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A study of 216 respondents examined a medical center environment's influence on patient responses. A stimulus-organism-response (S-O-R) model was adapted to the theory that more hospitable healthcare servicescape elements will affect patients' overall satisfaction, loyalty behaviors, and willingness to pay out-of-pocket expenses. Servicescape elements included atmospherics of the healthcare environment, service delivery by healthcare staff, physical design of the healthcare environment, and wayfinding. Results of structural equation modeling confirmed that four servicescape elements—atmospherics, service delivery, and physical design and wayfinding—had a significant impact on patients' overall satisfaction with the healthcare experience. Furthermore, overall satisfaction with the healthcare experience predicted patients' loyalty intentions and willingness to pay out-of-pocket expenses for healthcare services. The study makes a significant contribution to the empirical modeling of patients' behavioral responses to hospitable healthcare environments.

Keywords: servicescape; hospitality design; healthcare; stimulus organism response; service delivery

Introduction

With patient-centered healthcare driving the industry in the past decade, the potential role of hospitality has received increasing amounts of attention (Erickson & Rothberg, 2017). Early research often had to do with health hotels or other very specific topics such as medical tourism. As hospitality makes more inroads into healthcare discussions, many institutions are considering major shifts towards improved physical design, atmospherics, and service environments (Lee, 2011). These changes are a response to higher expectations from patients, ever-advancing technology, greater access to information through the Internet and digital media, and a holistic approach to health and wellbeing concerns. Moreover, changes in employer health coverage are intensifying the competitive environment by giving patients more choices in the doctors and medical services they can use, presenting new challenges for medical centers that are now striving to create establishments that attract patients (Anderson, 2004).

Thus, research on patient experience has drawn much attention from academics and industry alike (Steele, Jones, Clarke, & Shoemaker, 2015). Literature in healthcare has provided

findings concerning the impacts of the healthcare environment on the satisfaction and behavioral intentions of patients. The evidence base, however, is mixed, both in terms of methodological rigor and conclusions drawn by the researchers. Only recently have more comprehensive examinations of the role of hospitality in healthcare design received attention, focusing on the patients' evaluation of the overall experience, adding subjectivity and overall satisfaction to the mix (Kelly, Losekoot, & Wright-St. Clair, 2016). Therefore, this study is designed to establish an empirically-tested theoretical foundation in healthcare. Specifically, this research tests a theoretical model that describes several distinct elements included in a healthcare servicescape on patients' overall satisfaction with healthcare experience and their related behavioral intentions.

The following questions are addressed:

- (1) Do more hospitable elements included in a healthcare servicescape affect patients' overall satisfaction with healthcare experience?
- (2) How does this, in turn, affect patients' loyalty intentions and willingness to pay out-of-pocket expenses?

This research carries both academic and industry implications. Knowledge of patients' satisfaction may help refine models developed to determine a more hospitable healthcare servicescape's influence on patients' healthcare experience, of which multivariate analyses are of current interest and have not yet been perfected. From a business standpoint, knowledge of patients' responses to a healthcare environment including atmospherics of the healthcare environment, service delivery by healthcare staff, physical design of the healthcare environment, and wayfinding is crucial and this research is intended to provide guidance to healthcare operators, administrators, and academics for making facility and service decisions related to investment towards the infusion of hospitality in healthcare environments that result in improved Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores.

Literature Review

Overall satisfaction with healthcare experience

Customer satisfaction is defined as the pleasurable emotional state of customers' feelings based on their experience in an organisation (Berry, Wall, & Carbone, 2006). After decades of research in the services industries, it is hard to ignore the fact that design of the environment and service have an impact on users' satisfaction and outcomes. However, despite the significant advances in the science of engineering satisfactory experiences, or perhaps because of them, healthcare institutions, with their life-saving equipment, procedures, and technologies are often perceived as sterile, intimidating institutions (Ulrich & Gilpin, 2003) and the environmental qualities of buildings that could promote a satisfactory healthcare experience have been largely neglected (Dilani, 2001).

Thus, there is increasing concern about improving patients' satisfaction as related to the patient experience (Bohmer, 2005) and healthcare leaders and administrative boards are increasingly required to focus on the reimbursement to their institutions and medical professionals included in "value-based purchasing" or "pay for performance" programs. In this regard, the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey's focus places an emphasis on the patient satisfaction with experience. With the mandated reporting of patient experiences through the HCAHPS it seems reasonable to predict that institutions that have more hospitable environments will be rated higher by patients in the HCAHPS survey.

Creating an experience that is satisfactory for the patient will in turn lead to better competitive advantage of the provider; satisfied patients are, in turn, loyal customers. With changes in employer health coverage and a new competitive environment giving people more choices in the doctors and hospitals they can use, it has become increasingly important for healthcare providers to ensure patient-consumers are satisfied with their care so they return to receive services (Waterman & Faulkner, 2010). This also plays a significant role in patient recommendation of a healthcare center with a resulting impact on the market share and financial bottom line. In addition, many healthcare centers are enhancing service levels and design, competing for customers who are willing to pay higher out-of-pocket expenses to receive healthcare in places which look appealing and where they are treated well.

In sum, today, more healthcare providers are searching for ways to deliver healthcare more hospitably, as part of the overall efforts to manage the ever-increasing pressure of challenges facing them. Thus, it is important to understand, holistically, the patients' experience

when they receive healthcare from providers and to examine what elements, specifically, contribute positively to patients' overall satisfaction with healthcare experience.

The paramount importance of patient-as-consumer and their behavior has led researchers to apply Bitner's (1992) servicescape model in healthcare applications. The servicescape is comprised of environmental stimuli including atmospherics, physical design, and social factors. Most notably, Hutton and Richardson's (1995) healthscape model combined Bitner's (1992) servicescape with Kotler's (1973) atmospherics model and found associations between features of the physical design and ambience—interior design, facilities management and atmospheric elements, service delivery and clinical care, and patients' overall satisfaction with the environment. Servicescape conceptualizes the way in which an environment affects human responses (Bitner, 1992). Based on this premise, our study proposes to test how servicescape elements in a healthcare setting not only influence patients' overall satisfaction but also their behavioral responses.

