keywords: visual impairment, perception, imagination.

1. Introduction

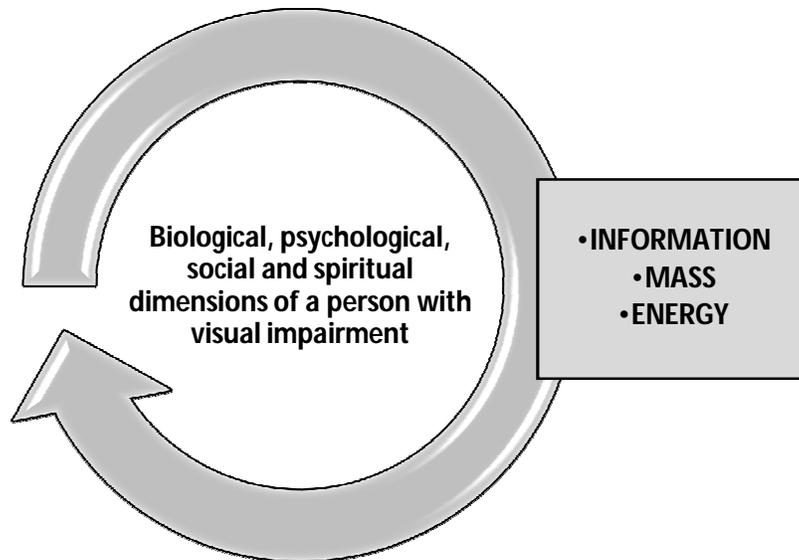
An impaired individual is considered as a multidimensional being. Holism as an approach to an impaired individual means to consider not only the ecological and biological dimension, psychological and spiritual approach, social and cultural sphere, but also the technical and information dimension. From this perspective the perception and imagination are influenced by the various information qualities. The life of an individual with visual impairment as experience, perceived reality or representation is also a philosophical topic and a practical-theoretical phenomenon. The paper outlines particularly a preliminary survey, which is one part of the research project of the Institute of Special Education Studies, Faculty of Education, Palacky University, Olomouc (Ref. No. IGA_PdF_2015_020).

2. Person with Visual Impairment

Visual impairment has been described in a variety of contexts, in the concepts of functional blindness, partial blindness, low vision, and expressions such as visually defective, visually handicapped, visually impaired (visually disabled), visually limited. In recent decades, the diversity of terminological expressions has reflected in a tendency to use the term impairment. A discrepancy between various countries concerns the definition of special needs, and types of difficulty. Some publications on the topic of education include the following terms: students having difficulty, students having impairment, students with disabilities/difficulties/disadvantages. The terminology is designed to support special educational needs, according to which visual impairment is conceived (Florian, McLaughlin, 2013). We can see the conceptual inconsistencies and the certain translation differences. The language aspect and translation issue was, inter alia, emphasised by a Marxist-feminist-deconstructionist literary theorist and professor at Columbia University in New York Gayatri Chakravorty Spivak (2014) at a round table on 4 November 2014 at University of Paris 8. Spivak's publications are translated into many languages, however, the author herself pointed out that expert texts and their terminology were not always correctly translated. Scientists and professionals reveal this fact during conferences, joint debates, round tables, and lectures.

A person with visual impairment is a unity, physically understood organism with an internal environment including mass (physical body, its impairment), energy (work performing and energy consuming organism, system with a biochemical and physical dimension), and information (genetically and otherwise understood information, also cell memory). This unity is confronted with the outer environment also including mass (physical and natural world, which surrounds an individual with own principles), energy (ability of mass to perform work), information (coded data in the surrounding environment). From this perspective, a visually impaired person and the state of such person's visual analyser is a set or a system of material (physical), energy and information potential (Figure 1).

Fig 1: Dimensions of a person with visual impairment



We add that an individual with visual impairment is not a technical term for us but rather a person characterized by a certain condition of the visual analyser and methods of processing information; further text speaks particularly of an individual with a loss of sight.

