

Healing environments in existing buildings – case Finnish rehabilitation centers

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SUMMARY

In ageing societies the importance of healing and restorative environments has been noticed both in practice and in research. The vast literature on the issue has shown that the features of the built environment may have a positive impact on patients and their experiences. These findings have been incorporated in building new healing environments, but at the time of planning older facilities, these research findings were not available. The aim of this article is to study how the modern principles of creating healing environments have been incorporated into healing environments that were built before the new Millennium.

This paper introduces a vast theoretical literature review on the qualities of healing environments. This is done from five perspectives. These are the indoor environment, physical environment, natural environment, sensory environment, and mental environment. In the empirical part of this study, five Finnish rehabilitation centers are studied by reflecting the findings from the literature review with the case rehabilitation centers. The aim of the empirical part is to describe how the principles of healing environments have been utilized in this stock of older facilities that were initially built to be either hospitals or rehabilitation centers.

In theoretical terms this article provides a summary of existing research and utilizes this understanding in a multiple-case study setting in the existing building stock. The theoretical literature review will be used in practical terms to understand how the existing environments could be improved to provide modern healing and restorative experiences. To make this easy, this paper presents a list of features that affect the healing nature of an environment according to the theory. This list is intended to give food for thought for those interested in improving the existing stock of healing environments.

INTRODUCTION

The healing and restorative aspects of built and natural environments have been studied a lot. This research has convinced the designers and other practitioners of the need to create healing and restorative environments that enable or even enhance the wellbeing of the patients. The principles of healing and restorative environments have been utilized in creating healing environments – such as hospitals or rehabilitation centers.

There is, on the other hand, a vast stock of buildings that were built before these principles of healing environments were scientifically verified. This article is interested in this stock of buildings. *The aim of this article is to study how the principles of creating healing and restorative environments are incorporated into the older building stock of Finnish rehabilitation centers.*

The incorporation of the principles of healing and restorative environments into older buildings may have happened in two ways. First, the buildings may have been built in a way that is “intuitively” healing and restorative. Another possibility is that healing and restorative elements have been brought into these buildings after they were built. Some elements are easily added to the existing building stock (as artwork) or they may have

been added when the building has been renovated (outdoor views through larger windows).

This article is divided into a theoretical part and an empirical part. The theoretical part consists of a theoretical literature review on the healing and restorative aspects of healing environments. The existing literature is divided into five subsections - indoor environment, physical environment, natural environment, sensory environment, and mental environment. These viewpoints are used in the empirical part to assess whether and how the theoretical aspects of healing environments are present in Finnish rehabilitation centers. The data is gathered with walkthrough audits in these rehabilitation centers.

For practitioners this paper provides an understanding of how to create healing and restorative environments into the existing facilities. As the restorativeness is ever more important in all building types, this paper also offers insights for those who design and create other kinds of environments, such as homes, schools, offices or commercial sites. Theoretically this paper summarizes the existing research and offers some theoretical insights into the healing nature of one specific type of building that is seldom researched, namely the rehabilitation centers.

FRAMEWORK

Salonen and her co-authors have written a vast review (Salonen et al., 2012a,b) on the literature concerning healing and restorative environments. This literature review is used as the basis of analysis in this paper. The research referred to in the literature review is thematically divided into five subgroups: the indoor environment, physical environment, natural environment, sensory environment, and mental environment.

The indoor environment refers to the indoor air (HVAC systems), the building materials and the maintenance services. The physical environment refers to all the easily adjustable fittings in the space – the furniture, fabrics and decorations (excluding arts). The indoor environment and physical environment form the context of the built structures in the healing environment. Around this build structure, there is the natural environment – that is, the outdoor environment of the rehabilitation center.

While the first three viewpoints look at the environment from a physical and tangible perspective, the remaining two perspectives are related to how a person experiences the environment. The sensory environment refers to experiences that are obtained through

the five senses. The mental environment involves the mental processes that are caused by the environment. These five viewpoints to healing environments are briefly presented in the following paragraphs.

Indoor environment. The elements of the indoor environment are related to the building technology (such as building materials, lightning, or HVAC) and the facilities management (such as cleaning, maintenance). These requirements are common for almost all types of buildings, but there are some special requirements for buildings such as hospitals. For example, HEPA-filtering in certain types of hospital settings has been shown to be important in preventing diseases (Dharan and Pittet 2002).