Servicescape

Servicescape (Donovan, Rossiter, Marcoolyn, & Nesdale, 1994) was initially developed to refer to the holistic retail environment in which a consumption of a service occurs- including the tangible and intangible aspects. Following Donovan et al. (1994), Bitner (1990) adapted the servicescape model elements from retail settings for application in broader consumer behavior contexts. Bitner's (1990) model identified major elements of a service-provider environment, including: (1) atmospherics; (2) social factors; (3) physical design; and, (4) layout and orientation. Atmospheric conditions describe the intangible aspects of ambience including noise, music, aromas, temperature, indoor air quality, lighting, and decoration. Social conditions involve human factors such as customer-staff interaction during the service delivery process and levels of empathy expressed by service providers. Physical design refers to the condition of the facility's physical elements such as fixtures, furniture, equipment, room scale, and the relationships between customers and spaces. Layout and orientation relates to spatial functionality and customer flow through the space, including place identification, entrances, and ease of navigation for the customer. Signs also play a key role as both symbols and indicators of direction. While other service industries such as hospitality and retail have valued the role of the physical environment on customer satisfaction and retention and have put in an effort to provide

a physical environment that exceeds the customer's expectations, it was only recently that the healthcare industry recognized that servicescape elements are important resources that can impact patients (Fottler, Ford, Roberts, & Ford, 2000).

In one of the earliest studies on the application of the elements of servicescape to the experience of hospital patients Hutton & Richardson (1994) determined that ambient conditions, ability to navigate the facility, interior decoration and seating comfort all produce a significant affect on patient overall satisfaction. Similarly, Lee, (2011) found perceived control from wayfinding and environmental crowding to have a significant impact on overall patient satisfaction. Babakus and Mangold (1992) investigated the impact of patients' positive and negative perceptions of staff and service interactions on overall satisfaction. The results of these previous studies demonstrate that the atmospherics of a healthcare environment, service delivery by healthcare staff, physical design of the healthcare environment and wayfinding are important predictors of healthcare satisfaction. Some researchers in healthcare servicescape have evaluated the physical environments of healthcare facilities as a whole entity, instead of separating each dimension of physical environments, to examine the impact of healthcare facilities' physical environments on patient experiences (Becker, Sweeney, & Parsons, 2008). In recognition of these trends, the present study examines both product and service-related elements that contribute to patients' perceptions of a hospitable servicescape and positively influence patients' satisfaction with the overall healthcare experience. Specifically, we examine the impact of four servicescape elements-- atmospherics of the healthcare environment, service delivery by healthcare staff, physical design of the healthcare environment, and wayfinding.

Atmospherics of the healthcare environment

Atmospheric factors have been found to elicit affective responses in addition to an organism's cognitive responses (Loureiro, Almeida, & Rita, 2013). In the healthcare environment, the role of atmospherics on patient satisfaction has been documented (Malenbaum, Keefe, Williams, Ulrich, & Somers, 2008; McCaul & Malott, 1984; R. S. Ulrich, Berry, Quan, & Parish, 2010; R. S. Ulrich, Lundén, & Eltinge, 1993; R Ulrich, 1991; R Ulrich & Gilpin, 2003; Roger Ulrich, 1984). For example, Hutton and Richardson (1995) found the association between ambient elements and patients' overall satisfaction with the environment. Harris, McBride, Ross, & Curtis (2002) also found that patients in aesthetically appealing areas expressed greater satisfaction with

overall services than patients in non-aesthetically appealing areas. Atmospheric are positive distractions that help patients attend to stimuli other than their own discomfort and anxiety (Ulrich, 1991). A healthcare environment that provides more hospitable atmospheric might include ambient lighting, pleasant music, comfortable temperatures, pleasing colors, aromas, plenty of plants and flowers, artwork, reduced noise levels, comfortable furniture, attractive interior decoration, material and equipment finishes (Andrade & Devlin, 2015; Dijkstra, Pieterse, & Pruyn, 2006; Huisman, Morales, Van Hoof, & Kort, 2012; Iyendo, Uwajeh, & Ikenna, 2016; Suess & Mody, 2017; R. S. Ulrich, Simons, & Miles, 2003).

Service delivery by healthcare staff

Active social stimuli such as friendly demeanor of staff also have the potential to provide patients with increased overall satisfaction with their experience. Medical is a system that can best be characterised as follows: by the people, for the people, and of the people. It means that employees, especially medical staff, are of critical importance in the health-care system (Lee, Lee, & Kang, 2012) Hospitable service by healthcare staff, in essence, falls into Bitner's (1992) representation of social factors. Positive interactions created by hospitable healthcare staff help offset patient's negative feeling, offering social support. In a potentially unfamiliar and stressful environment, the hospitable service delivery by healthcare staff and quality clinical care can increase patient satisfaction (Hutton & Richardson, 1995). Gifford (2007) found that the quality of social relationships and interaction with healthcare staff is crucial for patients' satisfaction in a hospital. Moreover, an employee's degree of empathy expressed to a customer, such as a warm welcome or reassuring demeanor, was also found to be of significant importance to a consumer. From a service perspective, Oz et al. (2001) conducted a patient evaluation of the hotel function of hospitals and found that those who perceived a better customer service delivery, in terms of factors such as courtesy, promptness, and cleanliness, indicated significantly higher satisfaction levels. Similarly, using a revised SERVQUAL scale, Vinagre and Neves (2008) found that patients' evaluations of a hospital's service quality had a significant impact on their satisfaction with their doctors, nurses, and the hospital's overall service performance. Thus, to promote patient satisfaction, it is important to understand how patients perceive service delivery by healthcare staff.

Physical design of the healthcare environment

Previous literature on evidence-based healthcare design has found that well-designed physical settings play an important role in creating satisfactory experiences for patients (Harris et al., 2002). Physical environment is defined as the physical and interior design features that are stimulus objects (Harris et al., 2002; Waterman & Faulkner, 2010). For a validation of physical design features included in the healthcare environment see Andrade et al., (2012). Several studies have demonstrated the impact of physical design conditions on the consumer perceptions of experience. Swan, Richardson, and Hutton (2003) found that patients who perceived design quality in healthcare environments had higher levels of satisfaction with service from physicians and nurses. Wu et al., (2013) found the practice of healthcare institutions offering design associated with hi-end hospitality influences patient emotional states such as minimizing patients' stress. Reduced stress levels then correlated with increased patient satisfaction. Hepple, Kipps, and Thomson (1990) also highlight the application of the concept of hospitality to healthcare and concluded that hospitality factors pertaining to environment and service were important to a satisfactory experience for patients. The key idea is that 'hospitable physical design' is related to a healthcare facility's cleanliness, quality, updated condition, spatial organization, and accessibility, all of which impact cognitive and affective consumer satisfaction.

Wayfinding

With the paramount importance of the facility-related factors on customer attitudes and behavior in healthcare settings, research has highlighted the important role that the healthcare layout and orientation systems play on the patient. Wayfinding describes the ease with which people are able find entrances and information, recognize and interpret signposts, orient themselves and way-find which has also been found to impact patients' reactions. Patients' ability to navigate through an environment, affected by environmental elements, contribute toward the formulation of attitudes about how satisfactory or unsatisfactory an experience overall is found to be. Literature on consumer perceptions demonstrates that wayfinding is a critical proxy for customer satisfaction (Klebanow, 2006).

