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Abstract

Wayfinding has been recognized as an important aspect that should be carefully considered, especially in the design of healthcare facilities. Previous studies have identified environmental elements that influence wayfinding, but there is still a lack of understanding on which properties of environmental elements and features that has the potential to aid wayfinding in hospital areas (Pati, Harvey, Willis & Pati, 2015). This pilot study examined the potential of interior design elements (including artwork) to support the participants' ability to navigate in one of the reception halls at SUS Malmö hospital. In order to focus on the wordless wayfinding capacity, two subject categories were participating, 1) Arabic speaking visitors; 2) and Swedish speaking visitors. The participants, 4 females and 7 males, responded to a questionnaire in dialogue with the researcher. The data analysis showed that artworks, plants, skylight, furniture, wooden material on walls, and a tilted reception cube were the most eye catching physical elements associated with wayfinding. Written signs were seen as helpful but sometimes useless due to the fact that they are written only in the Swedish language, whereas artworks was the common language between most of the participants and therefore interesting to further explore. Since the majority of the participants disliked the artworks in the reception hall, the influence of aesthetic preferences on wayfinding could possibly be a fruitful path of further investigation.

Keywords: wayfinding, hospitals, interior design, aesthetic preference, artwork.

Introduction

Wayfinding is people's ability to orient and navigate from place to place without missing the destination (Passini, Rainville, Marchand, & Joanette, 1998). It is related to people's immediate perception of space as well as their previous spatial knowledge (Roux, 2014). Today, wayfinding is a problem in the complex building, especially in health care facilities (Carpman & Grant, 2001). Pati, Harvey, Willis, & Pati (2015) states that wayfinding need more attention in healthcare facilities, and that there are few studies that investigate the influence of interior design elements on wayfinding. When disorientation occurs people get anxious and stressed, which affects their well-being (Lynch, 1960; Carpman & Grant, 2001). The physical environment in hospitals is important because of its effect on the healing process and the well-being of patients, visitors as well as staff (Huisman, Morales, van Hoof, & Kort, 2012).

Complex environments that do not facilitate wayfinding often lack readable environmental features (Raubal & Egenhofer, 1998). One main observation is that people need visual cues such as maps, directions, and symbols to guide them to their destination and thus to enhance wayfinding (Lynch, 1960; Huelat, 2007). Pati et al. (2015) have studied which visual cues in the physical environment that participate in fostering wayfinding and they have categorized these visual cues into: *primary navigational cues*, *supporting navigational cues*, and *familiarity markers*. In this study, Pati et al. (2015) found that besides common and obvious guiding elements (primary navigational cues) such as maps, signs, and architectural features; and elements that match images from memory (supporting navigational cues) such as functional clusters, structural elements and furniture; there was also a wide range of other design elements that functioned as anchor points or landmarks (familiarity markers) such as artworks, informative panels and display boards, fixed furniture, wall colour, plants, and vending

machines. Among all these other design elements, artworks were associated with the highest frequency of using as a physical element as a familiarity marker or landmark to enhance wayfinding (Pati et al., 2015). However, besides Pati et al. (2015, pp. 51- 64), research on how artworks can be used to improve wayfinding is scarce. The outcome of the pilot study, presented in this paper, calls for further research on this subject, and an attempt to address this lack in the future.

Aim and objectives

In this paper I will discuss a pilot study made in 2015 as part of my ongoing PhD project. The aim of this pilot study was to examine the potential of artwork and interior design elements to support people's ability to navigate in one of the reception halls at SUS Malmö hospital. The study includes a questionnaire, an on-site interview, and a photographic documentation, addressing two main questions: 1) What aspects of the physical environment aid in wayfinding decision making? 2) What role does the design of the interior environment play in the wayfinding process? The study included two subject categories: Arabic speaking visitors; and Swedish speaking visitors. The choice of Arabic speaking participants was made due to the fact that a large number of Arabic speaking immigrants has sought refuge in Sweden during the last year. For people like these, who do not speak the Swedish language and therefore cannot make us of written signs, the impact of the physical environment on the wordless wayfinding capacity is especially crucial.