The physical indoor environment must be on a certain level, and if it is not, healing and restoration are not possible (or they may be really difficult to achieve). There is often a “zone of tolerance”, and outside this zone the environment may not be healing and restorative. The indoor temperature is a good example of this. If the room temperature is too low or too high, the environment does not enable restoration and healing (Kaplow & Hardin, 2007; Niemelä & al., 2002; Seppänen & al., 2004).

Physical environment. Many aspects of the physical environment affect the healing nature of the indoor environment. An important part of this environment is the furniture. The furniture of healing and restorative environments has been studied a lot. It has been suggested that wooden elements in furniture have indications of psychologically beneficial effects (Nyrud, & Bringslimark, 2010).

Further, studies suggest that carpets promote improved patient outcomes via an effect of heightening social support, reduction in falls and injuries, glare reduction and patient comfort (Harris, 2000a; Anjali, 2006; Counsell, & al., 2000; Willmott, 1986; Carpman & Grant, 1993; Horton, 1997 Radke 1997; Weinhold 1988). It has also been claimed that flexible and comfortable furniture enhances wellbeing, as it makes it possible to construct context-specific social settings that support healing and restoration. Moreover, ergonomic furniture and furniture that adjusts to special needs are good for healing and restoration (Melin & Gotestam, 1981, Sommer & Ross, 1958; Ulrich, 2000; Peterson & al., 1977.)

Natural environment. The widely studied Attention restoration theory (ART) suggests that natural environments are restorative (Kaplan & Kaplan, 1989; Kaplan & Talbot, 1983). Many studies also confirm that natural elements in an environment make it healing and restorative. This applies to natural elements (water, natural sounds) inside

buildings, outdoor views from windows and to access to garden and other outdoor environments.

Outdoor activities reduce stress related diseases (Grahn & Stigsdotter, 2003) and arouse a feeling of freedom, happiness and connection with nature (Chiesura, 2004). It has been shown that time spent in nature benefits children with ADHD as well as adult workers suffering from stress and elderly people with Alzheimer's disease (Bird, 2007; Kinnunen & Mauno, 2009; Takano, & al., 2002). In hospitals, gardens allow for restoration for patients, staff, and family members (Cooper-Marcus & Barnes, 1995; Ulrich 1999; 2000; 2002). It is also reported that having favorite natural places in residential neighborhoods supports the residents in regulating their daily stress and moods (Korpela and Ylén 2007; 2009; Korpela et al., 2008; Korpela et al., 2010).

The presence of nature inside the premises is also beneficial for the patients. One way to ensure this presence is through windows. It has been shown that views from windows have a restoring effect on individuals (Kaplan & Kaplan, 1989) as they increase general wellbeing and affect hormone production and regulation (Leather & al., 1998, Küller & Lindsten, 1992). On the other hand, it has been observed that a lack of windows and outdoor views has many negative effects on humans (Keep & al., 1980, Parker & Hodge, 1976; Wilson, 1972; Ulrich, 1991).

The views are not the only positive natural element that is acquired through the windows. The natural light also has many favorable effects on healing and restoration. According to research, daylight improves patient recovery rates and improves the vision of the elderly (Edwards & Torcellini, 2002) Further, access to daylight alleviates pain, improves sleep and circadian rhythms among patients and reduces the length of stay (Anjali, 2010; Kaplow & Hardin 2007; Ulrich & Zimring, 2004). (For other advantages, see: Edwards and Torcellini 2002; Robbins 1986).

Bringing natural elements into the buildings has been one way to get the feel of nature inside the buildings. One typical way of doing this has been the use of natural materials in interiors. For example, wood, rocks and plants have been used for this purpose. The effect of plants is the most often studied aspect. The research suggest that plants provide stress reduction and increase pain tolerance (Bringslmark & al., 2009), lower blood pressure (Lohr & Pearson-Mms, 1996, Lohr, 2000), make people calmer and more relaxed (Browne, 1992; Randall & al., 1992), increase attentiveness and work efficiency and reduce physical discomfort (Lohr & Pearson-Mims, 1996; Lohr, 2000). Moreover,

the scents of plants and freshly cut grass change the increment of human emotions and awaken memories (Rappe & al., 2003; Worden & Moore, 2003).

