

THESIS

EXPLORING CULTURAL PERCEPTIONS OF WAITING AREA DESIGN FEATURES ON
MOOD AND QUALITY OF CARE

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ABSTRACT

EXPLORING CULTURAL PERCEPTIONS OF WAITING AREA DESIGN FEATURES ON MOOD AND QUALITY OF CARE

Healthcare organizations spend millions of dollars to improve the physical attractiveness of their facilities, particularly in more public areas such as lobbies and waiting rooms, however impacts of renovations on perceived quality of care is rarely measured (Becker & Parsons, 2007). This two-part study uses the servicescape lens to examine perceived impacts of waiting area design features on mood and quality of care with people from two different countries, Kuwait and the United States. The first part of the study used an electronic card sort to identify specific design elements (e.g. furnishings, lighting, interior architectural features, etc) that people associate with positive or negative mood. Positive mood associations informed three different servicescape approaches to the digital design of a waiting area: medical-focused, neutral/activating, and hospitality-focused. In part two of the study, a photorealistic rendering of each servicescape design was used for image elicitation during semi-structured interviews. Twenty adults (five females and five males from each country) were interviewed in their native language using online video-communications technology to share their perceptions of the experiences and quality of care they felt they would receive in each servicescape design. Findings suggest the importance of considering cultural differences when designing waiting areas, respect to atmospheres and affordances that support user's psychological, sociological, and physical needs, including colors, density, visual complexity, style, and spatial configuration.

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TABLE OF CONTENTS

ABSTRACT.....	ii
ACKNOWLEDGMENTS	iii
DEFINITION OF TERMS	vii
CHAPTER I: INTRODUCTION.....	1
Statement of Problem	5
Purpose of Study	5
Theoretical Framework	6
Research Questions	7
Assumptions	7
Researcher’s Perspective.....	8
Delimitations	9
CHAPTER II: REVIEW OF LITERATURE	10
Introduction	10
Evidence Based Design.....	12
Supportive Design in Healthcare Settings.....	13
Lighting/Views.....	14
Acoustics/Background noise.....	15
Furnishings	16
Choice.....	17
Aesthetics/Style.....	17
Floor/Finishes.....	20
Way-finding/Signage	20
Servicescapes	22
Quality of care.....	25
Conceptual Model	27

CHAPTER III: METHODS	29
Population and Recruitment	29
Data Collection.....	30
Analysis.....	33
Human Subjects Approval	34
Research Quality	34
REFERENCES	37
APPENDIX I: MANUSCRIPT	48
Introduction	48
Positive distractions.....	51
Servicescape/Quality of care.....	52
Conceptual framework	55
Methodology	56
Findings.....	59
Part one: Card sort analysis.....	59
Part Two: Photo-elicitation interview analysis	63
Atmosphere: “Nature” promotes positive distraction and mood	64
Affordances: Furnishings mediate social interactions	66
Signs, symbols and style communicate character of patient-staff interactions	68
Mood: Individual and cultural differences interactions	71
Cultural differences in aesthetic preferences for waiting area designs.....	74
Cultural differences in perceptions of servicescape and quality of care.....	76
Discussion	78
Limitations and Conclusion	82
REFERENCES	84
APPENDIX II: SEMI-STRUCTURED INTERVIEW QUESTIONS	93
APPENDIX III: PART ONE: PARTICPANT RECRUITMENT LETTER – ENGLISH	94

APPENDIX IV: PART ONE: PARTICPANT RECRUITMENT LETTER – ARABIC.....95

APPENDIX V: PART TWO: PARTICPANT RECRUITMENT E-MAIL– ENGLISH96

APPENDIX VI:PART TWO: PARTICPANT RECRUITMENT E-MAIL – ARABIC.....97

APPENDIX VII: PHOTO-ELICITATION IMAGES98

APPENDIX VIII: IRB APPROVAL FORM.....99

DEFINITION OF TERMS

Ambient/ atmosphere: refer to the controllable, observable stimuli such as air temperature, lighting and noise (Bitner, 1992).

Amenities/affordances: space and function such as layout, equipment, furnishings etc. Spatial layout refers to the ways in which machinery, equipment, and furnishings are arranged, the size and shape of those items, and the spatial relationships among them. Functionality refers to the ability of the same items to facilitate performance and the accomplishment of goals. (Bitner, 1992).