Theoretical background

The Wayfinding process

The skill of wayfinding emerged from an essential human need to find food and water, to shelter and to avoid danger (Ingold, 2000; Careri, 2002). Wayfinding can be understood as a process (Arthur & Passini, 1992; Golledge, 1999), as an ability (Downs & Stea, 1977); and as an interaction between human and the environment based on spatial knowledge and memory (Golledge, 1999). Wayfinding is the procedure of locating and following a route to reach a destination (Golledge, 1999), a procedure in which one is faced with the surrounding environment and thereafter remembers it (Arthur & Passini, 1992). "*Way-finding is a cognitive and behavioural process*" (Raubal & Egenhofer, 1998), and it is a "*purposeful, directed, and motivated activity*" (Golledge, 1999). Finally, wayfinding according to Passini (1984), is a process that includes information processing, decision making or planning, and decision execution. Information processing is associated with the built environment features and elements which take the main role in influencing people's perception. Therefore people make their cognitive maps based on the knowledge that they acquire from the physical environment in order to make a decision to track their destination. The decision that is taken needs to be executedin order for the person to reach the desired destination (Passini, 1984) as shown in figure (1) below.

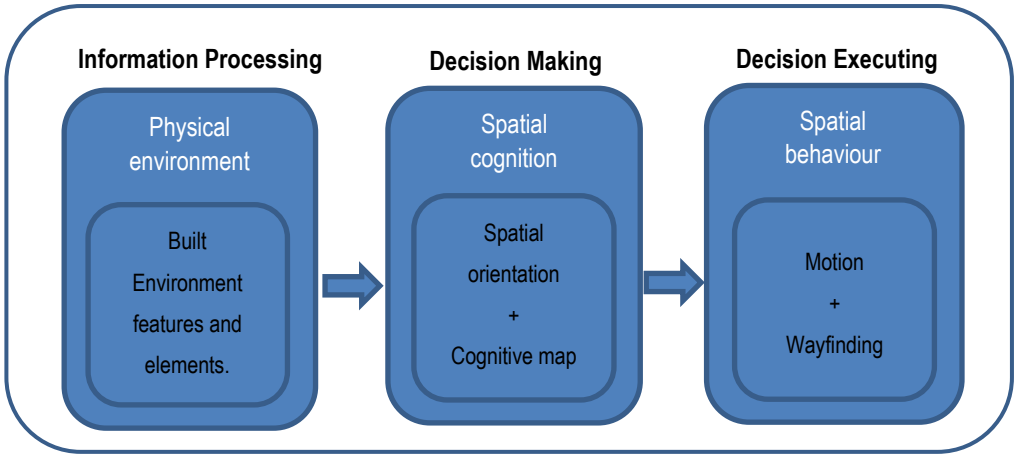

Figure 1. Wayfinding process

To further clarify the definition of wayfinding we need to look at some terms that are often used within the wayfinding literature: Orientation, Navigation and Cognitive Maps. These terms are considered to be integral parts of the wayfinding process and each one has its own function within this process to achieve wayfinding. Orientation is the determining of the person's position in relation to a set of surroundings and other locations (Downs & Stea, 1973). Information about position, direction, destination and rout planning, which are associated with the concept of orientation (Harper and Green, 2000), are considered a primary step towards starting navigation (Golledge, 1999). Navigation is related to the action of walking through a space, while wayfinding is the cognitive process of identifying and choosing a route which leads from an origin point to a destination (Golledge, 1999). The knowledge gained from the perceived environments is presented as a cognitive map (Tolman, 1948). A cognitive map is an *"overall mental image or representation of the spaces and the layout of a setting"* (Arthur & Passini, 1992). Lynch (1960) describes the cognitive map as an image held in the mind, in other words, it is a person's internal reflection of the outer physical environment (Golledge, 1999; Galloti, 2008), where the term physical environment refers to all natural and man-made features of the environment that limit and facilitate people's movements (Lawton, 1970) and hence affect their wayfinding.

