

Health Benefits from Wood Interior in a Hospital Room

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Abstract

The presentation provides a theoretical basis for evaluating psychological effects of the use of building materials from wood. Empirical studies have documented that both active and passive experiences of nature may be beneficial for human health and well-being. The use of natural materials - such as wood - is expected to improve the user experience of designed environments. A study was conducted to evaluate psychological impact of different wood interiors in a hospital room was measured by using employees at a hospital as an expert group and patients as a control group. The study is part of a larger Norwegian research project investigating possible health benefits from wood use in indoor settings. An anonymous e-mail questionnaire was sent out to employees and patients at a Norwegian hospital and the participants were asked to rate the pictures on twelve items describing the room. The pictures were data-manipulated pictures of a patient room with different amount of wood used on walls, floor and ceiling, on a continuum from no wood to all wood. All the items in the questionnaire were taken from standardised measures related to preferences for both exterior and interior settings. The results indicated that it was the room with an intermediate level of wood that was the most preferred. This room was also rated as most Pleasant, Natural, Calming, and Secure, and as the least Boring room. The results indicate that there are limitations to how much wood is preferred and provides some guidelines for how wood should be used in interior settings.

Keywords Wood, sawn wood, psychological response, well-being,

Introduction

Which physical environments are good for people, and how can the physical environment be designed to promote physical and mental health and well-being? These are obviously complex issues that include a large number of different factors, some of which are physical and others which are psychological. The psychological aspects of the relationship between the physical environment and human health and well-being are a major concern of the field of study known as environmental psychology (Gifford 2009). Within environmental psychology, much emphasis has been placed on factors in the environment that can contribute to stressful experiences, such as noise, crowding, and extreme temperatures (Evans 1982). However, research has not only focused on negative factors in the physical environment, but also on more salutogenic factors that can enhance psychological well-being. One of these factors is thought to be the presence of non-threatening elements of nature (Kaplan and Kaplan 1989, Ulrich et al. 1991).

Designing with Nature Elements

Over the past decades, an increasing number of solid empirical studies have documented that experience of nature can be beneficial for human health and well-being (Health Council of the Netherlands 2004), and that simply looking at nature, both in outdoor and indoor settings, can be psychologically beneficial (Ulrich 1984, Hartig et al. 2003, Bringslimark et al. 2009, Nyrud and Bringslimark 2010). Correspondingly, new design strategies have emerged which focus on implementing the psychological beneficial effects of nature to the built environment. According to Kellert et al. (2008), both direct experiences with natural features in the built context (e.g., natural environments and window views to nature), indirect experiences (e.g., potted plants and water fountains), and symbolic representations of nature (e.g., through images and pictures) can all appeal to this innate affinity which accordingly can evoke positive experiences in built environments.

Taking humans' psychological, physiological and behavioural needs into consideration when designing buildings, is important in all kinds of built settings (Hartig et al. 2009). Even in people's daily life it is important to go beyond mere survival to also consider life quality and more salutogenic factors in the built environment that can possibly improve people's health and well-being. However, implementing features in the built context that can enhance stress-reduction or restoration might be especially important in settings made for healing such as hospitals.

Evidence-based Design

Whereas evidence-medicine is concerned with the quality of treatments, evidence-based design focuses on the quality of the built environment (Ulrich et al. 2002). However, both approaches aim to apply the best available evidence gained from empirical research in decision-making. Even though evidence-based design is applicable to many types of building projects, it has mainly focused on hospitals and healthcare settings. A great part of the previous research related to evidence-based design has concentrated around physical factors that can lead to stress-reduction or restoration of stressful experiences for patients, family and staff. Thus, the main issue is to design healthcare environments that can amplify the healing process for patients, and that also might lead to less stressful experiences for hospital employees.

According to Ulrich (2008) there exist more than 50 rigorous studies related to the influence of nature elements in healthcare settings on patients, staff, and visitors. These studies include different experiences with natural elements such as physical activities in gardens or horticulture therapy, but most of the studies concern passive interaction with nature elements such as window views to nature, pictures of nature or other elements of nature in the hospital setting. Beneficial outcomes found from implementing elements of nature in hospitals are reduction in stress-responses, improved emotional well-being, and pain alleviation.

The use of evidence-based design has not gone without critics, and healthcare decision makers have questioned the quality of available evidence for health impacts of healing environments. However, other review studies have shown the possible healing effects of the quality of the physical environment in healthcare settings (van den Berg 2005).