Atmospherics: the discipline of designing a space to evoke a particular emotional response in users that will enhance their purchasing behaviors (Kotler, 1973).

Design features: interior design elements used to create the physical environment. Including lighting, views, furnishings, finishes and aesthetics (color, amenities, décor/artwork, and style).

Environmental graphics: Items in the physical environment that serve as an explicit or implicit signals that communicate about the place to its users, such as signage, way finding cues, direct communication etc. (Bitner, 1992).

Evidence Based Design (EBD): empirical evidence used in collecting data through both fact finding and location of new evidence, and using that evidence to inform design solutions (Centre for Evidence Based Medicine [CEBM], 2007; Nussbaumer, 2009).

Healthcare: facilities where medical services are provided. Comprises of providers of diagnostic, preventive, remedial, and therapeutic services such as doctors, nurses, hospitals and

other private, public, and voluntary organizations. It also includes medical equipment and pharmaceutical manufacturers and health insurance firms.

Hospitality: is a broad term used for categories within the service industry. For the purposes of this study this term is used specifically to describe the hotel and spa industry.

Lobby: main entrance of a hotel or the building, one of the first spaces that a guest enters and is most likely to wait if needed (Lawson, 2007, p.199).

Mood: an emotional response; temporary state of mind or feeling.

Perceived quality of care: customers' evaluation of the type of healthcare service they will receive (Berry & Bendapudi, 2007).

Person-environment fit: is the degree to which individual and environmental characteristics match (Dawis, 1996).

Physical environment: the overall layout, design, decoration and aesthetics of a space (Lee & Jeong, 2012).

Restorative design: an environment that is capable of promoting recovery from stress, and that especially natural settings have these restorative effects (Hartig et al., 1996).

Service: The action of helping or doing work for someone.

Service design: arrangements that combine facilities, staff and service users in the co-production of care" (Hyde & Davis, 2004).

Servicescape: a model developed by Bitner (1992), highlighting the importance of the impact of the physical environment in which a service process takes place.

Supportive Design Theory (SDT): a theory by Roger Ulrich (1991) that discusses the importance of the physical environment, focusing on variables such as physical factors. He states that these factors promote wellness and support health through interior design in healthcare facilities.

Waiting area: a part of a building or a room, where people sit or stand until the event or appointment which they are waiting for begins.

CHAPTER I

INTRODUCTION

Over the past two decades the healthcare industry has undergone significant transformations in healthcare service delivery. Changes are largely due to advancements in technology, greater access to health information, and higher service expectations from patients (Cheng Lim & Tang, 2000; Zimring, Joseph, & Choudhary, 2004; Francis, 2010). A large number of healthcare providers are competing for patients by upgrading their service design. Service design is defined as “those arrangements that combine facilities, staff and service users in the co-production of care” (Hyde & Davies, 2004). It is important for healthcare providers to have a deeper understanding about what patients and their loved ones’ experience in their facilities, and how they perceive the quality of care. Recently the healthcare industry has begun to recognize the importance of the physical built environment in shaping service experience and people’s expectations of the quality of care they will receive (Lee, 2011). In addition, some facilities have adapted practices from other industries, particularly the hospitality sector, to attract users (Fottler, Ford, Roberts, & Ford 2000; Lee, 2011).

Supportive design is an idea introduced by Ulrich (1991) in the late 1990’s to describe how qualities of the physical environment can provide psychosocial support for people, particularly in times of duress. Patients and visitors often experience emotional and physiological duress in hospitals. When they are anxious or physically debilitated, they need a supportive, calming, and (potentially) restorative environment (Hartig & Marcus, 2006; Bengtsson & Grahn, 2014; Carpman & Grant, 2016). Ulrich (1991) found that changes and additions made in the physical environment of healthcare facilities can positively influence patients’ outcomes, including fostering the healing process, promoting wellness, and reducing

stress. More recent studies have examined health impacts of nature views (Verderber, 1986; Dijkstra, Pieterse, & Pruyn, 2006), noise (White, 1992; Ulrich, 2000; Schweitzer, Gilpin, & Frampton, 2004), artwork (Leather, Beale, Santos, Watts, & Lee, 2003; Cusack, Lankston, & Isles, 2010) and furnishings (Lepore, Allen, & Evans, 1993; Pennachio, 2003). Although most studies examine how design features such as these affect patients, Carpman and Grant (2016) argue that healthcare settings need to accommodate not only patients, but also visitors and staff. Physical design factors are part of the workplace system of a hospital; they both shape and are shaped by the work process, the organization culture, patient characteristics, workforce demographics, and medical and information technologies (Becker & Steele, 1995).