Sensory environment. Individuals perceive their environment through tasting, hearing, touching, seeing and balancing. The colors and how they affect the individuals have been studied extensively. *Table 1* summarizes some effects of colors on humans that have been studied.

Table 1: How colors affect individuals

Colors	
Red	<ul style="list-style-type: none"> • High energy, passion, induces excitement, increases blood pressure, can cause fatigue, a stimulant effect (Friendrich, 1999; Kaplow & Hardin, 2007; Loiri & Juholin, 2006; Naughton, 2003; Starkweather et al., 2005).
Orange	<ul style="list-style-type: none"> • Emotional expression, warmth, induces excitement, increases blood pressure, can cause fatigue (Friendrich, 1999; Kaplow and Hardin, 2007; Loiri and Juholin, 2006; Naughton, 2003; Starkweather et al., 2005).
Yellow	<ul style="list-style-type: none"> • Optimism, clarity, intellect, mood enhancement, induces excitement, increases blood pressure, can cause fatigue, aging (Friendrich, 1999; Kaplow and Hardin, 2007; Loiri and Juholin, 2006; Naughton, 2003; Starkweather et al., 2005).
Green	<ul style="list-style-type: none"> • Healing, calming, nurturing, unconditional, love, reassuring (Friendrich, 1999; Kaplow and Hardin, 2007; Loiri and Juholin, 2006; Naughton, 2003; Starkweather et al., 2005).
Blue	<ul style="list-style-type: none"> • Relaxation, serenity, loyalty, calming, healing (Friendrich, 1999; Kaplow and Hardin, 2007; Loiri and Juholin, 2006; Naughton, 2003; Starkweather et al., 2005).
Violet	<ul style="list-style-type: none"> • Healing, calming, spirituality, stress reducer, feeling of inner calmness (Friendrich, 1999; Kaplow and Hardin, 2007; Loiri and Juholin, 2006; Naughton 2003; Starkweather et al., 2005).

As already pointed out, the research suggests that floral smells have a positive impact on individuals, whereas the “smell of hospital” is perceived as stressing. However, when the odors are evaluated, it is important to note that individual differences in experiencing different smells vary greatly; a pleasant smell for one person can be a negative smell for someone else.

Art and music can be used in creating healing and restorative environments. It is reported that art makes patients and staff feel better (Hathorn and Nanda 2008), lowers stress and anxiety levels, promotes restoration from stress and improves the mood among patients, visitors and staff (Hathorn and Upali, 2008; Ulrich, 1991b; 1999; Ulrich et al., 1993a; Ulrich et al., 1993b). Art also reduces the length of hospital stay and the intake of pain medication and stabilizes blood pressure and heart rate. Further, it lowers patient ratings of perceived pain, increases satisfaction with healthcare services and staff-reported satisfaction. (Ulrich and Gilpin, 2003.)

Further, art functions as a positive distraction (Hathorn & Nanda, 2008) and improves the perception of care at the hospital, and it also serves as an element that users identify with (Hathorn & Nanda, 2008). Patients exposed to figurative arts have less anxiety, require less pain medication and have quicker post-operative recovery times (Diette & al., 2003; Ulrich, 1984b, Ulrich & al., 1993). Abstract art (abstract images, or art having a sense of "challenge" or ambiguity) (Lankston & al., 2010) can increase stress and worsen other outcomes in many patients, even compared to patients viewing no pictures at all (Ulrich, 1991; Ulrich, 1992; Ulrich, 1999).

According to several studies, music can be beneficial in health care settings if doctors and patients have a chance to listen to music of their choice (Standley, 1986; Allen, Blascovich et al., 1991; Menegazzi, Paris et al., 1991; Allen & Blascovich, 1994). In acute care settings, music can be used in order to cover disruptive noise (Helmes & Wiancko, 2006). As an aspect of sound, the health benefits of silence may even exceed those of healing sounds. Silence is an important element of health retreats and spiritual canters throughout the world (Morrison & Saini, 2010). Many airport terminal buildings are now equipped with spaces (for example, a well-insulated and wired room) where stressed-out transit passengers can retreat into total silence or contemplation or enjoy and relax with appropriate music of their choice (Morrison & Saini, 2010). There is no reason why such an idea could not be extended to different work places, such as healthcare settings.