Legibility and imageability

The interaction between people and the environment when finding ones way depends on our senses (Lynch, 1981). How we experience and interpret different sounds, smells, and visual elements is dependent on our physical and mental status as well as our social and cultural background (Lynch, 1981). Some people rely most on vision, while other people rely more on other abilities, such as hearing or smelling. According to Lynch (1960) the physical environmental features, which are read or analyzed by people when experiencing an environment, could be categorized into three types of elements: *identity*, *structure*, and *meaning*. These elements are important for creating a *sense of place* that in turn can aid people to find their way, which creates a sense of control (Lynch, 1960).

Initially Lynch (1960) focuses on the sense of place through two elements: structure (the relation between physical elements) and identity (the physical element's distinction from each other). Lynch (1960) puts less emphasis on the meaning element because of its relation to time (history), people's background (society and culture), and people's emotions (Lynch, 1981).

The meaning element is however also embedded in the structure and identity elements by people's sense of *legibility* (Lynch, 1981). How easy it is for people to perceive and understand an environment depends on the readable features of its environmental structure, in other words, the environment's legibility (Lynch, 1960). Legibility is "*the degree of distinctiveness that enables the viewer to understand or categorize the contents of a scene the greater the legibility the greater the preference*" (Bell, Greene, Fisher, & Baum, 2001). At the building scale legibility can be described as the environmental affordances that foster the wayfinding process (Wiseman, 1981). An environment's visual quality depends on the shape, colour, and arrangement of its physical elements, and this visual quality determines and reinforces the environment's degree of legibility. The environmental richness of memorable and legible elements enhances spatial cognition and facilitates wayfinding (Kosslyn, 1975; Wiseman, 1981; Haq, 2001). This definition implies that there is a strong relation between the physical environment and wayfinding. In other words, the physical environment can influence people's cognitive maps and subsequently affect their wayfinding behaviour (Long, 2007). Wiseman (1981) argues that the "*legibility of the environment in complex buildings depends on environmental variables such as signs and numbers, architectural differentiation, perceptual access, and plan configuration*".

Lynch (1960) studied how the features of a place affect people's perception of it, in other words, how people perceive the environment. During this investigation people were asked to draw sketch maps from their memories based on what Lynch calls *imageable* elements: that is the common features of the environment that people use when forming a coherent mental image – a cognitive map. Furthermore, imageability is dependent on two aspects: the physical and the cultural. The first one defines location and appearance, and the second concerns meaning and association (Bell, Greene,

Fisher & Baum, 2001). The physical imageable elements, used by people to aid their wayfinding, are categorized by Lynch (1960) as: *paths*, *landmarks*, *districts*, *edges*, and *nodes*. The characteristics of the physical environment hence have the role to define what lynch calls *imageability* (lynch, 1960).

The literature above indicate that the quality of the physical environment (shapes, colours, and arrangements) determine the degree of legibility of a built environment, and that this in turn help people to form cognitive maps that influence their wayfinding (Lynch, 1960). In this paper I will put emphasis on two of Lynch's (1960) imageable elements: landmarks and nodes. I have particularly chosen these two elements since they act as external references points and strategic foci that help people to find their way. Nodes are focal points and intersection places where people need to make a decision on how to reach their destination. While landmarks are physical features of the environment that attracts attention and are easy to remember. Landmarks are also associated with decision points, which are nodes where people have to choose which destination to follow (Lynch, 1960). According to Pati et al. (2015, pp. 59-64) landmarks are closely related to the concept of familiarity markers, but whereas landmarks are traditionally considered to be visually dominating objects, familiarity markers can be a wide range of different interior design elements that function as landmarks even though they are not necessarily visually dominant. In Pati et al.'s study (2015), mentioned in the introduction, artworks were found to be associated with the highest frequency of using an interior design element as an anchor point or landmark to enhance wayfinding, which is interesting since the pilot study discussed in this paper examined the potential of interior design elements (including artworks) to support people's wayfinding. I believe that he other imageable elements mentioned by Lynch, such as paths, edges, and districts, do not contribute to the analysis of my pilot study in the same direct way as nodes and landmarks do, and hence I have decided to set these three elements aside in this particular paper.

