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ORIGINAL ARTICLE

Visitors' Experiences of the Art Gallery at a Teaching Hospital

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Purpose: In Taiwan, the establishment of public art or art exhibitions and performances has become a public relations trend of large hospitals. To meet the public's needs, medical facilities provide patients with not only top-quality medical treatment, but also a comfortable and relaxing hospital environment to facilitate recovery from disease and shorten the recovery period. The purpose of this study was to investigate the emotional effect on individuals after they had visited the Taipei Medical University Hospital (TMUH) Charity Gallery and to analyze their satisfaction with and viewing behavior with regard to the exhibition.

Methods: We investigated the effect of the Charity Gallery art exhibition at TMUH by questionnaire survey to understand whether the enhanced environmental appearance can cause positive emotions while patients are using the healthcare service.

Results: This study discovered that for half the patients (51%), their motive in visiting the Charity Gallery was to pass time while waiting for their appointment. Most visitors (80%) felt a significant sense of peace after visiting the gallery; 73% of visitors felt either less stress or pleasure. Further results showed that overall satisfaction with the exhibition reached 70%, with "exhibition type" receiving a level of satisfaction of 74%.

Conclusion: This study suggested that art exhibition could be an acceptable service for patients that would not only promote the hospital's added value services, but also satisfy patients' sensory and spiritual needs. The results of this survey may serve as a reference for the promotion of art exhibitions in medical facilities.

1. Introduction

The role of art exhibitions in medical facilities differs from that in museums, focusing mainly on cultural education and relaxation. They may also possess certain functions such as having therapeutic value and giving comfort to patients and medical staff. Psychologists have investigated people's emotional reactions towards environmental aesthetics through different studies, the results indicating a direct effect and correlation with human physiological reactions. For instance, human beings change their emotions according to environmental stimulation such as color, sound, and objects. Crowded or noisy environments invoke negative emotions, while with soothing music and a comfortable environment, people relax, resulting in positive energy. In 1965, Fitch[1] proposed that "metabolism is the prerequisite for obviously sensory perception, while sensory perception is the fundamental for aesthetic appreciation."

The effect of art exhibitions and performances in hospitals exceeds that of ordinary spatial environments, and possesses deeper meaning compared with museums. Fitch[1] proposed that the environments of medical facilities are directly related to life and death. He said that "in a hospital, various types of biomechanical tension can be found, including life and death." Fitch went on to say that "we can discover that among all others, these are the buildings with the least errors allowed; success or failure in here is truly a matter of life or death." Therefore, the emotional effects of medical spaces are worth investigating, regardless of psychological or physiological aspects.

Many domestic and overseas studies have discussed the influences of environmental aesthetics on emotion, such as Mehrabian and Russel's "three-factor theory of emotions"[2] and Nasar's "components of aesthetic response;" other studies have investigated interior space aesthetics through formal aesthetics, such as Scott's study on the visual characteristics of interior spaces that affect preferences.[3] Previous literature has also covered the relationships between emotions and pain, but there is a paucity of literature discussing the environmental aesthetics that art

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exhibitions and performances in medical facilities create, and their impact on patients' emotions. Public art in medical facilities not only enhances the appearance, but also has therapeutic effects.[4] Art could be a silent treatment for us when we are in pain,[5] helping to ease our discomfort; it is a spiritual mentor for us when we are at peace, enhancing our appreciation of beauty.

From previous studies, it can be observed that the effects of environment and art are closely combined and are inseparable from a person's spiritual emotions. Before any scientific proof had confirmed the effects of environment on illness and pain, Nightingale[6] stated that, although we do not know how shape, light, and color affect us, we cannot deny that their impact on us is profound. Chen[7] further divided the functionality of public art in hospitals into three main aspects: the functionality of public art in hospitals, the categorization of public art in hospitals, and environmental aesthetics.

This study targets the aesthetic appreciation response triggered by the environment according to the different characteristics and emotional responses of visitors. The research and execution of environmental psychology utilizes and improves the process of environmental design.[8] Nasar defined environmental aesthetics as a combination of empirical aesthetics and environmental psychology.[9] These two fields employ scientific methods to explain the correlation between physical stimuli and human responses. Rapoport[10] applied "complexity factor in the environment" as an independent variable to investigate change in the dependent variable, a person's "feeling of pleasure." Lang[11] thought that formal aesthetics belonged to empirical aesthetics and, together with symbolic aesthetics, these formed two different aspects of categorization of aesthetics. The variables included in form or structures are shape, proportion, rhythm, ratio, complexity, color, lighting, and shadow. When discussing environmental aesthetics, Stamps[12] took into consideration not only spatial scale, proportion, styling, visual content, color, and type, but also other formal aesthetic factors such as extensity, quality, consistency, breadth, complexity, and diversity, and applied them in practice.

