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THE IMPACT OF HOSPITAL ART EXHIBITION SPACE ATMOSPHERE ON PERCEIVED VALUE AND SATISFACTION OF WAITING PATIENTS

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Abstract

In recent years, it is a trend to integrate art exhibitions into hospitals, which brings the integration of medical care and art to another level. Space utilization is not necessarily an exhibition area, instead it is the integration of art and space. Quality and intrinsic virtue are given by art, which improve the relationship between spatial art and medical care institutions. Moreover, the patients can obtain considerate service and additional perceptual value. The objective investigation and assessment are essential for improving spatial art in medical care institutions. To shorten the cognitive gap be-

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tween visual perception and communication, it is expected to reach a positive balance between art and medical care.

This research is to explore the impact of the patient's experience on the atmosphere of the art exhibition displayed in the medical care institutions, with patients' perceived value, the quality of doctor-patient relationship and satisfaction. The samples are from the experiences of the patients in Sanchong district, New Taipei City, Taiwan. The questionnaires based on the scale of spatial atmosphere, perceived value and satisfaction are designed by the researchers. 400 questionnaires are distributed and 388 of them are available to use. The valid response rate is 97%. In this study, the statistical methods such as narrative analysis, regression analysis, reliability and validity analysis are used to verify the hypothesis via SPSS. The results show that hospital spatial atmosphere has a significant positive correlation with perceived value and satisfaction, perceived value has a significant positive correlation with satisfaction as well.

Keywords: Medical Care Institutions, Spatial Atmosphere, Perceived Value, Art Exhibition, Satisfaction

Introduction

Taiwanese people average 15 visits a year to the hospitals (Taiwan's National Health Insurance Administration, 2019). During each visit, patients often wait for a long time for treatment. With a rapid development and social change, people expected the improvement of the quality of hospital space, such as art combined with space, to make a relax situation for patients and escorting person. However, it should pay more attention on improving the quality of art exhibition in the medical care institutions from the perspective of viewers, such as medical staff and the public.

Kuo (2000) conducted an empirical study on customer satisfaction and competition strategies in the medical service industry. The results pointed out that patient expectations and perceived performance were significantly positive for patient satisfaction based on five large hospitals in Tainan. NMFC (1985) mentioned that hospitals gave people the impression of the space with mechanic, cold, and the smell of medicine; hence, a number of architects and space designers suggested that color should be allocated into mid-tone which made the place seem cozy. Moreover, psychologists and psychiatrists also used colors as their treatment.

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Theoretically, hospitals are appropriate to use light blue with light green or light yellow as a basis. Different departments use different colors. For example, waiting room is better to use medium color to show stability, like beige, khaki, light brown and apricot. The wards are suitable for light blue and division of pediatrics are better to use yellow with youth and lively. Chiang, Lee and Chang (2010) indicated that a good atmosphere can positively affect consumers' stay, emotion, consumption and experience. Since 1970, a majority of scholars found that there was a significant impact on patients' condition between physical and social environments.

As discussed above, art exhibitions and lighting effect would directly affect patients' emotion. Spatial atmosphere in hospitals including color and artworks could help patients eliminate stress and improve their perceived value and satisfaction. Thus, this study aims to investigate the perceived value and satisfaction from patients and escorting person via questionnaire about integrating art exhibitions into medical care institutions in Sanchong district, New Taipei City, Taiwan. The relationship between art exhibition integrated into hospital and the impact of the quality of visits would be as a reference for the future.

In other words, the smaller the gap between expectation and reality, the higher satisfaction it is.

Literature Review

Art exhibition spatial atmosphere and its measurement dimension Berry and Kunkel (1968) considered that spatial atmosphere was the interaction between five senses of human and the same space. Yalch and Spangenberg (2000) believed that atmosphere included spatial atmosphere, relationship, symbolism, design and even interaction. Turley and Milliman (2000) thought that atmosphere was created by space which affects cognitive environment, such as the interactive feeling of mission, time and target. Since Kotler (1973) mentioned the concept of atmosphere, a majority of scholars started to investigate the reaction and feeling of customers in service conditions. The results showed that each kind of service would impact customers' satisfaction, especially for environment factors. Binter (1992) extended the concept of atmosphere to the framework of an impact on consumers, and then proposed the definition of "Servicescape". The aspects involved "Ambient Condition", "Signs, Symbols and Artifacts" and "Space/Function", providing implicit or explicit information which would affect

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the behavior of customers and staff. Wirtz and Bateson (1999) deemed that the factor that affected our cognition was the perception of spatial atmosphere design, therefore to be temporarily relax our emotions would be the main goal of the overall situation.