Materials and method

The study setting

Hospitals have an important role in the healthcare system. Studies imply that the very design of hospital's can improve patients' well-being, patient recovery (beside the medical treatment), patient safety, and reduce stress and anger among the staff (Ulrich, Zimring, Quan, Joseph & Choudhary, 2004). This is also true of good wayfinding design, since this is a key factor in reducing stress and anxiety in patients and visitors (Passini & Arthur, 1992).

My pilot study, which is the material for this paper, focused on the influence of interior physical elements on people's wayfinding in one of the reception halls at SUS Malmö hospital. The place of study was chosen due to its interior design, which offered a unique setting of physical features that might promote wayfinding through this node place (Lynch, 1960). The reception hall contains several types of physical elements such as artwork, plants, furniture, skylight, and many exits as well as many openings, as shown in Figure (3). The idea was that the variety of physical elements might support the pilot study in providing me with valuable information on how different physical elements impact the participants' ability to find their way within the architectural space of the reception hall.

The hospital consists of four buildings: A, B, C, D and the emergency building E (building B and D are linked through a bridge). My study site is located at building D in the ground floor in front of the X-ray department. The participants' destination is the surgery department at the third floor of building B. The reason for choosing this destination is the strong relationship between these two departments in the medical field. Figure (2) shows the buildings, the entrances, the destination (surgery department), and the study site location at the SUS hospital in Malmö.