Understanding patient and visitor needs in healthcare waiting areas is a growing concern for facilities planners and researchers (Ayas, Eklund, & Ishihara, 2008; Arneill & Devlin, 2003; Leather et al., 2003). Waiting areas are places where staff, patients, and visitors interact, and where visitors perceive and receive healthcare services (Ayas et al, 2008). Servicescape is a concept developed by Bitner (1992) to describe the role the physical environment design plays in shaping people's service experiences. The model illustrates influences of ambient conditions, functionality, and signage on service satisfaction and has been highly influential in the retail and hospitality design sectors (Lee, 2011). Although people do not typically view healthcare as a service (Wennberg & Fisher, 2006), it is similar to retail and hospitality services in certain aspects, such as that experiences are intended to promote reportage (Cheng Lim & Tang, 2000). It also has uncommon characteristics, including services supported by goods, equipment in operating rooms, or pharmaceuticals. Most importantly, healthcare customers are uniquely at high risk (Berry & Bendapudi, 2007). Healthcare designs have only recently been considered from the servicescape perspective (Lin, B., Leu, Breen, & Lin, W., 2008; Holder & Berndt,

2011; Lee, 2011) and this is particularly apparent in its incorporation of strategies from the hospitality design sector to improve the patient and visitor service experience (Lee, 2011).

Trends in healthcare design look to the hospitality industry not only for service experience, but also by incorporating physical elements from hotels and spas (Wu & Ko, 2013). The role of atmospherics in hotels has been replicated in hospitals, in building exteriors and interiors, including landscape, furnishings, fixtures, décor, lighting, music, and aromas (Pizam, 2007; Wu & Ko, 2013). Atmospherics refers to the discipline of designing a space to evoke a particular emotional response in users that will enhance their purchasing behaviors (Kotler, 1973). This is widely used in the hospitality industry (Wu & Ko, 2013); lobbies, where guests have their first impression of the organization, crucially impact guests' perception and satisfaction (Rutkin, 2005). Lobbies that focus on atmospherics support brand image including style, ambience, service standards and interior design (Rutkin, 2005). Within the last decade, this trend is achieved by the use of hotel-type physical design in healthcare spaces to appeal to and assure the return of prospective patients (Wu & Ko, 2013). For example, studies have revealed that hospitals with hotel-style amenities are associated with positive patient experiences (Randall & Senior, 1994; Sheehan-Smith, 2006). However, most studies examine people's preferences of holistic environmental experience, with few measuring effects of individual design features on mood or behavior.

Although the healthcare industry spends upwards of 800 billion dollars annually (Parish, Berry, & Lam, 2008), including improvements to the attractiveness of lobbies and waiting areas, a limited number of studies have examined effects of hospitality-like qualities and features of waiting rooms users' emotional response, or mood (Dijkstra et al., 2008; Ulrich, 2000), and perceived quality of care (J.Arnetz & B.Arnetz, 1996; Becker & Jones-Douglas, 2006).

Additionally, studies infrequently consider cultural differences in how people respond to waiting room designs (Figueroa, 2016). For example, Figueroa (2016) found that due to the Kuwaiti culture, people tend to cluster in separate gender zones, adapting their behavior based on cultural, political, and religious norms; people readjust their spatial environment to achieve privacy and avoid interacting with strangers of the opposite sex (Figueroa, 2016). Figueroa (2016) suggests that hospital waiting areas in Kuwait should create flexible spaces that would give people options of sitting by themselves, with others of the same sex, or with others of opposite sex. This study highlights the importance of understanding and respecting cultural differences in an increasingly globalized healthcare industry (Figueroa, 2016; Shepley & Song, 2014). Healthcare facilities around the globe are trying to compete for patients' satisfaction. Thus, professionals need to be attuned to the cultural needs and behaviors of the users in the spaces they design. Cultural and geographical differences are known to shape people's experiences, yet healthcare waiting areas designs in the United States (US) are relatively similar to waiting areas in Kuwait (Shepley & Song, 2014).