3. Inner world of the person with visual impairment

For over 25 years scientists have tried to understand the mechanisms behind the generation and projection of images in the consciousness of an individual with visual impairment (Bértolo, 2005). The perception and imagination in persons with visual impairment is the subject of numerous debates today. The experts try to understand this phenomenon in an experimental way and formulate a number of questions. The inner world of a person with visual impairment can be as rich as the inner world of sighted individuals (Montoya, 2013). Let us now name some of the significant persons dealing with perception or imagination in individuals with visual impairment. Thomas Vecchi (Italy) has mapped the area of visuo-spatial imagination in individuals with visual impairment since 1990s. Semir Zeki (Great Britain) published a paper addressing cerebral blindness and its specifics from a neuroscience perspective. For example Thomas (USA) mentions various theories of perception and he focuses on the consciousness of imagery. However, some of the oldest research on brain activity in blind individuals dates from 1970s (Novikova, 1973).

Vecchi (1998) compared visuo-spatial imagination in blind and intact individuals. Within the study, blind and intact individuals were verbally instructed and asked to recall spatial positions of objects (cubes) in a two-dimensional and three-dimensional matrix. The results of the study (see detailed information in the original text) indicate that individuals with visual impairment were less successful in all forms of tasks compared with intact individuals. The results showing that individuals with visual impairment reached worse results than intact participants can be explained by the fact that intact individuals prefer visual perception within their visuo-spatial memory.

Spatial perception and its processing by an individual with visual impairment is affected by missing visual perception, which must be taken into consideration. Vecchi (1998) adds that visuo-spatial memory is a structure capable of processing information from perception modalities. Visuo-spatial memory mechanism is not dependent only on visual and spatial experience but is linked with tactile and other modalities. In completing the tasks, an individual with visual impairment creates visuo-spatial images both in case of complete or congenital blindness. In the development of these images, verbal strategies take a considerable part.

An analogue concept of mental images is supported by Cattaneo, Vecchi (2011), who add that images in blind individuals need not necessarily be visual in the right sense of the word, but they can take the form of an analogue signal (analogue format), which is enriched with a semantic content (semantic knowledge of an individual). In this sense, mental images in these persons are “live”. The results of some studies demonstrate that blind individuals are able to visualize, as claimed e.g. by Bértolo (2005). Congenitally blind persons use the visual cortex to produce information of various kinds – tactile, somatosensitive, auditory, olfactory, or gustatory. The author is inclined to the view of Lopes da Salva, i.e. that auditory and tactile inputs can create virtual images in the brain of persons with congenital blindness, which can be detected e.g. in a dream (EEG record). Sensory modalities are used for the integration of various inputs; this also engages the visual system. In this sense, visual imagination is also possible without visual experience or visual perception. On the contrary, cases where previous visual experience shaped the form of mental images in an individual with visual impairment lead us to a comparison of published cases as presented by Sacks and Hull.

Sacks (2011), describes medical cases related with our issue. Jacques Lusseyran lost his sight as a result of an accident before he was eight. As a result however, he had quite rich visual experience that he could use. In spite of this, there was a gradual change in the previously perceived. Very shortly after he had lost sight he forgot the faces of most people, the father, the mother and he stopped worrying about whether they were dark-haired, blue-eyed, etc. All of a sudden, it appeared to him that sighted individuals worry about these unimportant details too much. Sometimes, in his mind, men and women appeared even without their fingers, heads etc. Eventually however, his vision was started, firstly as light, a shapeless flood of blaze. The visual cortex was denied the supply of visual perceptions, and subsequently was spontaneously awakened (similar to the phenomenon of tinnitus or phantom limbs). In this case it was a capability of visual imagination, in which the visual cortex was activated. The internal vision and mind of the man constructed a kind of “screen”, which projected all thoughts and desires – the screen was always unlimited in space and was present in every moment, everywhere... names, characters, objects appeared in all colours of the rainbow (Sacks, 2011). But Hull (2012) states a somewhat different experience, although he lost sight gradually and became registered blind in adulthood. About a year after he had lost vision, he experienced very lively images, which appeared to be rather hallucinations. These images were often false, even his tendency to project the images gradually started to disappear. An interesting fact is that people, who he had known before he lost sight, retained their faces in his imagination. Those people that he met after he had gone blind did not have such face. According to him, visual perceptions resembled glitter. His visual perceptions were not black but uneven, spotty, sometimes grey, pink-brown to blue-grey. He describes his consciousness as an experience with internal darkness, dealing with what he touches and hears, while details and complexity disappear in his mental representations.