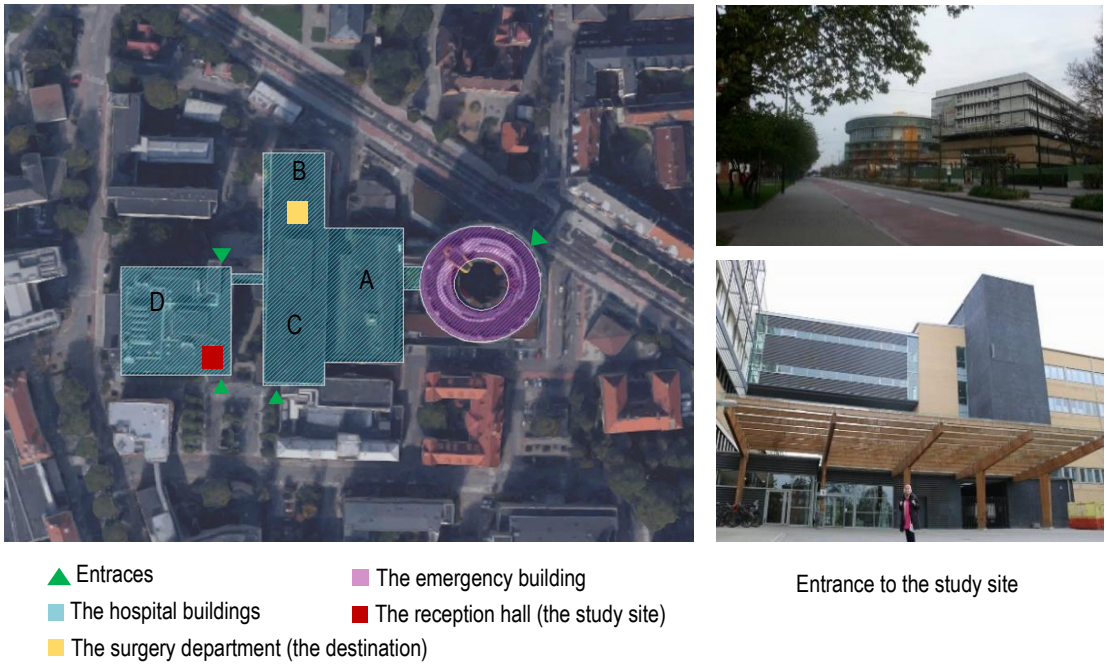

Figure 2. SUS Malmö hospital

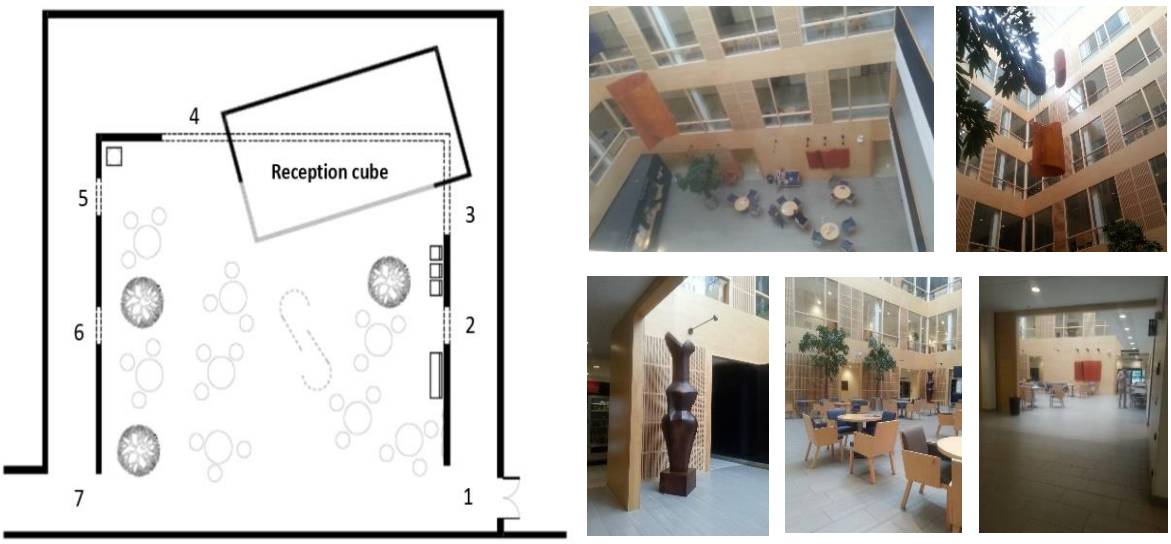

Figure 3. The plan and the interior design of the reception hall at SUS Malmö hospital.

In order to focus on the wordless wayfinding capacity, two categories of subjects participated in my pilot study:six persons speaking Arabic and five persons speaking Swedish. (One of the participants speak both these languages. In my study this participant is counted as a Swedish speaking person because she was born in Sweden 29 years ago) I chose to focus on these languages since a large number of Arabic speaking refugees have recently moved to Sweden and do not yet speak the Swedish language so well (if at all). In my study the Arabic speaking participants' had been living in Sweden for different ammounts of time. All of them (except the one who was born in Sweden) had been living here between 1,5 – 2 years. By chosing these two groups of participants I could test the impact of the physical environment on people's ability to find their way, by makinging a comparison between Swedish speaking respondents, who can rely on informative signs to find their destination, and Arabic speaking

respondents, who can not use informative signs for their wayfinding. The respondents consisted of 11 visitors: 4 females and 7 males. The main conditions were 1) the respondents should not have visited the study setting before; 2) the respondents had to stay and experience the visited reception hall before responding to a questionnaire.

The questionnaire and the additional on-site interview

The questionnaire is a quick and efficient way of collecting data through both open-ended and close-ended questions. It is also a method that is familiar to most people, and it is relatively simple to use (Robson, 2002). The questionnaire consisted of three parts: each part focusing on different aspects of the study. The first part included general information such as occupation, gender, nationality, and knowledge of art. The second part enquired about the studied place itself, particularly asking how the participants perceived various physical elements in the reception hall, such as its interior design, art, furniture and exits. The third part concentrated on wayfinding within the reception hall, for instance what elements that complicate or facilitate wayfinding.