When creating healing and restorative environments, it is important to take into consideration the needs of individuals. As individuals sense their environment in different ways, the same things are not always healing and restorative for different persons. One term used in research to illustrate this is to speak about “preferred arts”. If an artwork is not preferred by a person, then it does not have a healing or restorative effect, even though for another person the same piece of art can be very restoring and healing. The same also applies to music.

Mental environment. The mental environment includes things such as feeling secure, feeling in control and finding one's way around. It is important that an environment is safe and that the users of healing environments perceive the environment as safe. The feeling of security leads to a feeling of mastery and belonging and it reduces fear (Zeisel et al., 2003). In contrast, the feeling of insecurity leads to fear, psychosomatic symptoms and anxiety (Niemelä et al., 1997).

Many studies suggest that a sense of control in the environment increases spatial satisfaction. On the other hand, it can also affect physical and psychological health (Carr, 2011b; Gatchel et al., 1989; Rodin, 1986). Further, people who feel they have some control over situations cope better with stress, are less stressed and have better health than people who feel that they lack control (Evans & Cohen, 1987; Ulrich, 1999). Some examples of things that add to a sense of control include the possibility to adjust the indoor conditions to suit personal needs, the possibility to control the sensory stimulations (e.g. whether the television is on or off (Ulrich et al., 2003) and the possibility to adjust the furniture to personal and situational needs.

One thing that is related to the feeling of being in control is way-finding. If a person finds his way easily around in an environment, the person tends to feel that he has control over the situation (Ulrich, 2000). Thus, easy way-finding leads to the same positive outcomes as being in control (Evans & Cohen, 1987; Ulrich, 1999) On the other hand, confusion arising from difficulties in way-finding produces stress and affects the patient outcomes negatively (Ulrich, 2000). The research suggests that clear signage creates a sense of safety and caring and reduces the need for staff to advice patients and visitors (Hossi & Jänkälä, 2008).

It has been shown that the complexity of an environment and the variety of the spaces has positive effects on patients. It leads to greater cognitive functioning and beneficial physical activity in the elderly (Davidson and Bar-Yam, 2011). It also affects emotional and cognitive functioning and may affect immune-system function (Davidson and Bar-

Yam, 2011; Parsons, 1991). Further, it reduces depression, social withdrawal, misidentification, and hallucinations in Alzheimer's patients (Brawley, 1992; 1997).

METHODS AND SELECTION PROCESS

There are about 100 rehabilitation centers in Finland. Many centers have more than one building and typically these buildings have been built in many phases over several decades. Still, most of this building stock has been built in the 1900's. Some buildings even date back to the time period from 1880 to 1900. One big challenge in this building stock is to bring it up to date and to create healing environments that meet the needs of modern demanding customers (Rantanen & Rasila, 2011.)

The empirical part of this study was carried out in five of these rehabilitation centers. The case organizations were operators in the field, managing turnover, the number of beds and the size of the premises. The case sites represent well the large rehabilitation centers in Finland. The smaller rehabilitation centers are excluded from this study, even though the principles could probably be successfully used in these as well.

The data was gathered with a walkthrough audit in the case rehabilitation centers. Some users of the premises took part in the walkthrough, so it was possible to get some user insights. They were also able to tell if the situation during the walkthrough was comparable with the normal situation or if there were some special circumstances where the environment was somehow different (for example, in the wintertime vs. summertime). A lot of photos were taken along the journey and these photos were used in the analysis.

RESULTS AND ANALYSIS

Indoor environment. In all case sites, the indoor environments were at a decent level, as the building systems were already quite old and each site had some problems. These problems were hard to repair as it would have required costly and expensive renovations. Thus, these problems were addressed by paying attention to the use of facilities. For example, a room with low indoor air quality was used for short-term activities only. There were not any special indoor air solutions for a healing environment (HEPA filtering, for example), even though at one case site it was acknowledged that their patients should probably have a better indoor environment than the normal level.

In rehabilitation centers, there are many activity levels in different parts of the building. Having, for example, gymnastics in one part and massage in another part of the building sets different requirements for indoor environments. The indoor temperature is one example of such difference - the massage is enjoyable in a warmer setting, whereas gymnastics put more strain on indoor air quality. Adjusting the indoor environment for different user groups and use situations would be necessary, but it is rarely possible in the existing rehabilitation center building stock.

The following questions that arise from the theory may be used in contemplating improvements to the indoor environment:

- Does the indoor air feel comfortable to all senses?
- Do the patients have special needs regarding the indoor air? (for example, HEPA-filtering)
- Do the patients have possibilities to control the indoor air conditions?