Kotler (1973) divided the spatial atmosphere into four aspects, such as visual (e.g., color temperature, brightness, size and location), tactile (e.g., soft and smooth), olfactory (e.g., fresh and aromatic) and aural (e.g, volume and intensity). The environmental atmosphere design proposed by Yalch and Spangenberg (2000) was divided into six elements (e.g., background, color, smell, temperature, location and lighting). Sirgy and Mangleburg (2000) believed that spatial atmosphere included colors, lighting interior style and music of the store. Baker (1987) divided spatial atmosphere of the store into design, ambient and social factors. Binter (1992) composed consumers' spatial perception of three dimensions, which were "Space/Function" (e.g., layout, equipment and furniture), "Overall environment" (e.g., quality of the air, lighting, music, noise and smell), "Signs and symbols" (e.g., personalized artificial signs and decoration styles). Baker and Levy (1992) proposed a concept of consumers' spatial perception with two dimensions:

"Social factor" for the anthropogenic elements of store environment such as the sufficient number of staff and their kindness, and "Peripheral factor" for the characteristics of the store such as background music and lighting which were enough to influence the consumers' sensory perception. Turley and Milliman (2000) discussed environmental atmosphere into three aspects: "External environment" for the surrounding area, "Internal environment" for the color, music, lighting, atmosphere, temperature of the store, and "Design" for the planning of space and route.

The Definition Of Perceived Value And Its Measurement Dimension

The definition of perceived value was first proposed by Monroe and Krishnan (1985). It was a natural phenomenon existed in human. The study pointed out that consumers' perceived value of purchased products was an indicator of measuring the differences between "perceived benefit" and "perceived cost". Generally speaking, it was a measurement of sacrifice (money) and quality (acquisition). Through comparison and measurement of the perception on quality of product from consumers, it showed a positive perceived value would appear if sacrifice (money) was less than perceptual

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quality (acquisition), indicating that perceived value would affect consumers' willingness of repurchasing. Besides, Sawyer and Dickson (1984), and Dodds and Monroe (1985) defined perceived value as the result of a product measure between "Give & Give Perceived Value" in consumers' perception. Zeithaml (1988) considered that perceived value was the subjective attitude with the measurement of giving and receiving. However, it often affected the overall perception of purchasing.

In the past few years, there have been several studies related to "perception of waiting time" and "performing art", such as Hsiao, Tsai and Wang (2010), exploring the impact of patient satisfaction on playing background music during waiting. Chang (2012) applied this concept to live performance, and discuss whether it could be replaced the background music with Guzheng to affect patients' perception of waiting time. The results proved that hospitals were suggested to hire a professional guzheng performer to increase patients' perceptions and improve the quality of treatment.

Perceived value was generally regarded as a dimension with difficult measurement although it has a framework (Holbrook, 1994; Woodruff,

1997; Zeithaml, 1988). Among these concepts, three elements of perceived value can be summarized, which were multiple components, subjective judgement, and importance of competition (Li & Su, 2016). Parasuraman (1997) regarded that the construction of perceived value as one of the most important measures for companies to gain competitive advantage (Parasuraman & Grewal, 2000) and consumers to repurchase the products. Parasuraman and Grewal (2000) proposed four dimensions of perceived value for acquisition value, transaction value, in-use value and redemption value. Kantamneni and Coulson (1996) mentioned four elements for measuring perceived value, including core value, personal value, sensory value and commercial value. Grewal, Monroe, and Krishnan (1998) used value and transaction as the measure of perceived value. Cronin, Brady, and Hult (2000) regarded the quality of products, service value and competition as the measurement of perceived value.

Summing up above literatures, this study defines perceived value as "the trade-off relationship between the cost and the benefit of intrinsic cognition of patients in the hospital spatial atmosphere". Besides, emotion, price/function, social, and quality mentioned by Sweeney and Soutar (2001)

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are used as the measurement of the perceived value in this research.