In order to get further insight into people's experiences of the physical environment, and to further clarify some of the questions that were found difficult to understand due to language problems, I decided to also make a qualitative on-site conversation interview in addition to the more rigid questionnaire (Kvale, 1996). It was conducted when the participants were answering the questionnaire and it was based on the participants' responses to this questionnaire. The additional on-site interview was documented by taking notes at the interview situation.

Execution

The questionnaire and the additional on-site interview were carried out at two occasions; weekend and workday. In the weekend the main entrances to the studied place are closed. Because of this the participants had to go through a complicated route to reach the reception hall. While in the work day it was easy for them to reach the reception hall directly from the main entrances.

The respondents answered a variety of enquires relating to the interior design elements influence on their wayfinding in the studied reception hall. The questionnaire included both close-ended and open-ended questions. The close-ended questions had a rating scale that was graded; strongly agree, agree, neutral, disagree, and strongly disagree. The open-ended questions allowed the respondents to include more information on feelings, attitudes, and understanding of the place. The additional on-site interview was made through asking further questions that were based on the respondents' answers to the questionnaire, such as: why do you feel that the artworks' placement confuses you?; or, why do you dislike the use of wooden material on walls? Perhaps that conducting the on-site interview at the same time as the respondents' were answering the questionnaire affected their responses somehow, but I believe that the value of getting deeper access to the respondents' experience, by asking them further questions of the studied place, outweighs this risk.

Findings

My analysis showed the following findings:

1. The most eye catching physical elements were artworks, plants, skylight, furniture, wooden material on walls, and the tilted reception cube.
2. The most helpful elements of the interior design, aiding wayfinding, were signs and artworks. And, the elements of the interior design that made wayfinding difficult were furniture arrangements, and the numerous doors.
3. The most chosen exit was exit number seven, and the alternative choice instead of exit number seven was exit number one. While the least chosen exit was exit number four.
4. The majority of the participants disliked the artworks in the reception hall. Whereas most of the participants agreed that the interior design elements worked well together.

Eye catching physical elements and most helpful interior design elements

The first part of the questionnaire included general information such as occupation and familiarity with art. Even though this information was not the focus of my study, but merely background information, I found the responses interesting and will therefore in this section include them in my findings. The same goes for answers where the participants' cultural background may have affected their response. It was not the outset of my study to look at cultural differences but in some of the responses this was clearly noticeable and I will therefore include this in my findings.

The participants' occupations and familiarity with art split up the participants in the questionnaire into four categories: 1) people whose profession relates very much to art, architecture and interior design, 2) people whose profession relates somehow to art, architecture and interior design, 3) people who are familiar with art, architecture and interior design, but their profession is not related to this, 4) people who are not familiar with art, architecture and interior design and whose profession is not related to this. The first category included one Arabic speaking and one Swedish speaking respondent, in the second category there were only one respondent and this respondent spoke Arabic, in the third category there were two Arabic speaking and three Swedish speaking respondents, and the fourth category included two Arabic speaking and one Swedish speaking respondent.

The second and third categories above recognized the artworks in the reception hall at the beginning of the task. Based on that, the participants found their way through perceiving and following the artworks. The first and fourth categories found their way with the help of many different types of interior design elements, such as artworks, plants, skylights, furniture, the wooden material on the walls, and the tilted reception cube (see table nr. 1 below). As an example, one of the participants was a fire engineer. The first element that caught this person's attention was the wooden material on the walls. This attention was related to safety issues, responded the informant. In case a fire would break out inside the reception hall the wooden material would speed up the course of the fire and help to expand it to the other floors.

Table 1. Eye catching interior design elements ("What perceived elements in the place catch your eye?").