Behavioral intentions

Since most previous studies have focused on the relationship between patients' attitudes and satisfaction, there is a need to explore behavioral responses that have significant implications for

the financial efficacy of the healthcare facility (Betts et al. 2016; Fottler et al., 2000; Lee et al., 2013). While there is significant evidence linking atmospherics, service delivery by healthcare staff, physical design of the healthcare environment, and wayfinding to patients' overall satisfaction with healthcare experience, hospital leaders and boards are increasingly required to "include cost-effective evidence-based and supportive interventions in their strategic plan and investment portfolio or risk suffering the economic consequences in an increasingly competitive and transparent environment" (Sadler et al., 2008, p. 1). From a revenue perspective, the past few years have seen the emergence of a fundamentally new concept in the reimbursement to hospitals and physicians, called "value-based purchasing" or "pay for performance." Due to the mandated reporting of patients' experiences in hospitals through the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey, it is likely that those hospitals with servicescapes that are more 'hospitable' will be rated higher by patients in the HCAHPS survey. In this regard, experience with a hospital—obtained through various sources such as improved atmospherics, service delivery, physical design, and way-finding—"could have significant influence on patient choice of hospitals with a resulting impact on a hospital's market share and its financial bottom line." (p. 5).

Since satisfied patients tend to reuse (i.e. revisit or repurchase) the hospital service, repeat patients are able to receive improved care as medical staff searches for better ways of treatment and/or diagnosis for patients' diseases. Herzlinger (2006) suggested that patients enjoy sharing their experience and information on treatment with other people. Also, patients' feelings about the hospital affect their level of satisfaction (Herzlinger, 2006). Positive WOM from satisfied patients can create opportunities to attract potential customers to use the hospital service, which results in improved performance of the hospital. For instance, a study of pneumonia patients by Goldman and Romley (2011) found that one standard deviation increase in a hospitable environment raises its demand by 38.5% on average, whereas demand is substantially less responsive to various measures of clinical quality. Moreover, changes in employer health coverage and a new competitive environment are giving patients increasing choices in the doctors and hospitals they can use. Thus, hospitals are shaping a new look and feel, striving to create settings that offer patients a sense of hospitality, and competing for customers who are willing to pay more for improved experiences and who have options to go elsewhere when they are not satisfied (Miller & Swensson, 2002).

Stimulus-Organism-Response

To examine the servicescape antecedents of patient satisfaction and its influence on subsequent behavioural intentions, the authors used the Stimulus-Organism-Response (S-O-R) framework to develop a model—Servicescape Framework for Hospitable Healthcare—that examines the infusion of hospitable servicescape elements including atmospherics, service delivery, physical design and wayfinding in a healthcare setting (Figure 1). In the S-O-R framework, the *stimulus* is defined as those factors that affect internal states of the individual and consists of physical and social environmental inputs (Ulrich, 2001). *Organism* refers to “internal processes and structures intervening between stimuli external to the person and the final actions, reactions, or responses emitted. The intervening processes and structures consist of perceptual, physiological, feeling, and thinking activities” (Bagozzi, 1986, p. 46). *Response* in S-O-R “represents the final outcomes and the final decisions of consumers, which can be approach or avoidance behaviors” (Chang, Eckman, & Yan, 2011). Our model (Figure 1) builds on Hutton and Richardson (1995) (1991) Healthscape Framework, and systematically examines patients’ evaluations of elements encountered during their experience in a healthcare setting and subsequent behaviors. In the following section, we discuss each component of the model.

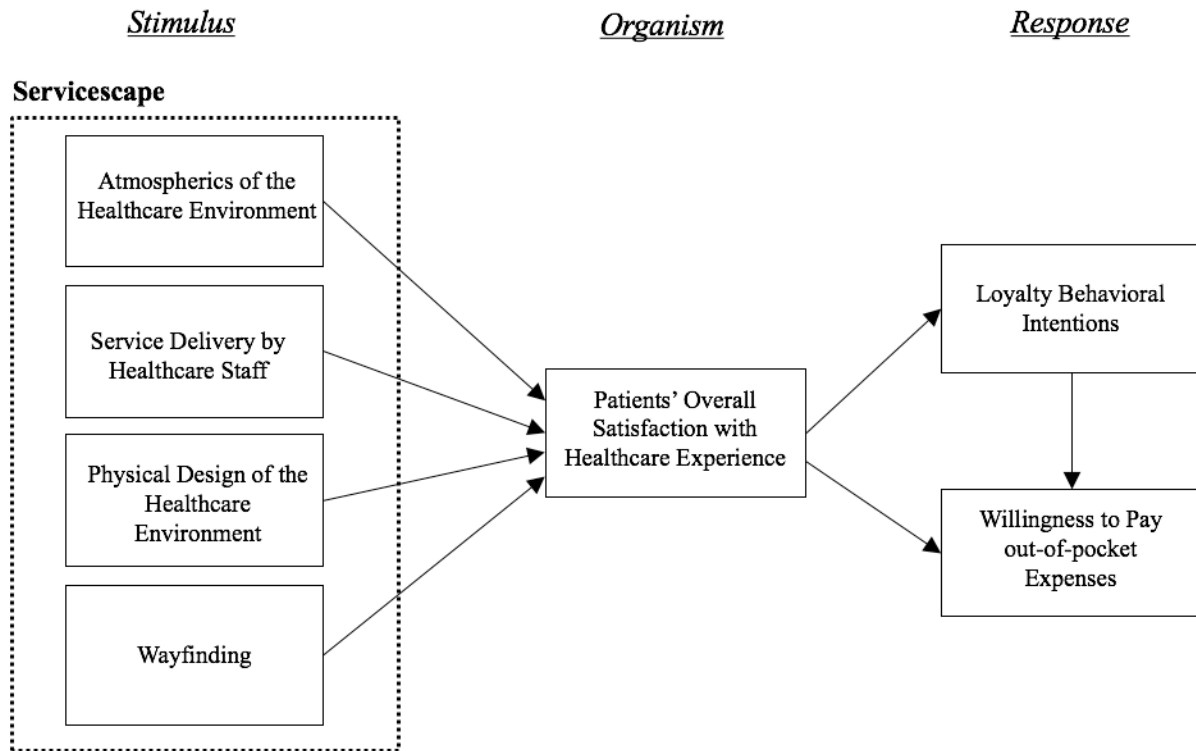


Figure 1. Servicescape framework for hospitable healthcare

Servicescape framework for hospitable healthcare

The first component of the model i.e. Stimulus measures patients' experience of specific environmental elements. The creation of a hospitable servicescape through an infusion of atmospheric, service, physical design, and wayfinging elements is informed by studies in the evidence-based design literature (Andrade & Devlin, 2015; Lee, 2011; Swan et al., 2003) and in Hutton and Richardson's (1995) Healthscapes model.