Methods

The authors of the present paper are working on an ongoing study investigating on possible beneficial effects of nature elements in hospitals. The main objective of the study is to examine whether elements of nature such as wood, pictures of nature and window views to nature possible might have health benefits for Norwegian hospital patients. As part of the larger study, we have first conducted a study on preferences for wood in patient rooms, using employees at a hospital as an expert group.

The earliest studies on human-nature relationships started with preference studies, especially preferences for landscapes (Ulrich 1985). One of the main assumptions guiding these studies was that the aspects people like in the environment reflect on conditions important for their well-being. Thus, preferences may signal possibilities for psychological beneficial outcomes and are therefore thought to provide indications for potential psychological benefits.

Participants and Stimuli

An anonymous e-mail questionnaire was sent out to 437 employees at one department at a Norwegian hospital, were 102 employees returned their answers. The employees were nurses (56.9%), physicians (13.7%), administrative workers (11.8%), auxiliary nurses (8.8%), secretaries (7.8%), and technicians (1%). Also a total of six patients have completed the questionnaire. We used 10 data-manipulated pictures of a patient room with different degrees of wood on a continuum from no wood to all wood (Figures 1, 2 and 3). The room with no wood represented a regular patient room.



Figure 1. Standard patient room with no wood.



Figure 2. Patient room with all wood.



Figure 3: Intermediate level of wood used.

Measures

The e-mail questionnaire was adjusted so that all the pictures were shown in a random fashion. That is, the employees answering the questionnaire were shown the pictures in different sequences. On a scale from 1 to 7 the participants were asked to rate the pictures on twelve adjectives describing the room. These were Pleasant, Nice, Boring, Pure Style, Airy, Masculine, Expensive, Modern, Ordinary, Natural, Calming, and Secure. All the items in the questionnaire were taken from standardised measures related to preferences for both exterior and interior settings (Küller 1972). In addition to the preference adjectives the participants were asked on a 7-point Likert scale whether they liked the room or not (“I like the interior in this patient room”),

whether they thought the interior was suited for a patient room (“The interior is well suited for a patient room”), and whether they would like to work in the room (“I would like to work in this room”).

Results

The results indicated that it was the room with an intermediate level of wood that was the most preferred (Figure 3). For the employees this room had the highest score on the preference item “I like the interior in this patient room” ($M=4.18$, $SD=1.81$), and also on the item “The interior is well suited for a patient room” ($M=4.19$, $SD=1.86$) and “I would like to work in this room” ($M=4.11$, $SD=1.88$). This room was also seen as most Pleasant, Natural, Calming, and Secure, and was rated as the least Boring room. The patients did, however, not rate this as their preferred room.

It is also interesting to note that the results from the employees indicated that the rooms on both end of the continuum were the least and second least preferred rooms. The second least preferred room was the regular hospital room with no inclusion of wood (Figure 1). The least preferred room was the room with all wood (Figure 2) and this room got the lowest score both for employees and patients. This room was rated lowest on the items “I like the interior in this patient room” ($M=2.72$, $SD=1.78$), “The interior is well suited for a patient room” ($M=2.68$, $SD=1.71$), and “I would like to work in this room” ($M=2.97$, $SD=1.84$). The all wood room was also rated as least Pleasant, Nice, Modern, Ordinary, Natural, Calming, and Secure, and as most Masculine and Expensive.

Conclusions

The present paper has presented some preliminary results from a larger study investigating on possible health benefits from natural elements in hospitals. Further research within this project will evaluate more directly on the possible health benefits of nature elements in hospitals.

The main results are

- Hospital employees prefer patient rooms with an intermediate level of wood.
- Traditional patient rooms with no inclusion of wood was the second least preferred,
- The patient room with wood on all the walls, floor, ceiling and furniture was the least preferred room.
- There is a limitation to the degree of wood preferred in patient rooms.
- There is some indication that patients employees have identical preferences, but there is not yet sufficient data to evaluate this statistically.

Investigating on preferences is important because it can give some guidelines to what people prefer. It can also give some indications on possible psychological or health related outcomes since preferences are affective responses. Nevertheless, hospitals are extremely complex buildings which are required to fulfill a host of different functions. Implementing nature elements is just one of many ways to enhance the physical properties of hospitals.

Research on this topic has the potential for helping planners and other environmental designers to influence properties of the built environment that can promote health and well-being both in hospitals as well as in other built settings. With increasing urbanization, people have less access to nature in their daily life. Additionally, people in Western societies spend as much as 80-90% of their time indoors (Evans 2003). Thus, integrating features of natural contents into the built environment can give people access to nature to a greater degree.

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