Physical environment. The physical environment is much easier to change during the use phase of a building. Thus, the rehabilitation centers that were studied had had several changes done in this setting after the initial construction or renovation. Wooden elements were extensively used in wall panels and floorings and wooden materials were also used in the furniture. Carpets were used as flooring material, for example, in accommodation facilities for acoustical reasons, but other kinds of carpets were rare. Reasons for this included the difficulty in moving around in premises with many carpets with walking frames or wheelchairs. The carpets were also seen as hard to maintain and they were assumed to cause problems in the indoor air quality.

Every rehabilitation center had put special emphasis on having comfortable and ergonomic furniture for patients. The most common way to do this was to offer higher chairs and sofas for persons with difficulties in moving around. The accessibility was also taken into account in all areas so that there were handles and accessible toilets for those who might need them. These solutions were mainly fit-for-all solutions, so the possibility to adjust the environment according to individual needs was uncommon. The automated bed was one example of the possibility to adjust the environment to meet individual needs.

The ease of moving the furniture was a challenge that had recently been noted in the rehabilitation centers. The easy movability of furniture had not been taken into account previously. It seemed that the public environments in rehabilitation centers were not designed to enhance social interaction. On the other hand, the “class-rooms” had furniture that allows for changing the setting for different kinds of situations.

The following questions that arise from the theory may be used in contemplating improvements to the physical environment:

- Would wooden elements in the furniture and surfaces add restorativeness and healing?
- How could carpets be used to increase restorativeness and healing?
- Is the furniture flexible – are they movable and adjustable to individual needs?
- Is the furniture comfortable and ergonomic for all patient and employee groups?

Natural environment. The case sites were all surrounded by beautiful natural environments that were full of possibilities to enjoy the nature. This environment was utilized therapeutically for group activities. There was still room for improvement, as the paths and other possibilities for outdoor activities were not marketed as well as they could have. The beautiful natural environment was one reason why these buildings were originally built, and thus the views from windows were taken into account already in the building phase of the rehabilitation centers. None of the case sites had special gardens for the patients, even though the employees of the centers were keen to have gardens.

Outdoor elements were also, to some degree, present in the Finnish rehabilitation centers. Plants were the most common outdoor elements. Furthermore, there were fireplaces, aquariums, and sand and rocks were also used at one site as indoor decoration material. None of the sites had tried to create an overall outdoor atmosphere inside the premises, as the natural elements were separately placed and different and did not form any entities.

The following questions that arise from the theory may be used in contemplating improvements to the natural environment:

- Is it possible to bring elements from nature to indoor areas (such as water, plants...)?
- Do the windows allow for natural views?
- Is there enough natural light in the premises?
- Is there an easy access to outdoor environments?
- Is the garden easy to access and use?
Is there a possibility for the patients to use near-by outdoor environments (jogging routes, parks...)?

Sensory environment. It is possible to create one common color scheme for an entire rehabilitation center or it is possible to have different color schemes for different types of rooms. Mostly the rehabilitation centers had tried to create one coherent color scheme for the entire site. The colors were not used intentionally to create different atmospheres, even though the colors were appealing at every site. At one site they had planned to have a video wall where the color would change according to the situation that the room is used for. Thus, for rehabilitation the wall would be calm and restorative and for a meeting it would be innovative and activating.

The smells of rehabilitation centers were not intentionally created or managed. There were some bad smells in some rehabilitation centers. If there was no a technical solution found for the problem, these spaces were abandoned. The rehabilitation center representatives noted that it is really important to not have a smell of hospital in any part of the premises. Positive smells were occasionally present – for example, in the cafeteria – but these smells were unintended and did not last long.

Moreover, the sense of hearing was not utilized much in the rehabilitation centers. In day time music was not present in the premises. The only place where there could potentially be music was the group sessions (for example, gymnastics) but this music was situation-specific and limited to short periods of group activities. In some rehabilitation centers, there were restaurants that had music in the evening, sometimes even live music. The patients could decide for themselves if they wanted to go to the restaurant to listen to music or not.

Every rehabilitation center had some artwork inside the premises, and in some occasions there was artwork even outside the premises. This artwork was mostly abstract art, which, according to the research, is the most un-healing and restorative

form of art. In one rehabilitation center, there was a “path of art” that the visitors could follow on their own and study the history of the artwork.