The second component of the model i.e. Organism measures patient perceptions of satisfaction with their overall experiences. Given that Hutton and Richardson (1995) emphasize the measurable impacts of patients' experiences, we operationalized the construct of patients' overall satisfaction with the healthcare experience in terms of Dube and Morgan's (1996) indicators: quality of services, logistics of service, employee attitudes, and overall atmospheres of the facility.

Specifically, based on the various servicescape elements that will be examined in the present study, we hypothesize that:

H1a: The higher the patients' experiences of atmospheric elements, the higher their overall satisfaction with their healthcare experience.

H1b: The higher the patients' experiences of service delivery elements, the higher their overall satisfaction with their healthcare experience.

H1c: The higher the patients' experiences of physical design elements, the higher their overall satisfaction with their healthcare experience.

H1d: The higher the patients' experiences of wayfinding elements, the higher their overall satisfaction with their healthcare experience.

The third component of the model, behavioral intentions, represents the desirable, "approach"-related outcomes of Hutton and Richardson's (1995) Healthscapes model. In the hospitality context, an evaluation of customer preferences is usually accompanied by an assessment the customers' likelihood to choose a particular product over another, return to receive a service, and recommend to others (Lee, 2013). Thus, we included patients' behavioral intentions (i.e. likelihood to choose, return, recommend). Furthermore, interventions in healthcare design and service will be more justifiable if the financial viability of those interventions is known. In the healthcare setting, studies have also indicated that patients are willing to pay higher out-of-pocket expenses for improved physical environment, atmospherics, and service delivery (Suess & Mody, 2017). Thus, we also measured patients' willingness to pay higher out-of-pocket healthcare expenses in the third component of our model.

Based on the literature, we hypothesize the following relationships between the second and third components of the model:

H₂: The higher the patients' overall satisfaction with their healthcare experience, the higher their loyalty intentions i.e. likelihood to choose, return, recommend the healthcare provider

H₃: The higher the patients' overall satisfaction with their healthcare experience, the more they are willing to pay out-of-pocket expenses if they were raised by the healthcare provider.

H₄: The more loyal patients are to healthcare provider, the more they would be willing to pay out-of-pocket expenses if the provider raised them.

The various hypotheses of the present study result in the following structural model (Figure 2) that expands on the servicescape framework for hospitable healthcare presented in Figure 1.

Methodology

Survey design

A survey was administered to patients developed on the basis of review of related research. The first section of the survey included 4 situational questions where respondents indicated in which healthcare unit they were currently receiving services, how often they had visited that healthcare unit in a 12-month time frame and the average time in hours spent in the healthcare unit during their visits.

Next, the survey included 15 questions about the healthcare unit's design, spatial and physical comfort on a 7-point Likert-type scale (1=strongly disagree; 7= strongly agree). The following items were adapted on the basis of face validity from the Perceived Hospital Environment Quality Indicators (PHEQI) developed by Andrade et al., (2012): "The furnishings are in good condition"; "The quality of the furnishings is good"; "The patient areas are kept clean"; "The walls, floors, and ceilings are well kept"; "The number of seats (chairs and sofas) is appropriate"; "Patient waiting areas are well-equipped (chairs, sofas, tables, TVs, newspapers, magazines)"; "The restrooms are well kept"; "The equipment is in good condition". In addition, respondents were asked to indicate to what level they agreed with the following items on a 7 point Likert-type scale (1=strongly disagree; 7= strongly agree) adapted from an atmospheric cues scale developed by Loureiro et al. (2013) "The ambient lighting creates a comfortable atmosphere"; "The music is pleasing"; "The ambient temperature is comfortable"; "Walls, floors, and ceiling color schemes are nice"; "The scents in the air are pleasant"; "The overall

decoration is attractive”; “There are enough plants and flowers”; “The paintings and pictures are appealing”; “There is enough quietness”; Overall appearance of staff is nice”; “There is enough artwork and decoration”; “Furnishings are comfortable”; “Equipment is visually appealing”.

The third section of the survey asked respondents to rate service quality using (Babakus and Mangold's (1992) scale with the following items which were adapted for hospital services from Zeithaml, Berry, and Parasuraman (1996) SERVQUAL indicators: “People receive a nice welcome from the staff”; “There is a good cooperative atmosphere among staff”; “It is easy for patients to identify the name, surname, and function of the staff”; “Staff are informative”; “Service from staff is prompt”; “Staff are willing to help patients”; “Staff are polite”; “Staff are sympathetic and reassuring”; “Staff are organized”.

In the fourth section of the survey, respondents were asked to respond to five psychographic statements on a 7-point Likert-type scale (1=strongly disagree; 7= strongly agree) regarding the healthcare unit facility’s physical wayfinding and orientation: “It is easy to recognize the entrance of this healthcare unit”; “In this healthcare unit, there are enough signposts to help you find your way around”; In this care unit, it is easy to find your way around”; “In this care unit, you can easily find information points”; “Waiting areas are clearly defined”. These items were adapted from Andrade et al. (2012).

In the fifth section of the survey, four items regarding overall satisfaction with experience were borrowed from Dube and Morgan (1996) and included using a 7-point Likert-type scale (1=strongly disagree; 7= strongly agree): “I am satisfied with the quality of services, in general”; “I am satisfied with the logistics of service delivery”; “I am satisfied with employees attitudes”; “I am satisfied with the general atmosphere of the facility”. 4 items regarding quality in healthcare services and consumer behavioral intentions on a 7 point Likert-type scale were borrowed from Zeithaml et al. (1996) in Murti, Deshpande and Srivastava (2013) (1=very unsatisfied; 7= very satisfied): “I am willing to recommend this healthcare unit to others (friends, colleagues and family members), who seek my advice”; “If I need medical service in the future, I would consider this healthcare unit as my first choice.”; “I would visit other healthcare units run by the same parent group.”; “If the healthcare unit raised out-of-pocket expenses relative to other healthcare insitution, I would consider this healthcare unit as my first choice.”. Finally, demographic questions, including age, gender, education, ethnicity, income, employment status and state-of-health were asked.