*Figure 1: U.S. public hospital (top-left), Kuwait public hospital (top-right)
U.S. medical facility (bottom-left), Kuwait medical facility (bottom-right)*

To better understand how to more effectively design waiting areas for improved user experiences, more research is needed to understand impacts of specific design features and atmospheric qualities on peoples' mood and perceived quality of care, including users from different cultural and geographic backgrounds.

Statement of Problem

Atmospherics in the healthcare setting are used to promote positive emotional responses from users, helping to change their moods from anxious, stressed, or depressed to calm, relaxed, or happy. However, a limited number of studies have examined the effect of healthcare waiting area design on users' mood (Ulrich, 2000; Dijkstra et al., 2008). Servicescape design employs atmospherics, along with functional and signage strategies, to communicate quality of care, yet there has also been little research examining people's perceptions of servicescape design in healthcare (J.Arnetz & B.Arnetz, 1996; Becker & Jones-Douglas, 2006). Although the healthcare industry has implemented designs from the hospitality sector with the intention of improving user experiences, they do so with little evidence that changes have a positive outcome on healthcare visitors. There is a lack of understanding about how different physical features of waiting area designs (e.g., furnishings, views, and aesthetics) may affect customers' mood and how the atmospherics created through combining features associated with positive mood might impact perceived quality of care.

Purpose of the Study

This exploratory study focuses on how design features in healthcare waiting areas affect people's mood and perceived quality of care, identifying differences, if any, between two cultures (US and Kuwait). Mood has been conceptualized in the consumer research literature

both as response and state (Luomala & Laaksonen, 2000). For the purpose of this study, mood is defined as the perceived emotional response to stimulus provided by the physical design elements in the healthcare waiting area. A conceptual framework was developed from Bitner's (1992) model to explain relationships between servicescape features, mood, and perceived quality of care (Figure 2).

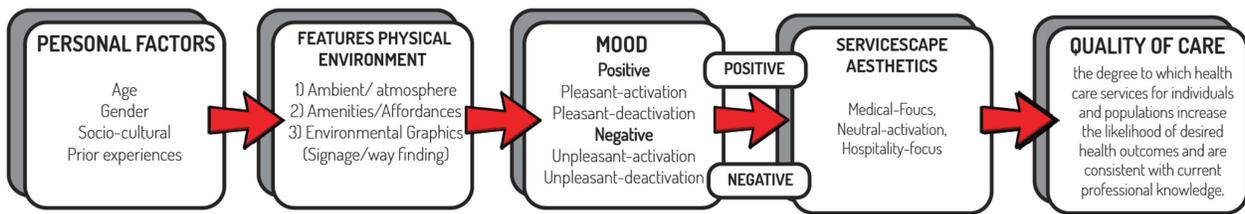


Figure 2: Conceptual framework adapted from Bitner's (1992) servicescape model

Theoretical Framework

Mehrabian & Russell (1974) stressed the importance of describing or defining the physical environment elements that make up the built environment (atmospherics). Bitner (1992) took the concept of atmospherics and developed a framework that addresses the effects of the physical environment on consumers in service studies. Bitner (1992) used the term “servicescape” to describe his framework. Bitner's servicescape conceptual model heavily informed this study as it aims to discover the perceived impacts of waiting area design features (physical environment) and qualities on visitors' moods and perceptions of quality of care (service). Three primary dimensions were identified by Bitner (1992) for his model that influence the customers' holistic perceptions of the perceived quality of an environment (i.e., the servicescape) and their subsequent internal (i.e. satisfaction with the servicescape) and external responses (i.e. approach/avoidance, staying, reportage). These dimensions are 1) ambient conditions, 2) spatial layout and functionality, and 3) signs, symbols and artifacts.

Research Questions

The conceptual framework was used to guide the following research questions for the study. The first two questions were investigated in part one using card sort methodology. The last two questions were examined during the interview using photo-elicitation with photorealistic rendered images of three servicescape designs.

1. How do individual design features of a waiting area (e.g., light fixtures, furniture, ceiling style, or artwork) affect people's mood?
2. What, if any, are the cultural differences in how people feel individual design features affect their mood?
3. How do different waiting area servicescape designs (aesthetics of medical-focus, neutral-activating, or hospitality-focus) comprised of features associated with positive mood affect people's perceptions of the quality of care they will receive there?
4. What, if any, are the cultural differences in how waiting area servicescape designs affect people's perceptions of quality of care they will receive there?

