



KEY POINT SUMMARY

OBJECTIVES

The objective of this study was to describe the effects of nature sounds and pictures of natural landscapes on anxiety and tranquility levels of patients in waiting areas.

Influence of Soundscape and Interior Design on Anxiety and Perceived Tranquility of Patients in a Healthcare Setting

Watts, G., Khan, A., & Pheasant, R. 2016 | Applied Acoustics, Volume 104, Issue N/A, Pages 135-141

Key Concepts/Context

The authors open their paper with a brief introduction on tranquil spaces and their relevance in a healthcare setting – improved hospital recovery rates, stress reduction, and more. According to the authors, tranquil spaces are spaces having a pleasant and calming effect – typically natural environments – specifically defined by low manmade sounds. The authors allude to the necessity of creating ‘restorative environments’ and their role in being part of treatment. This study focused on patient waiting rooms. It describes the impact of introducing natural sounds and images of nature landscapes in the waiting area of a student health center. Surveys were used to determine if these design interventions affected anxiety and tranquility levels and thereby patient experience. The study findings indicate that the interventions in the waiting room were beneficial, as they reduced anxiety and increased tranquility levels.

Methods

This was an experimental study conducted in the waiting area of a student health center close to a university campus. The study took place over a period of three weeks and had three phases. In the first phase the waiting room was left ‘as is,’; in the second phase visual and acoustic interventions were introduced to the waiting room – this was referred to as ‘adjusted,’ and in the third phase the interventions were removed. The acoustic intervention was selected from one of 12 audio recordings from around the British coast (after being evaluated by 14 volunteers) – this replaced the sound of a radio station playing popular music. The four noticeboards displaying health information were replaced by images of two



DESIGN IMPLICATIONS

This study suggests that acoustic interventions in the form of natural sounds and visual interventions like images of natural landscapes contribute to reduction in anxiety levels and increase in tranquility levels of patients in a waiting room environment.

landscapes and two seascapes – these were selected after 46 volunteers evaluated 20 images. Additionally, fresh flowers were placed on the ledges and the center table. Patients were asked to respond to questionnaires in each phase of the research. Questions pertained to anxiety levels and perceptions of tranquility. There were 81 research participants in the ‘as is’ and the ‘adjusted’ phases. The analyses of their responses was done by age and gender and this was referred to ‘matched pairs.’ There were seven participants who participated in both ‘as is’ and ‘adjusted’ scenarios – the analysis of their responses was referred to as ‘repeated measures.’ Data was analyzed statistically. Predicted tranquility rating was done using the Tranquility Rating Prediction Tool (TRAPT) (Pheasant et al., 2010).

Findings

On comparing the frequency levels of audio recording of water sounds (in ‘adjusted’ condition) with that of the radio playing (in ‘as is’ condition), the mid frequency of the former was 41.6dB(A) while that of the latter was 49.1dB(A). The frequency of the sounds of water was close to the frequency of the average background sound of 41.1dB(A) when neither was playing.

The average age of the participants in the ‘as is’ condition was 26.9 years and in the ‘adjusted’ condition was 24.8 years. In both conditions female participation was 56.3%. On analyzing the data, it was found:

- **Relaxation:** Although the interventions used in the ‘adjusted’ conditions did have an effect on relaxing patients, it was not statistically significant.
- **Anxiety levels:** Participants in both conditions rated that their anxiety levels in the waiting room were less than those experienced at home. As compared to the ‘as is’ participants, the ‘adjusted’ participants had a higher mean reduction in anxiety levels, but this difference was not significant ($p=0.159$).
 - For the participants who responded to both ‘as is’ and ‘adjusted’ questionnaires there was statistically significant difference in the mean reduction of anxiety levels (‘as is’: -1.14 ; ‘adjusted’: -2.14 ; $p=0.009$).
- **Tranquility levels:** ‘As is’ participants had an average rating of 5.90 for tranquility levels, while the ‘adjusted’ participants had a statistically significant higher rating of 6.85 ($p=0.0002$).
 - For the participants who responded to both ‘as is’ and ‘adjusted’ questionnaires there was a statistically significant difference in their ratings of tranquility (‘as is’: 5.57; ‘adjusted’: 8.86; $p=0.0098$).



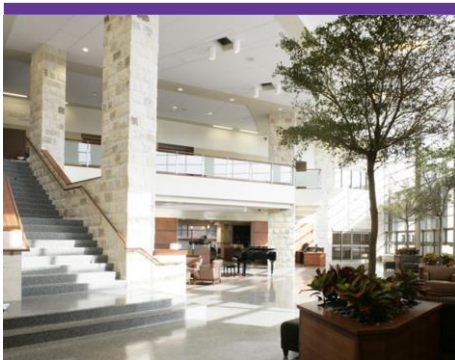
- Predicted tranquility rating (TR): The predicted TR values under the two conditions ('as is': 3.68 and 'adjusted': 5.23) were found to be lower than the ratings provided by the
 - 'Matched pair' participants: 'as is': 5.90 and 'adjusted': 6.85
 - 'Repeated measures' participants: 'as is': 5.57 and 'adjusted': 8.86.

Limitations

The authors indicate the following to be limitations of their study:

- Possibility of sampling bias as two separate groups of individuals participated in the study
- The Tranquility Rating Prediction Tool (TRAPT) was developed for outdoor landscapes – this could have affected findings of predicted TR.

Other limitations: Average age of participants was 24 and 27 years – findings may vary for different age groups.



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