Sampling

The desired sampling frame for this study included adults over the age of 18 who were English speaking and receiving healthcare services. To gain a sample with these qualifications, a purposive sampling approach was used, targeting groups likely to fit the desired sampling frame. The approach to recruit participants for the study involved the use of several outpatient care units within a major medical center. Department heads were contacted to secure permission and assistance with recruiting hospital technicians for notification regarding survey administration to patients. Contacted departments for surveying included Radiology, Orthopedics, Phlebotomy, Nuclear Medicine, Radiation-Oncology, Nuclear Medicine Family Medicine, Sports Medicine, Oncology, Breast Center, and Neurology. These multi-units departments were selected due to their high patient volume and cooperation from department staff. Because the theoretical model specified is not specific to any particular unit or service in the medical center, a cross-section of the patient populations is ideal; these units represented such a cross-section of non-surgical, non-emergency, outpatient healthcare services. During the study, the senior department administrator from the Oncology unit denied permission to further conduct survey recruitment, citing issues with survey fatigue for the medical center's primary patient satisfaction assessment administered by Press-Ganey company. During data collection, the Orthopedic clinic withdrew from participating in the study asserting (1) intercepting patients for the survey resulted in a 2 minute adverse effect on patient throughput rate; and, (2) the propensity for patients in the unit experiencing high levels of pain associated with broken or fractured bones.

Data analysis

Data analysis consisted of several stages using software Stata 13.0. 224 completed interviews received codes for missing data. These cases were deleted on a list-wise basis, resulting in a total of 216 cases for further analysis ($n = 216$). Next, descriptive statistics and distributions were assessed. Data were screened for skewness and kurtosis, univariate outliers, and multivariate outliers using Cook's distance. Next, the scales including atmospherics of the healthcare environment, service delivery by healthcare staff, physical design of the healthcare environment, and wayfinding in the proposed model were validated by using a confirmatory factor analysis (CFA). Based on acceptable fit indices, a structural equation modeling (SEM),

(maximum likelihood method), was conducted to test the hypotheses and proposed model. Multiple measures were used to assess the fit between both measurement and structural models and data, including normed chi-square (chi-square/df), critical function index (CFI), Tucker Lewis Index (TLI), root-mean-square error approximation (RMSEA), and standardized root mean squared (SRMR) that have been suggested for single group analysis in the literature (Acock, 2008; Hair, Anderson, Babin, & Black, 2010).

Results

Profile of respondents

The demographic characteristics of respondents have been shown in Table 1.

The majority of respondents were female (65%). More than half of the participants were in the age range of 60-75 years old (52.7%). The vast majority of patients had been waiting for less than 1 hour (80.2%), some patients waited 1-3 hours (18.9%), and very few waited up to 6 hours (0.94%). The visit frequency was fairly evenly distributed, with 45% patients reporting a visit frequency of once a year and 53.1% visiting more frequently. Employment status was full time of part-time for 48.2% and not employed for 51.8%. Income was reported as less than \$15,000 annually by 35.8%, less than \$45,000 by 39.5% and greater than \$45,000 by 24.7%. The highest reported education level as Graduate School. Ethnicity was predominantly reported as Black/African American (45%), followed by White (36%).

Table 1. Demographic profile of respondents

Demographic		<i>f</i>	% (<i>n</i> = 216)
Gender	Male	76	35
	Female	140	65
Age (years)	Older than 75	12	5.5
	60–75	114	52.7
	45–59	36	16.6
	30–44	28	12.9
	18–29	24	11.1
	Refused to respond	0	0
Average length of time spent in healthcare unit			
	Less than one hour	170	80.2

	1-3 hours	40	18.9
	4-6 hours	6	.94
	7-9 hours	0	0
	9-12 hours	0	0
	More than 12 hours	0	0
	Refused to respond	0	0
Visit frequency to healthcare unit	Once a year	97	45
	A few times a year	66	31
	Once a month	14	6.6
	2-3 times a month	20	9.4
	Once a week	6	2.8
	2-3 times a week	4	1.9
	Daily	2	.94
	I don't know	4	1.9
Employment status	Employed full-time	75	34.9
	Employed part-time	37	16.9
	Unemployed	4	1.9
	Temporarily laid off	37	17
	Retired	14	6.3
	Other	0	0
	Refused to respond	75	0
Income (yearly)	Less than \$15,000	76	35.8
	\$15,000– less than \$30,000	48	22.6
	\$30,000—less than \$45,000	36	16.9
	\$45,000—less than \$60,000	22	8.5
	\$60,000—less than \$75,000	8	3.8
	\$75,000—less than \$90,000	8	3.8
	\$90,000 or more	18	8.5
	Refused to respond	0	0
Education	Grade school	18	8.5
	High school	48	22.6
	Some college	46	20.7
	College	66	30.2
	Graduate school	38	17.9
	Refused to respond	0	0
Ethnicity	White/Caucasian	76	36
	Black/African American	96	45
	Asian/Pacific Islander	8	1.9
	Native American/Alaskan		
	Native	8	3.8
	Multiracial	10	4.7
	None of these	18	8.5
	Refused to respond	0	0

Hispanic background	Yes	30	14
	No	186	86
Healthcare Unit	Radiology	73	32.6
	Radiation-Oncology	2	.09
	Breast Center	61	27.2
	Family Medicine	47	20.5
	Nuclear Medicine	5	2.2
	Orthopaedics	4	1.8
	Phlebotomy	33	14.7

A summary of the means has been reported in Table 2.

Table 2. Means and standard deviations for survey measures

Topic	Survey item	<i>M</i>	<i>SD</i>
Atmospherics of the healthcare environment	The ambient lighting creates a comfortable atmosphere	5.81	1.54
	The music is pleasing	5.13	2.00
	The ambient temperature is comfortable	6.02	1.25
	Walls, floors, and ceiling color schemes are nice	5.73	1.56
	The scents in the air are pleasant	5.56	1.75
	The overall decoration is attractive	5.64	1.54
	There are enough plants and flowers	4.98	2.05
	The paintings and pictures are appealing	5.67	1.50
	There is enough quietness	6.0	1.14
	Overall appearance of staff is nice	6.13	1.24
	There is enough artwork and decoration	5.72	1.60
	Furnishings are comfortable	5.93	1.31
	Equipment is visually appealing	5.80	1.48
Service delivery by healthcare staff	People receive a nice welcome from the staff	6.14	1.35
	There is a good cooperative atmosphere among staff	6.21	1.30