Assumptions

The research was driven by several assumptions. First, people will be able to distinguish from digital imagery the design features in a healthcare waiting area that impact their mood and how they perceive the quality of care provided in the setting. Second, there will be cultural differences within the findings. Third, by selecting physical design features perceived to have a positive impact on mood, those variables individually and combined would have an impact on

perceived quality of care. Finally, findings would be useful for designers, professionals and healthcare facilities by providing them a greater understanding of the effects of the different physical environment features impacting visitors' mood and perceived quality of care.

Researcher's Perspective

In Kuwait, I was fully on board to undergo surgery to help me fight obesity. My experience in the waiting area of a private hospital in Kuwait, before being admitted to my private room, changed many things in my life. The waiting area had no windows, long, and was connected to artificially illuminated corridors, which opened to views that I preferred not see: such as stretchers, IV stands, and nurses walking in and out of other areas. This unfamiliar environment, which I felt did not support me, made me reconsider going through with the surgery. I was frightened and tried to find a space that made me feel less anxious. This, however, was not an option. I finally went into my private room, and my stress only increased. My complexion changed color, my temperature rose, and my anxiety escalated. This may have been to limitations of the room; it had no connection to nature, no artwork or distractions to calm me down, nor an aesthetically pleasing built environment. Even when I looked out the window, all I could see were roofs of other buildings. At that moment I realized that I could not go through with the surgery. As a result, I took off the surgery gown and decided to go home — despite the large sum of money that was already paid for my procedure. Neither the waiting area nor the patient room settings supported my needs for a healing environment.

Having experienced waiting areas in the private and public sectors in both the US and Kuwait, I was inspired to understand in greater depth the influence of hospitality design in waiting areas most often associated with the private sector healthcare facilities. I hope that this

study will help inform better waiting area designs to alleviate visitors' fears and anxieties that might be exacerbated in unsupportive environments.

Delimitations

The study uses digital images to understand people's moods and experiences, instead of having them experience these settings in a real healthcare facility. Due to financial and geographical limitations, it is extremely difficult to have participants from both populations experience the same three waiting areas in facilities. It is also not possible to control design features (variables) in real life settings to examine their individual effects. Moreover, the study asks people about their perceptions; how they anticipate they might feel in a setting could vary from their actual experiences in a waiting area during times of duress.

CHAPTER II

REVIEW OF LITERATURE

Introduction

A visit to the doctor or physician can be a memorable experience, and the tone is typically set by experiences in the waiting area. There people are often in an unfamiliar environment, and may feel frightened and confused because they have more questions than answers (Ulrich, 2000). Physiological reactions, such as rapid heartbeat or quickened breathing may be accompanied by a host of psychological reactions, chief among them stress and anxiety (Carpman & Grant, 2016). Visitors and patients visit a healthcare facility under what are often emotionally stressful and physically debilitating conditions. At such a time, they need a supportive, soothing environment because they have little capacity to deal with a complex and confusing one (Carpman & Grant, 2016). Waiting is a common human experience, yet people differ in age, gender, physical limitations, and preferences for how they spend their time waiting (Carpman & Grant, 2016). Given this diversity, how can waiting area designs make peoples' experiences more pleasant and help alleviate their symptoms associated with stress?

Healthcare is a service that people do not necessary want, but is, arguably, the most personal and important service they buy. Yet many studies document wide variation in the quality of care delivered in waiting areas (Wennberg & Fisher, 2006) and in patients' ability to evaluate that quality (Adams & Biros, 2002). Stressors may include lack of contact with nature, lack of physical and mental stimulation, and lack of privacy (Steptoe & Appels, 1989; Dijkstra et al., 2006). Despite the importance waiting area designs may have on people's healthcare experiences, researchers have noted the limited number of studies dealing with person-

environment fit in healthcare settings (Devlin & Arneill, 2003). The belief that the traditional, medical, institutionally designed healthcare facility has no bearing on the wellness of its patients so long as a high level of care is provided, is being questioned (Ulrich, 1992). Researchers are finding changes and additions made to healthcare facilities' physical and social environment, that focus on the patient experience, can positively influence health outcomes (Davidson, 1994). However, despite the fact that hospitals are spending millions of dollars to improve the physical attractiveness of their public spaces, such as lobbies and waiting areas, there is little empirical investigation of any impacts these changes may have on patients and visitors (Becker & Parsons, 2007).