2. Methods

2.1. Questionnaire design

Our survey was divided into four parts with 34 questions in total. The first part surveyed general visiting behavior and consisted of five questions. The second part surveyed satisfaction with the gallery, and questions were divided into environmental satisfaction and exhibition design satisfaction dimensions according to aesthetic factors and exhibition styles described in previous literature; this part consisted of 15 questions. The third part featured an emotion scale, designed by applying the "pleasure," "arousal," and "dominance" factors of Mehrabian and Russel's[2] three-factor theory of emotions, combined with the "nervous–anxious" and "dominance" factors, the "tired–lifeless" and "arousal" factors, and the "spirit–energy" and "pleasure" factors described in Shacham's profile of mood state; this part consisted of eight questions. The fourth part collected basic information and consisted of six questions.

The researchers worked at the Taipei Medical University Hospital (TMUH) and were responsible for arranging art exhibitions and performances; therefore they did not require approval from the hospital to carry out these surveys. Weekday visitors to the waiting area of the obstetrics and gynecology clinic were targeted. After first asking for their approval, 2-hour survey investigations were carried out on five separate occasions. Surveys with fewer than half the questions answered (17 questions), with the same, automatic answers throughout the survey, or with answers that contradicted each other, were counted as invalid.

2.2. Participants

The first round of survey consisted of 25 distributed surveys and 25 valid returned surveys; the second round consisted of 16 distributed surveys and 16 valid returns; the third round consisted of 27 distributed surveys and 27 valid returns; the fourth round consisted of 26 distributed surveys and 26 valid returns; and the fifth round consisted of six distributed surveys and six valid returns. A total 100 valid surveys were retrieved in total, with an effective rate of 100%.

2.3. The Mehrabian–Russell PAD scale

Mehrabian and Russell[2] proposed an emotion structural model consisting of three dimensions: arousal, pleasure and dominance (Figure 1). This model views interaction levels of the environment and the individual as mediating variables, and utilizes a "PAD scale" to measure three dimensions of emotions. **P** represents pleasure–displeasure, indicating whether the environment makes one feel pleasure, and refers to the positive and negative characteristics of an individual's emotional state. **A** represents arousal–nonarousal,

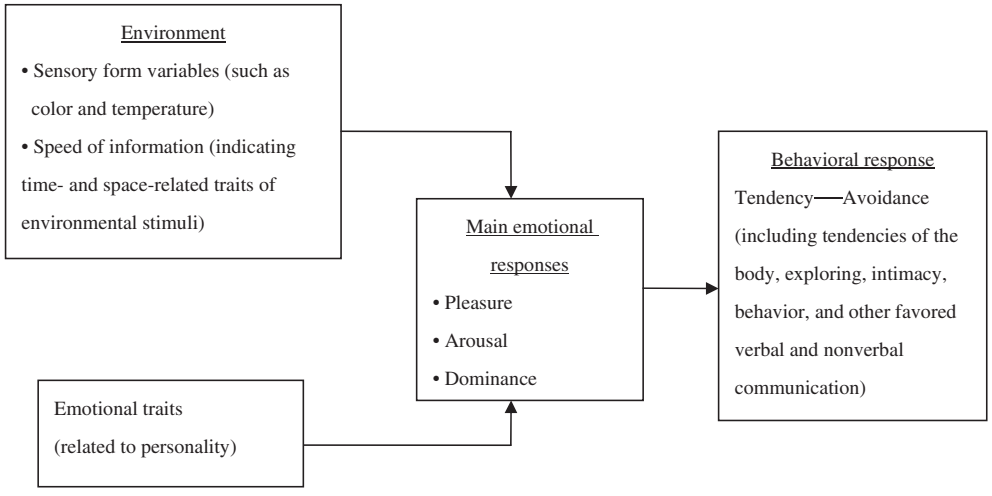

Figure 1 The Mehrabian–Russell relationship model (1994) of emotion and behavior.

Table 1 Mehrabian and Russell's modified PDA scale (1974)

Pleasure factors	Arousal factors	Dominance factors
Happy—Unhappy	Stimulating—Relaxing	Controlling—Controlled
Cheerful—Worried	Excited—Peaceful	Vital—Feared
Pleased —Displeased	Wild—Dull	Dominant—Submissive
Satisfied—Dissatisfied	Alert—Drowsy	Independent—Led
Relaxed—Bored	Nervous—Insensitive	Affective—Affected
Hopeful—Despairing	Aroused—Nonaroused	In control—Under care

indicating whether the environmental stimuli make one feel encouraged or bored, and refers to an individual's neurophysiological activation level. **D** represents dominance—submissiveness, indicating whether one feels controlled by external environmental stimuli, leading to feelings of nervousness, or on the contrary feels at ease controlling the environment, and refers to the control status related to scenarios and other people.