	It is easy for patients to identify the name, surname, and function of the staff	5.86	1.49
	Staff are informative	6.11	1.36
	Service from staff is prompt	6.20	1.28
	Staff are willing to help patient	6.34	1.09
	Staff are polite	6.19	1.35
	Staff are sympathetic and reassuring	6.09	1.42
	Staff are organized	6.17	1.35
Physical design of the healthcare environment	The furnishings are in good condition	6.10	1.20
	The quality of the furnishings is good	6.00	1.31
	The walls, floors, and ceilings are well kept	5.92	1.48
	The patient areas are kept clean	6.01	1.41
	The number of seats (chairs and sofas) is appropriate	6.26	.96
	Patient waiting areas are well-equipped (chairs, sofas, tables, TVs, newspapers, magazines.	6.17	1.12
	The restrooms are well kept.	5.64	1.91
	The equipment is in good condition	6.15	1.23
Wayfinding	It is easy to recognize the entrance of this healthcare unit	5.86	1.52
	In this healthcare unit, there are enough signposts to help you find your way around	6.03	1.47
	In this care unit it is easy to find your way around	5.81	1.51
	In this care unit, you can easily find information points	6.10	1.21
	Waiting areas are clearly defined	6.30	1.04
Overall satisfaction with healthcare experience	I am satisfied with the quality of services, in general	6.20	1.38
	I am satisfied with the logistics of service delivery	6.22	1.35
	I am satisfied with employees attitudes	6.18	1.38

Loyalty intentions	I am satisfied with the general atmosphere of the facility	6.19	1.39
	I am willing to recommend healthcare unit to others (friends, colleagues and family members), who seek my advice	6.08	1.64
	If I need medical service in the future, I would consider this healthcare unit as my first choice	6.02	1.65
	I would visit other healthcare units run by the same parent group.	5.71	1.91
Willingness to pay out-of-pocket expenses	If the healthcare unit raised out-of-pocket expenses relative to other hospitals, I would consider this healthcare unit as my first choice	5.69	1.78

The scales used to measure constructs in the model - atmospherics of the healthcare environment, service delivery by healthcare staff, physical design of the healthcare environment, wayfinding, and loyalty intentions- have been validated in previous studies, while patients' willingness to pay out-of-pocket expenses was measured using a single-item. The reliabilities ranged from 0.91 to 0.96. A confirmatory analysis was conducted. All measurement model paths were significant without any offending estimates (Table 3). Fit indices indicated an acceptable range based on the suggested threshold values: RMSEA=0.059; SRMR=.048; CFI=0.95; TLI=.97; $\chi^2(702) = 1745$; Normed $\chi^2=2.48$ (1745/702) (Acock, 2013; Hair, 2010). The authors used several measures to check the reliability and the validity of the CFA model (Jang & Liu, 2009). Cronbach's α and composite reliability values were computed to check the measurement's reliability. Reliabilities were over .70 as recommended by Hair et al., (2010). Convergent validity and discriminate validity were also tested by checking factor loadings and average variance extracted (AVE). All composite reliabilities were above .70 and exceeded the squared correlations between pairs of constructs indicating high internal consistency between the items measuring the various constructs and providing support for discriminant validity of the measures (Acock, 2013). Convergent validity was satisfied in this study, in that all items had high (values ranged from .62 to .96), significant ($p = .000$) standardized factor loadings on their underlying

constructs. The values for both the reliability and validity measures indicated that the models were suitable for subsequent structural analysis.

Table 3. Confirmatory factor analysis

Constructs and indicators	Loadings ^a	Indicator reliability	Error variance ^b
Atmospherics of the healthcare environment ($\alpha = .95$; $\rho = .97$; AVE=.64) ^c			
• The ambient lighting creates a pleasant atmosphere	.82	.67	.18
• The music is pleasing	.62	.38	.38
• The ambient temperature is comfortable	.81	.66	.19
• Walls, floors, and ceiling color schemes are nice	.86	.74	.14
• The scents in the air are pleasant	.81	.66	.19
• The overall decoration is attractive	.86	.74	.14
• There are enough plants and flowers	.64	.41	.36
• The paintings and pictures are appealing	.86	.74	.14
• There is enough quietness	.87	.76	.13
• Overall appearance of staff is nice	.71	.50	.29
• There is enough artwork and decoration	.81	.66	.19
• Furnishings are comfortable	.89	.79	.11
• Equipment is visually appealing	.79	.62	.21
Service delivery by healthcare staff ($\alpha = .96$; $\rho = .98$; AVE=.79) ^c			
• People receive a nice welcome from the staff	.89	.79	.11
• There is a good cooperative atmosphere among staff	.97	.94	.03
• It is easy for patients to identify the name, surname, and function of the staff	.76	.58	.14
• Staff are informative	.96	.92	.04
• Service from staff is prompt	.90	.81	.10

• Staff are willing to help patients	.83	.69	.17
• Staff are polite	.95	.90	.05
• Staff are sympathetic and reassuring	.92	.85	.08
• Staff are organized	.83	.69	.17
Physical design of the healthcare environment ($\alpha = .94$; $\rho = .96$; AVE=.70) ^c			
• The furnishings are in good condition	.85	.72	.15
• The quality of the furnishings is good	.93	.86	.07
• The walls, floors, and ceilings are well kept	.94	.88	.06
• The patient areas are kept clean	.96	.92	.04
• The number of seats (chairs and sofas) is appropriate	.76	.58	.24
• Patient waiting areas are well-equipped (chairs, sofas, tables, TVs, newspapers, magazines.	.68	.46	.32
• The restrooms are well kept.	.69	.48	.31
• Equipment is in good condition	.82	.67	.18
Wayfinding ($\alpha = .91$; $\rho = .95$; AVE=.68) ^c			
• It is easy to recognize the entrance of this healthcare unit	.81	.66	.19
• In this healthcare unit, there are enough signposts to help you find your way around	.93	.86	.07
• In this care unit it is easy to find your way around	.83	.69	.17
• In this care unit, you can easily find information points	.79	.62	.21
• Waiting areas are clearly defined	.76	.58	.24
Overall Satisfaction with Healthcare Experience ($\alpha = .95$ $\rho = .82$; AVE=.86) ^c			
• I am satisfied with the quality of services, in general	.92	.85	.08
• I am satisfied with the logistics of service delivery	.95	.90	.05
• I am satisfied with employees attitudes	.96	.92	.04
• I am satisfied with the general atmosphere of the facility	.89	.79	.11

Loyalty Intentions ($\alpha = .91$ $\rho = .83$; AVE=.87)^c

• I am willing to recommend healthcare unit to others (friends, colleagues and family members), who seek my advice	.94	.90	.04
• If I need medical service in the future, I would consider this healthcare unit as my first choice	.96	.92	.05
• I would visit other healthcare units run by the same parent group.	.95	.91	.04

^a Entries are standardized values; all statistically significant ($p < .01$).

^b Error variance entries are standardized.

^c α = Cronbach's alpha of reliability; ρ = composite construct reliability; AVE = amount of variance extracted.

The average variance estimates (AVEs) ranged between 0.64 and 0.87.

Based on measurement fit, further analysis was conducted on the structural model (Figure 2).