Carpman & Grant (2016) state that facilities planners and designers must understand that good design needs to balance technological demands with human needs. Changes in medical technology, difficulty attracting and retaining registered nurses, a more competitive business environment, a more informed and demanding patient population, and alarming data about the quality of care (service) in healthcare settings are driving a construction boom (Ulrich et al., 2004; Lee et al, 2011). For healthcare facilities, designing for the human experience (eg. person-centered design) is essential (Carpman & Grant, 2016). In the corporate office sector a poorly designed environment may cause dissatisfaction and annoyance, inhibit effective communication, or contribute to relatively minor health problems (Carpman & Grant, 2016). However, in healthcare the consequences of getting the design wrong can be far more serious, including death (Berry & Bendapudi, 2007). Healthcare clinicians may have to respond on demand to medical issues ranging from mundane (a cold) to the critical (a heart attack). Even a normal day in a primary care medical practice presents potential rollercoaster of emotions and

demands, not only amongst patients and visitors, but staff members and physicians as well (Berry & Bendapudi, 2007; Carpman & Grant, 2016).

Person-centered designs for healthcare are closely linked with concepts of service design (Lee, 2011). Healthcare services have several distinct characteristics when compared to other service providers. First, they are intangible in that the core benefits of medical diagnoses, treatment, and patient education derive primarily from performances. Second, patients sustain an expense rather than acquire a tangible services supported by goods (e.g., surgery in a well-equipped operating room). Finally, tangible goods in healthcare are typically supported by intangible services (e.g., pharmaceuticals and pharmacy services) (Berry & Bendapudi, 2007). The physical environment can have an impact on how visitors perceive the service being provided (Arneill & Devlin, 2002). The physical attractiveness of the waiting room has a positive effect on how patients perceived quality of care (Berry and Bendapudi, 2007) and visitor satisfaction (Pruyn & Smidts, 1998).

Evidence Based Design

It is difficult to imagine a service where customers are more at risk than the healthcare service; evidence-based strategies to support person-centered designs are critical for a well-functioning healthcare system benefitting staff and patients (Nussbaumer, 2009). The complexity of factors designers must consider to create beneficial healthcare designs underscores the importance of evidence-based design in facility planning and design (Becker & Parsons, 2007). Evidence based design (EBD) stems from evidence-based medicine, which is dedicated to administering the best care to patients through explicit, and conscientious use of current empirical evidence in making decisions (Centre for Evidence-Based Medicine [CEBM], 2007 Hamilton, 2003). The Center for Health Design, a leading proponent of evidence-based planning

and design, helps to spread empirical knowledge about the effects of lighting, noise, and other environmental factors on quality of care outcomes (Malkin, 2008). EBD became a major focus of healthcare facility planning and designs' (Marberry, 2006; Ulrich, Berry, Quan & Parish, 2010). Intending to create physical environments that positively impact patients, visitors, and staff. Over \$200 billion was to estimated to be spent over the last decade on hospital construction (Suttell, 2007). Evidence based facility designs that function well for patients and staff and are cost effective and more likely to generate expected outcomes (Becker & Parsons, 2007). Evidence-based design is a never ending process of knowledge accretion: different studies together, and over time, build confidence in our understanding of the consequences of decisions we make about planning, design, and management of the built environment.

Supportive Design in Healthcare Settings

Supportive design theory (SDT) developed by Ulrich (1991) emphasizes the importance of the physical environment, highlighting variables such as lighting, views of nature, etc. (Ulrich, 1991). Ulrich (1991) states the importance of these factors for supporting health and wellness, reinforcing the role of interior design in positively impacting patient outcomes and shaping quality of care (service). Supportive design theory also underscores the importance of designing to meet the psychological needs of users, including the visitors, patients and staff (Ulrich, 1991). Thus, interior designers need to be aware of the users need in order to create environments that promote wellness, and do not increase stress. Studies have, for example, stated benefits of good artificial lighting (Arneill & Devlin, 2002), natural daylight/views using windows (Leather et al., 2003), music (Walworth, 2005), furniture layout (Davis & Heineke, 1993), choice (Ulrich, 1992), waiting room attractiveness (Pruyn & Smidts, 1998), color, and way finding (Dalke et al., 2006)