Interior design elements	Arabic speaking	Swedish speaking
Artwork	3	1
Plants	2	1
Skylight	2	1
Furniture	2	0
Wooden material	2	0
Tilted reception cube	1	0
Nothing	0	2

Signs and artworks were mentioned in the study as helpful interior design elements in guiding the respondents' wayfinding. In the second part of the questionnaire no one mentioned the signs as a physical element that caught their eye based on the question "What perceived elements in the place catch your eye? Why?" (see table nr. 1 above). In the third part of the questionnaire there was a question asking about "What elements of the interior environment do you find most helpful in aiding your wayfinding?" and here four Arabic speaking and one Swedish speaking respondent (from all the four categories) mentioned informative signs as the most helpful, but the Arabic speaking respondents mentioned that the signs would only help them in case they were written in a language that they could read. Four Arabic speaking respondents from the first and the third categories and one Swedish speaking respondent from the fourth category mentioned artworks to be the most helpful environmental cues. And lastly, two Swedish speaking respondents (from the third category) mentioned nothing that was helpful to them (see table nr. 2 below).

Table 2. The most helpful interior design elements in aiding wayfinding ("What elements of the interior environment do you find most helpful in aiding your wayfinding?").

Interior design elements	Arabic speaking	Swedish speaking
Artwork	2	2
Signs	4	1
Plants	1	0
Tilted reception cube	1	0
Nothing	0	2

Interior design elements that obstructed the participants' wayfinding were furniture arrangements and the many doors. Two Arabic speaking participants (from category one and three) thought that the furniture was distributed randomly within the space which made the navigation through the place difficult for the respondents, and the repetition of the many doors confused the participants. One suggestion that came forward in the questionnaire was to merge some exits, for instance to merge exit number two and number three, to create a bigger and more obvious exit that would help the participants to find their way, instead of as now getting lost because of the many different doors.

Most chosen exits

The second part of the questionnaire included questions about the most preferred and the least preferred exits for reaching the surgical department from the reception hall. Exit number seven and exit number one were the most chosen exits. These choices were based on the physical environmental features of these exits. Most participants (6 out of 11) chose exit number seven as their first choice. This was because the staircase (a physical element) that leads to the next floor where the end destination (the surgical department) is situated was clearly visible through exit number seven, which enhanced the respondents' ability to find their destination through that exit. Exit number one was the respondents second alternative (5 out of 11) and this was for three reasons: firstly, the participants entered the place from exit number one; secondly, the participants felt that exit number one seemed to lead the way into the hospital in an easier way than exit number seven, this since the main entrance of the hospital was clearly visible through exit number seven and this main entrance leads outside the hospital and not into the surgical department. Thirdly, exit number one has an exit sign. Furthermore, one of the participants had a different wayfinding routine than the others: he always chose the door next to his right hand without specifying one of the exits as the most chosen. He always does this, because from his perspective it makes it easier for him to remember how to return if he loses his way. The reason for this behaviour was a habit rooted in his religion (Islam). The least chosen exit was exit number four (5 out of 11 participants choose this to be the least useful exit), this because the respondents thought that this exit seemed too private and also that it might lead to a dead end, which made the participants feel uncertain about its destination.

Aesthetical preferences of artwork and interior design

Eight participants (from all the four categories) expressed that they thought it was unusual to find artworks inside places that are for medical treatments, such as health-care buildings. Seven participants (from the first, third, and fourth categories) agreed that the elements of the interior design worked well together. At the same time, six of them disliked the artworks in the place. The material of the artworks seemed strange somehow from the participants' perspectives, and the size and placement of the hanging artwork confused some of them. The orange colour of the artwork attracted two respondents from the first and third categories, since they felt that this colour had the principle role of catching the eye. The wooden material on the walls, the furniture, the skylight, and especially the plants made four of the participants remember nature environments from their homelands (Iraq and Syria). Because of the skylight's inlet of daylight two of the participants also experienced the place as bigger than it actually is.

Discussion

People's wayfinding abilities and behaviours are not one and the same. Some people depend on maps and signs for their wayfinding, or prefer verbal communication to find their direction, and other people are depending on visual cues such as signs, artworks, furniture, interior design elements, and other visual features of the physical environment for their wayfinding. In this study, there are individual differences such as people's occupation, their familiarity with art, their culture, and their language that affected the wayfinding decision making process and the physical movement within the studied space.