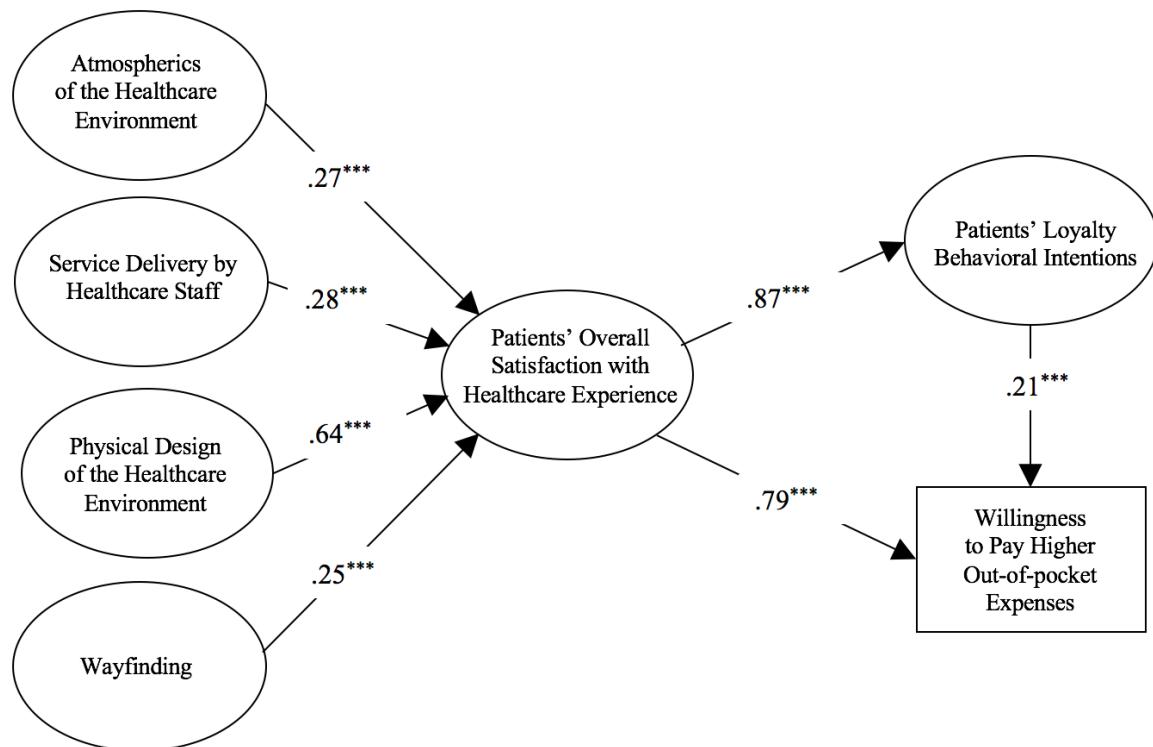


Figure 2 Structural model results

The chi-square test for the measurement models was significant. However, chi-square statistical results tend to be significant in large sample sizes and complex models (Liu & Jang, 2009). The structural model achieved acceptable fit indices based on the suggested threshold values for the other fit indices: RMSEA=0.06; SRMR=.054; CFI=0.90; TLI=.89; $\chi^2(749) = 2506$; Normed $\chi^2=3.34$ (2506/749) (Acocck, 2008; Hair et al., 2010). All structural relationships were significant, as presented in Table 4, thus validating the various hypotheses of the present study.

Table 4. Results of structural equation model

Path	Path coefficient ^a	$p > z$
Atmospherics of the Healthcare Environment → Patients' Overall Satisfaction with Healthcare Experience	.27(.06)	.00***
Service Delivery by Healthcare Staff → Patients' Overall Satisfaction with Healthcare Experience	.28(.07)	.00***
Physical Design of the Healthcare Environment → Patients' Overall Satisfaction with Healthcare Experience	.64(.11)	.00***
Wayfinding → Patients' Overall Satisfaction with Healthcare Experience	.25(.06)	.00***
Patients' Overall Satisfaction with Healthcare Experience → Loyalty Intentions	.87(.12)	.00***
Patients' Overall Satisfaction with Healthcare Experience → Willingness to Pay Out-of-pocket Expenses	.79(.13)	.00***
Loyalty Intentions → Willingness to Pay Out-of-pocket Expenses	.23(.08)	.00***

^a Entries are standardized estimates (standard errors). *** = $p < .001$

The relationships between the various servicescape elements and patients' overall satisfaction with healthcare experience were: Physical design of the healthcare environment (.64) and significant ($p < .01$); atmospherics of the healthcare environment (.27) and significant ($p < .01$); wayfinding (.25) and significant ($p < .01$); and service quality by healthcare staff (.28) and significant ($p < .01$). The relationships between patients' overall satisfaction with healthcare experience and loyalty intentions was (.87) and significant ($p < .01$); between patients' overall satisfaction with healthcare experience and willingness to pay out-of-pocket expenses was (.79) and significant ($p < .01$). Finally, the relationship between loyalty intentions and willingness to payout-of-pocket expenses was (.21) and significant ($p < .01$).

Discussion and conclusion

The influence of the surrounding environment on consumers' satisfaction is a longstanding topic of research and has implications for healthcare environments. Studies have shown that physical environment and social elements affect the patient experience in several ways, however, there is very little attention paid to subsequent behavioural intentions in the patient-as-consumer healthcare context. The current study fills this gap. Results confirmed, as hypothesized, that atmospherics of the healthcare environment, service delivery by healthcare staff, physical design of the healthcare environment, and wayfinding significantly affect patients' overall satisfaction with healthcare experience. Results indicated various relationship strengths' most notably that that hospitable physical design elements evidenced the strongest positive path coefficient among the relationships between servicescape elements and patients' overall satisfaction with healthcare experience. Furthermore, results showed that patients' positive overall satisfaction with healthcare experience predicts strong significant behavioral outcomes including loyalty intentions (i.e. likelihood to choose, return, and recommend the healthcare institution to others) as well as willingness to pay out-of-pocket expenses.