We can see that there is not something that could be identified as a typical experience of a blind individual. In this place, we ask – what is the nature of the perception and imagination in persons with severe visual impairment?

2. Selected Aspects of Research Survey

In relation to the theoretical background we will outline the preliminary research, which focused on the qualitative dimension of perception and imagination in persons with visual impairment. The qualitative questioning was used. Qualitative data classification and comparison of cases reflect the differences in perception and imagination in the target group. Data systematization, first order reduction and coding preceded a largely descriptive approach to the analysis (development of clusters, detecting patterns, comparisons, searching for correlations). The participants are affected by visual impairment in the form of remaining vision. The comparison presents the differences in the quality of experience. The readers will be provided with the statements of specific individuals with a loss of vision and evaluation of their situation in the area of perception and creation of images (sources of the below: preliminary research for dissertation; presented at a seminar of EXPERICE laboratory, University of Paris 8, 3 December 2014).

2.1 Quality of experience

Mary, 29 years old, has visual impairment from birth, remaining vision. The etiology of her visual impairment is associated with scarlet fever in her mother during pregnancy. She states about her own perceived experience: “My visual experience is mainly from the period of childhood, vision, although considerably waning, is still a very significant and important sense for me... in childhood my mum would describe everything... I always had an opportunity to safely touch everything, taste, listen to, experience... she bought me picture books, we sat for hours and analysed every single picture to the last detail.” Memories from childhood, i.e. perceived facts, played a very important role in the development of internal images: “I think I learned to see in this way – I don’t know how to describe and explain this, it was a wonderful link of the internal and external world and this is actually how my vision works today.” The respondent further stated that in terms of perception “the alpha and omega of all visual activities” were colours, lights and shades.

A similar statement was also given by Jana, 35 years old, remaining vision, visual impairment from birth, specifically the Stickler syndrome, considerable deterioration occurred after 15 year of age. Vision is still a very important sense for this woman: “In childhood I acquired a lot of visual experiences... I still use those experiences to complete the images of various things. Although I acquired these experiences until 14 years of age.” Some of the memories of the perceived: “Even though my vision was worse, I did not recognize my visual impairment.” The woman was able to see slightly inaccurate outlines, landscape at a distance, houses, poles, and even most obstacles, known people at a few metres.

In the process of development of internal images an important role is played by previous experience. The perceived is crucial for the development of images, their storing and recalling. The preliminary research focused on three areas – what is difficult for an individual to imagine, what is easy for an individual, and what helps develop images. For clarity reasons the data were arranged into a table. The table shows the differences and similarities given by the respondents (Table 1).

Table 1: Specifics of the perception and imagination

	Mary	Jane
Perception, imagination.	If a person is close, it is possible to perceive the colour of clothing; an important aspect is the colour of the voice. An individual develops an image.	Sometimes remaining vision is used. Voice is mostly preferred, (sound of the voice), the image is developed rather through hearing.
What is difficult to imagine.	Activities and working procedures, specific situations; meanings of postures, movements, facial expressions; everything where an individual lacks experience.	Modern aspects after defect progression, i.e. after 15 year of age (tablet, modern hairstyles, clothing).
What is easy to imagine.	Previous memories (facts about which the person heard or read).	The previously perceived (hills, previous clothing, etc.)