This model includes tendency and avoidance aspects in emotional status and external behavioral responses resulting from a direct influence of the actual physical environment or social stimuli. This is done by evaluation using a scale of two opposing adjectives divided into different levels. The ideal situation is that the scales are independent of each other with no correlation, thus providing descriptions and measurements of actual emotions. This method has become a common scale in environmental psychology. Osgood[13] proposed three dimensions of semantic space: property, force, and action. In the scale, every six adjectives represent a principal emotional response, with a total of 18 pairs of adjectives, all utilizing semantic differential measures. This study applies the PAD scale adopted by Mehrabian and Russell[2] to measure the correlation between a person's emotional responses and behavior (Table 1).

2.4. Data analysis

Statistical Package for Social Science software (SPSS Institute, Chicago, IL, USA) was adopted to analyze the retrieved data. Descriptive statistics, Scheffe's method, and analysis of variance were used.

3. Results

3.1. Visiting the gallery while waiting for a doctor's appointment

This survey was carried out at the Charity Gallery at TMUH. One hundred valid surveys were retrieved. Table 2 indicates that most individuals (84%) came to the hospital to see a doctor and visited the gallery in passing, and only 2% of people came especially for the exhibition. Most individuals (79%) did not know about the exhibition until they arrived at the hospital. Table 3 shows the information source for the art exhibition.

Table 4 shows that, for most patients (51%), their motive in visiting the Charity Gallery was to pass the time while waiting for their appointment. Other motives, such as "interest in art," "to learn," and "to relax" only constituted 20% of answers.

Table 2 Purpose of visit

Option	Number	Valid percentage
Visiting specifically	2	2.0
Passing by for doctor's appointment	84	84.0
Other	14	14.0
Total	100	100.0

Table 3 Information source for the art exhibition

Option	Number	Valid percentage
Newsletter	10	10.0
Internet	4	4.0
Friends and family	5	5.0
During hospital visit	79	79.0
Other	7	7.0

3.2. Visiting the Charity Gallery helps visitors to generate positive emotions

The main reason why art exhibitions in hospitals differ from those in other locations is because they play a role in healing and spiritual comfort. The artwork featured in the Charity Gallery helps care for patients and creates a high-quality medical space. Table 5 indicates that most visitors (80%) felt a significant sense of peace after visiting the gallery; 73% of visitors felt relaxed and less stressed, while 73% of visitors felt pleasure.

3.3. Exhibition environment analysis of the Charity Gallery

Table 6 shows that overall satisfaction with the exhibition reached 70%, with "exhibition type" receiving the highest level of satisfaction (74%). These results verify the results described in the previous section, where most people felt that the exhibition type presented in the Charity Gallery was comfortable and satisfying, and 80% of patients felt that positive emotions had been generated and felt calmness without the resulting of any discomfort after visiting the gallery. In second place, satisfaction with "exhibition content" and "overall environmental cleanliness" reached 73%. Since "exhibition content" should correspond with "exhibition type," and since hospitals possess a unique and special nature, both exhibition content and type were carefully designed and arranged in the hope of benefiting patients and helping them recover quickly. This study also found the major inadequacy of the exhibition environment: only 57% of patients were satisfied with the "toilet facilities," which significantly fell behind all other items.

3.4. The effect of aesthetic factors on satisfaction with the Charity Gallery

From the point of view of aesthetic factors, there is great room for improvement in terms of exhibition satisfaction (Table 7). Among these factors, "exhibition orderliness" achieved the greatest level of satisfaction (68%); "exhibition spaciousness" and "exhibition style" were second, both receiving 66% satisfaction. An orderly space gives the visitor a lighthearted feeling and appears more spacious. "Exhibition style" is also an emphasis of the Charity Gallery. The hospital hopes to present to visitors an exhibition filled with warmth, and the "style" of the exhibition is planned accordingly. Although satisfaction percentages regarding aesthetic factors were not high, no people were extremely dissatisfied, and a mere 1% of individuals selected "dissatisfied" regarding "exhibition spaciousness." These results

Table 4 Motive for visit

Option	Counts	Percentage	Effective percentage
Interest	22	22.0	22.0
To pass time	51	51.0	51.0
To learn	23	23.0	23.0
To reduce stress	24	24.0	24.0
Other	4	4.0	4.0