Physical design of the healthcare environment evidencing the strongest significant relationship with patient overall satisfaction with healthcare experience is not surprising since the literature shows that the physical design of a space tends to be a major consideration by patients (Andrade & Devlin, 2015; Andrade et al., 2012; Suess & Mody, 2017; Ulrich, 1991). Patients' - particularly those who are in poor health- may be especially appreciative of hospitable healthcare design. Poor health or good health, however, the result that the design quality and physical environment predicts patient's satisfaction is not new (Andrada et. al., 2012). Prior research has evidenced that design of a healthcare center has pronounced effects on patients' diversified emotional states- primarily stress, in addition to satisfaction (e.g. Suess & Matilla, n.d.; Ulrich, 1984). Results may best be interpreted by drawing from Lazarus and Folman's (1984) cognitive theory of stress. The theory posits that emotional responses that are indicative of stress levels depend on the significance of wellbeing. In a healthcare setting, patients might be more vulnerable to dissatisfied emotional responses, not only because they may be in poor health and more physically and psychologically impaired, and so with less resources to deal with the demands, but also because they might actually be dealing with multiple sources of dissatisfaction. For example, in addition to myriad illness, related factors, patients need to adapt to strange and unfamiliar healthcare physical environments over which they have little control. In

this respect, wayfinding is also considered in the physical design which gives additional confidence to this finding that patients' ability to easily find their way around a healthcare facility may influence their satisfaction and perception of a positive or negative overall experience.

The significant results of the healthcare environment also extend to the influence of atmospherics on patient overall satisfaction with experience. Similar to physical design, previous literature on patients' emotional responses have shown correlations between atmospheric elements (i.e. music and mood lighting) and patient relaxation (Kotler, 1973). These findings corroborate that a hospitable atmosphere has implications for higher patient satisfaction with overall experience. In the case of this study, atmospheric conditions of healthcare units are not amiable to be changed (e.g. temperature, lighting, music, aromas, etc.) therefore, patients might need to engage in coping with more relevant aspects of the situation (e.g. dealing with pain, interpersonal relationships with healthcare staff, preparing for uncertainty related to health outcomes). As such, patients may use emotional coping directed at changing their satisfaction level with the atmospherics. According to Taylor's theory of cognitive adaptation (Taylor, 1983) it is plausible that patients may develop either positive perceptions of the atmospherics, which could increase their satisfaction with aspects of the overall experience. In contrast, patients who are dealing with stressful aspects such as pain may not be able to tolerate, accept, or minimize the non-ideal atmospherics by highlighting their negative impacts and becoming dissatisfied.

Service delivery also predicted patients' overall satisfaction with experience. This is an anticipated finding as patients are especially dependent on physician, nursing, and medical staff care. In fact, patients are directly and continuously embroiled in interpersonal relationships with staff and operational processes of the unit. Additionally, their primary concerns are diagnosis, disease relief, recovery, and returning home in good health. In terms of service quality, Baillie (2009) found that patients' attitudes, including positive sentiments towards service provided by staff, correlated with feelings of satisfaction. Devlin (1995) also showed that patients' adjust their expectations to modulate their attitudes. Therefore, it can be inferred hospitable relationships with healthcare staff has a positive impact on patients overall experience. Accordingly, healthcare professionals demeanor, information, cooperation, organization, and prompt service, are crucial and consequently explains that patients feeling of overall satisfaction can be explained by their perception of the quality of the service elements included in the

healthcare servicescape. Staff members of units should be made aware of their important impact on patient responses.

This research extends beyond earlier studies because it contributes to the understanding a more robust process of behavioral intention evaluation in that it provided for the direct ways through which atmospherics of the healthcare environment, service delivery by healthcare staff, physical design of the healthcare environment, and wayfinding affect patients' overall satisfaction with healthcare experience, which, in turn, predicts behavior. The measure of healthcare servicescape hospitable perception is important for researchers interested in healthcare quality, environmental psychology, and the infusion of hospitality into healthcare. Since it's development by Bitner (1992), service industries (i.e. retail, food and beverage, lodging, leisure, gaming, etc.) have maintained an interest in the study of environment and service and its implications for users. As a result, some previous literature in healthcare has demonstrated that the physical and social environments have an impact on patients' recovery and satisfaction and there is the assertion for the need for more research made currently (Lee, 2017) with the advantage that healthcare industry is ready to apply it. More specifically, reliable and valid measures on healthcare servicescape quality can be useful for hospital administrators.

Thus, this study suggests that healthcare decision-makers can capitalize on hospitable facility and service features (i.e. *Servicescape for Hospitable Healthcare*) in an effort to promote patients' positive perceptions and a hospitable overall experience to increase satisfaction. In a time when healthcare institutions are actively competing for patients, when patients are becoming increasingly aware of their role as consumers of the healthcare they purchase, and when staff are accountable for engagement with patients, it is important for managers to monitor users' perceptions of quality and levels of satisfaction to track quality improvements over time. Such data allows managers to compare their facilities to those of other healthcare providers (assuming same measures are utilized) and to recognize and mitigate service problems. With regard to physical design, patients are increasingly adopting the perspective of consumerism and consumer facility types in healthcare (e.g. Suess & Mody, 2017). In fact, the Joint Commission on Accreditation of Healthcare Organizations are using patient satisfaction as a quality care indicator (JCAHO, 2017). Further, as of 2008, healthcare organizations in the U.S. collect data through standardized survey means; available to the public (Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) providing an opportunity to directly compare

institutional satisfaction ratings. These examples demonstrate a significant trend to ask patients to express their opinions regarding experience, and place a great emphasis on quality as defined by their perceptions. In an increasingly competitive market, where healthcare consumers have more options for care, healthcare institutions must work increasingly harder to create environments that encourage repeat visits, recommendations, and increase satisfaction.

Thus, healthcare administrators can not only leverage new design ideas, but also the new approaches to service culture (Malkin, 2013); the synergies between these two elements are recognized in Hollis and Verma's (2015)) assertion that a well-designed environment tapping into ideas from the hospitality world can help enhance a healthcare facility.

Although the results produced in this study support its hypotheses, it has some limitations. The correlational design weakens the evidence in support of the direction of the relationship between servicescape elements and patients' overall satisfaction with healthcare experience. The proposed model is based on the assumption that the relationships flow in the direction depicted (Figure 1). These results, however, do not exclude the possibility that satisfaction with overall experience may affect perception of servicescape elements in a bidirectional way, which, in turn, affects behavioral responses. Other limitations relate to subjective evaluation of indicators included in constructs. A hard measure of the physical design quality, wayfinding, atmospherics, and service quality as well as the moderating affects of patient emotional responses and situational factors including state of physical health would provide a more comprehensive picture.

Time-constrained interviews could have potentially affected participants' responses. Also, results might not be representative of the whole population because of hard-to-reach respondents in the age demographic younger than 60, and lack of a nonresponse bias check. Finally, given the length of some of the statements and the complicated nature of the topics, respondents might not have comprehended the survey questions or answered the questions carefully. In addition, the survey instrument measures the respondents' self-expressed intentions, not their actual behavior. Finally, the theoretical model used in the study is a broad overview of healthcare facilities and does not discern between specific healthcare service units. The study was limited to the examination of specific elements listed in the research questions. Because the study was conducted within the context of a U.S. healthcare system, the results may not be necessarily generalizable worldwide.

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