Customer Loyalty

Since the 1970s, literature on customers' satisfaction has gradually received attention. A majority of scholars have begun to explore the cause and effect of satisfaction, and tried to establish relevant theories. Risser (1975) believed that patient satisfaction referred to the degree of patients' experiences on the same treatment for ideal medical quality and actual experience. Hunt (1977) explained that satisfaction was a measurement of emotional perception, reflecting the positive emotions from consumers after the process of purchasing products. Oliver (1980) considered that satisfaction was the result of consumers' actual purchase experience and expectation based on their attitudes. Linder-Pelz (1982) defined patient satisfaction as the positive identification after medical treatment at different levels. Miller (1988) mentioned that a higher degree of satisfaction would reveal if the actual experience was above or the same as patient expectation. Woodside, Frey, and Daly (1989) pointed out that patients' emotion had a positive effect on the perceptions of service quality related to satisfaction, and it would directly affect the deci-

sion of medical care choices.

The results from the study conducted by O'Connor and Bowers (1991) indicated that the higher the patients' satisfaction, the higher the willingness to return to the original hospital for medical treatment. Reichheld and Sasser (1990) thought that a high degree of customer loyalty must have a high degree of customer recognition and an increase in willingness of purchasing. Jones and Sasser (1995) believed that repurchasing was a basic behavior after increasing customers' satisfaction; in fact, the other positive actions such as recommendation, image and reputation were appeared as well. After reviewing the above literature and the investigation of hospitals, the researchers of this study will design an indicator of patients' satisfaction based on the service received by patients in the process of medical treatment.

The relationship between art exhibition spatial atmosphere and perceived value
In his empirical study conducted by Lessig (1973), it is found that store image received a lot of attention because of the relationship between store image and loyalty. In particular, the unique image of a retail store would affect consumers' perception and

choice of the products and the stores. A study of Dodds, Monroe, and Grewal (1991) found that the more positive the store image, the higher the consumers' willingness of buying, showing customer loyalty will increase. Thus, store name, environment and image were the factors that affected consumers' willingness of purchasing and repurchasing. When the elements of art were one of the factors that formed the impression in the commercial space, that is, consumers may hold a positive attitude towards the value of art space. This research concluded that the integration of art into hospitals can increase the spatial atmosphere of itself, and consumers' satisfaction can be enhanced because of the healing environment. Therefore, it can be seen that there is a great correlation between the hospital spatial atmosphere and the perceived value. The first hypothesis is established in this study.

H1: Hospital space atmosphere has a significant positive correlation with perceived value.

The Relationship Between Perceived Value And Satisfaction

Perceived value is the basis for consumers to make purchase decisions during the consumption process, and it is also regarded as an important factor

that affects purchase intention and behavior. When consumers' perceived quality of products or service is greater than perceived sacrifice, it means that the higher the consumers' perceived value, the higher purchase intention (Jung & Yoon, 2013). Kuo (2000) conducted an experimental study in five large hospitals in Tainan, confirming that patients' expectations and perceived performance had a significant correlation on patients' satisfaction, where perceived performance-patients' satisfaction had a greatest impact. The second hypothesis is therefore established in this study.

H2: Perceived value has a significant positive correlation with satisfaction.

The Relationship Between Spatial Atmosphere And Satisfaction

Since 1970, a number of scholars found that there was a great impact on patients' condition between social and physical environments. After Ulrich (1979) mentioned nature benefit assumption, relevant research also proved that nature with elimination of stress and enhancement of positive emotions can help patients get well soon. Through the experiment of Ulrich, Lunden, and Eltinge (1993), they gave patients with heart surgery three

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types of pictures (e.g., abstract patterns, natural scenery and black-white), the results showed that patients used less painkillers for pictures with natural scenery than the others. A good spatial atmosphere would increase sense of calm, security, self-esteem and satisfaction. The third hypothesis is therefore established in this study.

H3: Hospital space atmosphere has a significant positive correlation with satisfaction.

Definition Of Research Dimension And Design Of Research Method

Definition Of Research Dimension

Art Exhibition Spatial Atmosphere.

This study adopts "environmental factors" (nature), "design factors" (lighting) and "social factors" (quality of healing) from Baker (1987) as the research dimension. Questionnaire on spatial atmosphere is designed with the parts of environment (e.g., sound, lighting, scent), social (e.g., the number of service staff, behavior) and design (e.g., interior design, architecture).

Perceived Value.

Referring to four dimensions of perceived value proposed by Sweeney and Soutar (2001), the scale is developed in this study with four dimensions including "emotional" (e.g., per-

ceived value on service or product), "social" (e.g., perceived value on product), "price/value" and "quality/performance" (e.g., perceived value of quality and the overall expectations).

Satisfaction.