The phenomenological table shows, that the development of images in these two women is dominated by previous memories. Everything not associated with experience is quite difficult to imagine for the women. A certain role is still played by remaining vision, however, hearing is dominant. The table also shows that orientation in specific situations, particularly communication ones that involve gestures, facial expressions, postures is difficult. It is interesting to compare what helps an individual develop images and mental representations – experience, touch, hearing and fantasy images. Changes in the images as a result of a loss of vision are also obvious from other statements of the preliminary research. In particular, statements about the content of dreams reflect the diversity, but at the same time the variability of internal representations.

- Jane: “After my vision deteriorated my dreams changed a bit... I want to see something well but it is still blurry.”
- Mary: “As a result of a gradual loss of the visual functions my dreams have not changed at all as far as sensory content and character are concerned – richness of the colours, sounds, events and feelings.”

Therefore, the change in the images of dreaming appears purely individual, depending on many factors. As mentioned above, in a case recorded by Sacks, a Frenchman Lusseyran had an ability of active visual imagination.

A continuing research survey performed in parallel by two researchers. Anne (32 years old) adds the following about her internal representations: “The image of a thing, what is actually the content of the concept, is rather figurative for me. It is easier for me to imagine nouns, specific things, when a word repeats in a sentence in various contexts, for example in a song.” On the contrary, it is difficult for the respondent to imagine adverbs and verbs, even in remembering. It is also difficult for Anne to imagine specific situations or interactions of persons with respect to the images of verbs (visualization of activities, actions). When it comes to mental representations, the idea of the word concept is perceived by the respondent as “a text written on a paper with a certain meaning that induces something in an individual and causes a response”. Remaining vision clearly plays a significant role, just as previous experience, as was mentioned above.

In the same questioning, Eve (22 years old) gave us answers to a few questions relating to mental representations. “I’m fortunate that I have a musical ear”. She said about herself, and she added that hearing was crucial for her in the development of images. With respect to mental representations as internal images, perception was dominated by the association between verbal concepts and specific things or events, linking concepts and words with specific things, linking words with their auditory forms. “I rather visualize the image of an object than the structure of a word.” As Eve adds, this also involves memory: “I might recall an image from a film, where a phrase was pronounced.” As we can see, remaining vision (albeit very low), previous visual experience and hearing as a compensatory factor are the preferred information channel. With respect to verbal representations it is apparently easier to imagine nouns and specific objects, rather than verbs and activities. Image representations represent a subjective category, which can take various forms in terms of involvement of previous visual experience, richness of colours, lights, shades, outlines, but also an image of blurred vision. Internal images of a person affected by a loss of vision change with time depending on the time of occurrence of the defect, its progression, but also psycho-social specifics of the individual. For an individual, loss of vision represents not only a change in perception and imagination but also a difficult emotional situation.

An individual with visual impairment and his/her development should be the main target of the research of the perception and imagination. Finally it is education that provides an opportunity for human development. Changes and development of the learning environment support growth and transformation. Creativity in lifelong learning in conjunction with cognitive and perceptual learning skills of an individual is understood as a body-mind experience (mind and body are an integrated unity), (Benedetto, 2014).

Conclusion

In relation to training of remaining vision, lower and higher compensatory factors in people with visual impairment, certain specific conditions regarding the learning environment should be observed. The learning environment should constantly change and develop in order to support the growth of the people. This fact should always be respected by the educator/special educator. Stimulation should be gradual. We should respect the specifics of visual impairment in terms of relevant methodologies (spatial orientation, self-attendance, etc.), but with regard to appropriate innovations. We conclude that the research of this area requires the cooperation of experts in many disciplines – cognitive psychology, neuroscience, sociology, cultural anthropology, computer science, cartography, education, special education and so on.

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