One issue emerged in the cases that was not mentioned in the research and the related checklist. This was sensing through touching. At one case site, there was a box of fine sand that allowed the patients to draw on the sand while contemplating their own lives. Further, there were building materials that were nice to touch, and this also stimulated the sense of touch.

The following questions that arise from the theory may be used in contemplating improvements to the sensual environment:

- Is the color scheme good for restoration and healing?
- What are the smells in the environment? Is it possible to abolish bad smells such as the *hospital smell* and how could the pleasant ones be better utilized?
- Are there possibilities to listen to music in the premises? It is possible to decide individually what music to listen?
- Is there space for being silent?
- Are there pieces of art in the premises? Do individuals have a choice over the art in their rooms?
- Are the natural and artificial lights suitable?
- Are there glares that should be avoided?
- How is it possible for the patient to adjust the sensual environment (sounds, lights, noises...)?

Mental environment. One of the most challenging aspects of creating healing and restorative environments into Finnish rehabilitation centers was to find a way to help the patients move around in the premises easily. The rehabilitation centers are complex facilities and finding around is hard for everyone, not to mention persons with mental or physical disabilities. The way-finding was made easier by directing the patients to certain meeting points. Other methods of way-finding were rarely used.

The feeling of security and the feeling of control were elements of healing and restorative environments that were hard to assess with the checklist. Understanding these phenomena would require a more thorough understanding of those features of an environment that make people feel secure and in control.

Finally, there was much sensory stimulation in the rehabilitation centers, even though it was not really consistently planned. There were places for reading magazines and libraries. There were games and puzzles, and as already mentioned, there was an art path at one site. Another way of creating stimulation is to put unexpected elements into

the space so that they stimulate thinking. This kind of ideology was present at one site where there was, for example, dozens of rubber ducks covering one wall.

The following questions that arise from the theory may be used in contemplating the improvements to the sensual environment:

- Is it easy to find one's way around in the premises?
- Does the environment enhance the feeling of security?
- Does the environment enhance the feeling of control over the environment? Does the environment offer different kinds of sensory stimulation?

DISCUSSION AND CONCLUSIONS

The theoretical part of this article outlined the research conducted on healing and restorative environments. This analysis was done under five subtopics. These were the indoor environment, physical environment, natural environment, sensual environment, and the mental environment. One viewpoint that was not included in this summary was the viewpoint of the personnel and how improving the workplace environment allows for enhancing the healing and restoration of the patients indirectly. For example, if the nurses have functional working environments, they have more time for the patients.

Some of the elements of healing and restorative environments are must-be elements that are crucial to all kinds of built environments. Having these elements does not make an environment healing, but without these, healing and restoration are difficult or even impossible to achieve. Other elements increase healing and wellbeing if they are present, but if they are not present, it does not mean that an environment cannot be healing and restorative. Art is a good example of this. Further, there are elements that may be healing and restorative in one situation and for certain persons and not in another situation or for another person. Preferred art is one example of such elements.

The healing and restorative elements in the Finnish case rehabilitation centers were quite similar. In all case sites the indoor environments were at a decent level, but as the building systems were already quite old, each site had some problems. Further, the possibility of adjusting the environment to situational and person-specific needs was not present. In the physical environments the solutions were also again quite similar and the aim was to create fit-for-all environments instead of creating environments that adjust to individual needs.

Further, all case sites were in beautiful natural settings and all faced the challenge of how to use the outdoor environment better for restoration and healing. One possibility that emerged was to create gardens that may be utilized all year round. The sensual environment was utilized in each rehabilitation center but not to a full extent. One thing that did not appear in the literature review was the potential to use touching as a gate to healing and restoration. This aspect of healing and restorative environments calls for further research.

The mental environment seemed to be an aspect that had received the least thought. Room for improvement lies in creating environments that make people feel in control and safe. For further research it would be important to understand the elements in the environment that make people feel safe and in control. Finally, some attention should be paid to the way the people navigate in a rehabilitation center. ICT may become an enabler in this regard, as location information could enable to guide people around the premises in an individual manner.

This article is only an initial exercise on a journey towards understanding the restorativeness and healing nature of rehabilitation centers. The work is at its beginning and problems related to the concepts of healing and restoration and to the elements of environments that enhance healing and restoration are acknowledged.

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