Referring to the satisfaction scale with five medical service qualities proposed by Zineldin (2006), this study first adopts the concept of "item-satisfaction" to measure the satisfaction of the patients in the spatial atmosphere of treatment and perceived value. It refers to the degree of patients' expectation and preference during the process of treatment. Finally, the concept of "overall-satisfaction" is used to measure the satisfaction of spatial atmosphere and perceived value from patients' viewpoint.

Research Subjects

The public and escorting person from Sanchong district in New Taipei city are the research samples of this study. 60 copies of questionnaire are distributed to 50 patients and 10 scholars as the pre-test. The results show that the measurement of Cronbach's α is above to 0.8, indicating the scale of perceived value has a high level of reliability. The researchers then conduct the follow-up questionnaire survey,

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and 388 copies of them are valid to use with the response rate of 97%.

Analysis Methods

To understand the impact on patients' perceived value and satisfaction of the art exhibition integrated into hospitals, this study uses regression analysis. Also, R square, adjusted R square and variance inflation factor (VIF) are adopted to examine the process of regression analysis. Item to total correlation coefficient are applied to establish the construct validity of patients on spatial atmosphere, perceived value and satisfaction. Finally, Cronbach's α is used to check the reliability of items within each factor.

Analysis and Discussion

Reliability & Validity Analysis

Art Exhibition Spatial Atmosphere.

There are 9 items in the survey of spatial atmosphere, the correlation coefficients of each item are between 0.613 to 0.814, which are above 0.50. It indicates that the internal consistency of the scale is well-designed. Additionally, the Cronbach's α of each dimension (e.g, environment, social and design) shows 0.887, 0.88 and 0.878, respectively, with the minimum level of 0.5 (Merchant, 1985), revealing high reliability of the scale.

Perceived Value.

There are 12 items in the survey of perceived value, the correlation coefficients of each item are between 0.758 to 0.822, above 0.5, indicating good consistency of the scale. The reliability of four dimensions (emotion, social, value and quality) are 0.945, 0.944, 0.942 and 0.944, with the Cronbach's α above 0.7, showing high reliability of the scale.

Satisfaction.

There are 6 items in the survey of satisfaction, the correlation coefficients of each item are between 0.794 to 0.886, above 0.5, indicating good consistency of the scale. The reliability of two dimensions (item and total satisfaction) are 0.907 and 0.91, with the Cronbach's α above 0.7, showing high reliability of the scale.

Regression Analysis On Art Exhibition Spatial Atmosphere And Perceived Value

As shown in Table 1, adjusted R square is 0.477, pointing out art exhibition spatial atmosphere has 47.7% of explanatory power for perceived value. In terms of collinearity, the VIF of independent variable are 1.847, 1.880 and 2.263, showing the regression equation of art exhibition spatial atmosphere is not serious for perceived

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value, and regression model can effectively predict dependent variable. In terms of explanatory power, F value is 116.598 (p=0.000), which reaches the significance. For standard coefficient (β), regression coefficient of environment-perceived value is 0.398, achieving the significance, where design-perceived value has the greatest impact. As discussed, spatial atmosphere has a significant positive correlation with perceived value (H1).

Table 1. Regression Analysis On Art Exhibition Spatial Atmosphere
And Perceived Value

Independent variable		Standard coefficient (β) Dependent variable -perceived value	t value	VIF
Spatial atmosphere	Environment	0.025	0.506*	1.847
	Social	0.340	6.712***	1.880
	Design	0.398	7.165***	2.263
F value		116.598***		
P value		0.000		
R2		0.477		
Adjusted R2		0.473		

*p value<0.05，**p value<0.01，***p value<0.001.

Regression Analysis On Perceived Value And Satisfaction

Table 2 shows the results of regression analysis on perceived value and satisfaction, which perceived value as an independent variable and satisfaction as a dependent variable. In Table 2, adjust R square is 0.347, representing that perceived value of hospital space atmosphere has 34.7% of explanatory power for satisfaction. In terms of collinearity, the VIF of independent variable are 2.302, 2.248, 1.877 and 2.037, indicating the regression equation of perceived value is not serious for satisfaction, and regression model can effectively predict dependent variable. In terms of explanatory power, F value is 50.978 (p=0.0000), which reaches the significance. For standard coefficient (β), regression co-

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efficient of emotion-satisfaction is 0.250, social-satisfaction is 0.033, value-satisfaction is -0.008 and quality-satisfaction is 0.371, achieving the significance, where quality-satisfaction has a greatest impact. As discussed, perceived value has a significant positive correlation with satisfaction (H2).

Regression analysis on art exhibition spatial atmosphere and satisfaction.