The participants in my study had different native languages: Swedish and Arabic. This affected their wayfinding possibilities in that informative signs were only written in the Swedish language. At the beginning of the pilot study my intention was to look at the differences between Swedish and Arabic speaking participants in terms of their wayfinding capacities, but the differences in understanding the Swedish language between the two groups did not provide me with more information than what is mentioned above. In addition I found that the participants' background (their occupation and familiarity with art as well as their culture) affected their perception of the environment in more profound ways, which in turn influenced their wayfinding. For example one participant always relied on his right hand to choose an exit to use based on his religion (Islam), and some participants noticed the plants since they evoked memories of the nature environment in Iraq and Syria where they used to live before moving to Sweden.

The pilot study, described in this paper, found that many different physical elements in the studied reception hall at SUS Malmö hospital a node place where the participants need to make a decision before moving on to their destination caught the navigating participants' eyes as landmarks that provided them with useful information for their wayfinding. In other words, these readable features of the physical environment enhanced the environment's legibility and made it easier for the participants to find their way. The different readable features, or imageable elements in Lynch's terms, found in my study include artworks, plants, furniture, skylights, wall material, and the tilted reception cube. These imageable elements affected the participants in different ways in that both positive and negative emotions and experiences tied to the physical environment were found in my study. For instance, the artwork was experienced as impressive in a positive way to some participants, since they were not used to see artworks in hospital environments. Other participants thought that the artwork was huge, and also ugly because of its odd material (sackcloth) and placement, and this made them confused. However, the artwork was functional as a landmark regardless of whether the participants liked or disliked it aesthetically.

Conclusions

The studied reception hall is a node place with legible features that were easy for the participants to notice and remember when selecting a path to follow, such as: signs, exits, artworks, plants, skylight, furniture, wooden material on walls, and the tilted reception cube. Out of these legible features signs and artworks were the most helpful landmarks in aiding the participants' wayfinding. Lynch (1960) states that landmarks provide the environment with orientation cues that aid participants' wayfinding. In my study artworks were the most attractive landmarks in that they were recognizable and usable as orientation cues to many different participants, even non-Swedish speakers. Interestingly enough, the majority of the participants in my study disliked the artwork in the reception hall, but this dislike of the artwork did not affect its role as a visually dominant landmark. Regardless whether they liked or disliked the artwork, it was still a memorable element that aided the participants' wayfinding. This is an interesting finding that opens up for further investigations, where the influence of aesthetic preferences on wayfinding would possibly be a fruitful path.

Thoughts for the future

Visual art in healthcare environments have the potential to moderate patients' stress levels and to aid their wayfinding (Rollins, 2011). Ulrich and Gilpin (2003) argue that the type of art that is used in hospitals should be chosen based on its potential to promote emotional responses, reduce anxiety, and relieve stress, and it should not be chosen based on its praise from art critics and artists or from museum norms for quality. According to Eisen, Ulrich, Shepley, Varni, & Sherman (2008) different types of art supports stress reduction to different extents: where art depicting natural environments reduce stress, pain, and anger, and increase satisfaction to a greater extent than more abstract arts. The physical environment in hospitals can also lead to stress, confusion and worry (Stankos & Schwarz, 2007; Rollins, 2011). For instance if you cannot find your way. When choosing art for health care environments the arts wayfinding capacity should therefore not be overlooked. Additionally, it might be interesting to experiment with the issue of what type of artwork that function as landmarks and which type of artwork that does not, and especially to examine how people's different aesthetic preferences affect this issue.

Limitations

The limitations of this study are evident. The first limitation is on an educational and gender level: the participants have a high educational level (Master and PhD student), which may affect the questionnaire responses, due to their homogenous background. The second limitation regards the types of artworks and their placements, in that there is little variation inside the reception hall. The third limitation is the Arabic speaking respondents in the sample have been living in Sweden for different amounts of time, making it hard to evaluate the cultural differences among the Arabic speaking respondents as well as the cultural differences between the Arabic speaking and the Swedish speaking informant groups. In addition, the number of participants in the study were small and hence it is not possible to generalize the results of the study.

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