Table 5 Results for emotion scale after visiting the Charity Gallery

Options	Emotional response (%)				
	Strongly agree	Agree	Average	Disagree	Strongly disagree
1. I felt relaxed and less stressed after visiting the gallery	14	59	26	0	0
2. I felt peaceful after visiting the gallery	10	70	19	0	0
3. I felt energetic after visiting the gallery	7	46	45	0	0
4. I felt inspired after visiting the gallery	12	47	40	0	0
5. I felt strong vitality after visiting the gallery	9	49	41	0	0
6. I felt happy after visiting the gallery	11	62	25	0	0
7. I felt full of vigor after visiting the gallery	9	50	40	0	0
8. I felt full of life after visiting the gallery	9	47	43	0	0

Table 6 Analysis of the atmosphere of the Charity Gallery exhibition

Items	Level of satisfaction (%)				
	Extremely satisfied	Satisfied	Neutral	Dissatisfied	Extremely dissatisfied
1. Exhibition type	5	69	21	0	0
2. Exhibition facilities	7	63	24	1	0
3. Exhibition content	8	65	21	1	0
4. Exhibition route	5	62	26	2	0
5. Overall cleanliness	10	63	21	1	0
6. Toilet facilities	7	50	35	2	0
7. Exhibition atmosphere	6	59	29	1	0
8. Transportation convenience	4	56	34	1	0

indicate that, for most patients, the design of the exhibition lay within an acceptable range.

4. Discussion

From the above analysis, the Charity Gallery at the TMUH can help patients relax, successfully achieving a therapeutic effect. This is due to certain factors as follows. For the atmosphere created from the exhibition, the satisfaction that patients expressed in "exhibition type" (74%), "exhibition content" (73%), and "exhibition style" (66%) showed that most people felt the presentation of the exhibition was acceptable, likely because the Charity Gallery features carefully selected artworks with topics focused on warmth, happiness, and pleasure.

Previous literature has shown that, to speed up patients' recovery, warmth, harmony, and elegance are the prior qualities for selecting artwork for patients; a violent, bloody, pornographic, gloomy, or judgmental style is considered inappropriate. These limitations render the Charity Gallery different from other exhibition venues, where richer and more diverse styles are acceptable. In hospitals, the level and depth of artwork is limited, so exhibitions are unable to attract regular art-lovers, especially those who have a deep interest in and knowledge of the arts. Eighty-four percent of the patients investigated visited the gallery only as an afterthought while visiting the doctor, again indicating the limitations of the gallery.

From a different point of view, medical facilities differ from other exhibition venues in that they are critically correlated with matters of life and death; helping people in the hospital reach a state of spiritual calm is the primary purpose for hospital art exhibitions. The purpose of the Charity Gallery at the TMUH is to create a warm and comfortable environment for visitors, so the diversity of the displayed art is limited; however, the ability of the art to move and give pleasure to viewers was verified from the satisfaction analysis of the emotion scale.

This study also showed why the Charity Gallery helped create positive emotions in at least half of the visitors. Patients visit the gallery while waiting for their appointment, to take their mind off their pain, and to pass time, which can be verified by the result that 51% of individuals visited the gallery to "pass time." This indicates that the Charity Gallery satisfies patients' requirements for medical space, which promotes the additional value of the hospital, providing patients with a better environment and an alternative pastime. For the benefit of patients and medical staff, investing and putting effort into enhancing the hospital's appearance and arranging art exhibitions is a subject for continuous development.

Finally, to achieve satisfaction with the exhibition's environment, the spatial design and cleanliness of the environment has been maintained at a high level since the Third Medical Building of the TMUH was constructed in June 2007, and therefore also received fair levels of satisfaction. However, for the Charity Gallery to become an optimal exhibition venue of exceptional value, hospital administration personnel must work on the improvement of certain issues, such as "toilet cleanliness," "transportation," and even "aesthetic factors."

In conclusion, this study discovered that art exhibitions in medical facilities can induce positive emotions in visitors. Exhibitions also promote the quality of the medical spaces and their benefit to patients. As for development of these exhibitions, the content and style must remain warm and pleasant, and the displays should be arranged in an orderly way. Medical facilities mainly adopt warm colors in such exhibitions to create an area in which people can reflect in peace. Such exhibitions could cheer patients up, boost their morale, comfort their souls, and allow them to feel

Table 7 The effect of aesthetic factors on satisfaction with the Charity Gallery

Items	Level of satisfaction (%)				
	Extremely satisfied	Satisfied	Neutral	Dissatisfied	Extremely dissatisfied
1. Exhibition lighting (lighting conditions)	8	57	30	0	0
2. Exhibition spaciousness (space conditions)	9	57	28	1	0
3. Exhibition orderliness (whether orderly)	11	57	27	0	0
4. Exhibition style (style of presentation)	9	57	29	0	0
5. Exhibition color settings	11	49	35	0	0
6. Exhibition texture settings	5	51	35	0	0
7. Exhibition proportions (whether in proportion)	7	51	35	0	0

the warmth of humanity; effort must be invested to provide a comfortable space and create a warm atmosphere.

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