As shown in Table 3, adjusted R square is 0.171, indicating art exhibition spatial atmosphere has 17.7% of explanatory power for satisfaction. In terms of collinearity, the VIF of independent variable are 1.847, 1.880 and 2.263, showing the regression equation of hospital art exhibition spatial atmosphere is not serious for satisfaction,

and regression model can effectively predict dependent variable. In terms of explanatory power, F value is 26.357 (p=0.000), which reaches the significance. For standard coefficient (β), regression coefficient of environment-satisfaction is 0.038, social-satisfaction is 0.233 and design-satisfaction is 0.191, totally achieving the significance, where environment-satisfaction has a greatest impact. As discussed, hospital art exhibition spatial atmosphere has a significant positive correlation with satisfaction (H3).

Independent variable		Standard coefficient (β)	t value	VIF
		Dependent variable-satisfaction		
Perceived value	Emotion	0.250	3.987***	2.302
	Social	0.033	0.541*	2.248
	Value	-0.008	-0.135	1.877
	Quality	0.371	6.292***	2.037
F value		50.978***		
P value		0.000		
R2		0.347		
Adjusted R2		0.341		

*p value<0.05，**p value<0.01，***p value<0.001

Table 2. Regression Analysis On Perceived Value And Satisfaction

Table 3. Regression Analysis On Art Exhibition
Spatial Atmosphere And Satisfaction

Independent variable		Standard coefficient (β)	t value	VIF
		Dependent variable-satisfaction		
Spatial atmosphere	Environment	0.038	0.595***	1.847
	Social	0.233	3.662***	1.880
	Design	0.191	2.732***	2.263
F value		26.357***		
P value		0.000		
R2		0.171		
Adjusted R2		0.164		

*p value<0.05，**p value<0.01，***p value<0.001.

The results of the hypotheses in this study are summarized in Table 4.

Table 4. Research Hypotheses And The Results

	Hypotheses	Results
H1	Hospital space atmosphere has a significant positive correlation with perceived value.	True
H2	Perceived value has a significant positive correlation with satisfaction.	True
H3	Hospital space atmosphere has a significant positive correlation with satisfaction.	True

Conclusion and Suggestions

The empirical results of this study reveal that the number of patients in the hospital art exhibition spatial atmosphere are "women" and "married people", most of whom are above 51 years old and part of whom have bachelor degree and NT$30,000 for average monthly income. Accord-

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ing to the results of this study, hospital art exhibition spatial atmosphere has a significant positive impact on patients' perceived value and satisfaction. In other words, space and view are the visual sensory objects that frequently touched by patients, such as enhancement of lighting of the treatment space, the integration of treatment space and view, the clear sign setting and high-quality hospital art exhibition space atmosphere. These are all the key factors that promote the relationship between the benefits of the patients' intrinsic cognition and offsetting of the cost.

Taiwan government encourages the creation of new environmental aesthetics, in terms of a guiding effect on the overall change of hospital environment. In another point, the placement of public artworks can extend art to the entire hospital. The interactions among people, space and art enhance the visual beauty of the space and enrich the connotation of the place; the diversified possibilities of new cultures in the hospitals are created as well.

As discussed above, the strategies of integrating art exhibition spatial atmosphere into hospitals on the patients' perceived value and satisfaction become more and more important. Hence, the agency should attempt the

quality and pay attention to the visual design of artworks in hospitals for brand image as their manage strategies. In this way, it would bring deep spiritual feelings to patients through their experiences, and help to strengthen the relationship among patients, art exhibition spatial atmosphere and perceived value, which makes it become the first choice for medical visits in the future.

The viewpoint of this research is to focus on the impact of art exhibitions integrated into the spatial atmosphere of the hospital on the perceived value and satisfaction. Among the empirical studies, the researchers strive to meet the objectivity of social science research. Nevertheless, the limitations of funds, time and manpower are existed for the further exploration. For this reason, this study puts forward the following suggestions, which under the conditions of adequate funds, time and manpower.

The samples of this study are the patients who had visited hospitals in Sanchong district within one year. The results should be further verified for the appropriateness of the inference of art exhibition to all hospitals. Based on this, it is suggested that follow-up research can refer to the theme, framework, questionnaire of this study, and expand the research sample to more

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hospital art exhibition spatial atmosphere, in order to explore the different viewpoints of the patients on the research theme. To avoid unfavorable implementation, the framework should not be too large. Besides, the follow-up research can add more variables for the depth discuss.

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