Lighting/Views. Within the literature, a number of studies have supported positive patient outcomes when exposed to artificial lighting, natural lighting and views in healthcare waiting areas (Birren, 1978; Verderber, 1986; Ulrich 2000; Leather et al., 2003). Frasca-Beaulieu (1999) suggests that variations in lighting, nature, and textures in Ambulatory Care Facilities (ACFs) can create a calming environment and are significant in helping the reduction of stress levels amongst visitors. Arneill & Devlin (2002), used slides to show images of physicians' waiting rooms to investigate the perceived quality of care within the physical environment. Participants had higher ratings for perceived quality of care for waiting areas that were nicely furnished, well-lit, contained artwork, and had an overall warmer appearance. when compared to waiting areas that had outdated furnishings, with no artwork, were dark and had a cooler appearance (Arneill & Devlin, 2002).

Views include window views as well as interior exposure to nature. The absence of windows in critical or intensive units were associated with higher rates of anxiety depression and delirium relative to rates for similar units with windows (Parker & Hodge, 1976). Lack of windows in ICUs is associated with higher rates of anxiety, depression, and delirium compared to rates for units with windows (Keep, James, & Inman, 1980). Positive effects on patients' well-being were found for spaces that used windows to let in daylight (Dijkstra et al., 2006). Patients in waiting areas who were exposed to real plants, as well as patients exposed to posters of plants, report lower levels of experienced stress (Beukeboom, Langeveld, & Tanja-Dijkstra, 2012). Despite the number of studies suggesting benefits of artificial lighting, the type of artificial lighting is not specified; it is often described as "warm lighting" (Arneill & Devlin, 2002; Leather et al., 2003).

Acoustics/Background noise. Ulrich (2000) found that noise reduction should be a major consideration in the design of new healthcare buildings. Unpleasant noise and poor acoustics in a hospital can exacerbate patient's perception of pain, increase use of pain medications, contribute to sleep deprivation, and may cause patient confusion and disorientation (Schweitzer et al., 2004). When noise levels are high, it can produce widespread annoyance among patients and perceived stress in staff (Hilton, 1985). For example, a study measured different sound levels in an Australian emergency department (ED) (Short et al., 2011). Results indicated that high noise levels were heard, suggesting that there could be a lack of sound absorption materials through the design of the physical environment that contributed to these high noise level findings (Short, A., Short, K., Holdgate, Ahern, & Morris, 2011). Sounds that were found to have a negative impact on patient's wellness included alarms on equipment, staff, visitors, doors opening and closing, and the public address system within an ED (Tijunelis, Fitzsullivan & Henderson, 2005).

While noise is undesirable in hospital settings, music has been found to have a positive impact on people in waiting areas (Walworth, 2005). Pleasant music (therapeutic) especially when controllable (eg. volume levels), often can reduce anxiety or stress and helps some patients cope with pain (Standley, 1986; Menegazzi et al., 1991). Lee et al (2011) found stress and anxiety levels decreasing when patients used headphones to listen to music in a waiting room. This study was conducted in a controlled clinical study that took place in the operating theater of a metropolitan teaching hospital in Taiwan. The type of music was described as "therapeutic music with low tempo, low pitch, regular rhythm, and pleasing harmonics, and should consist of string, flute, and piano selections" (Lee et al., 2011). In another study that involved hospitalized patients (White, 1992), the experimental group was exposed to 25 minutes of classical music

selected by the investigator, whereas the control group had a 25-minute rest period without music. An anxiety measure, heart rate data, and respiratory rate were included as dependent measures. The experimental group showed statically significant improvement in all the measures, and, although the controls also had a statically significant drop in the state of anxiety following their rest period, the drop was greater for those exposed to music (White, 1992). Use of music was also related to decreased stress and increased relaxation compared to times when no music was utilized (Tansik & Routhieaux, 1999).

Furnishings. Davis and Heineke (1993) have suggested user behaviors can be controlled or influence by furnishing designs. They propose that uncomfortable waits are resolvable through the design of the waiting area (eg. comfortable seating). Additionally, they suggest waits can be addressed by providing explanations, along with an acknowledgement of customers' concerns, or by ensuring ideal capacity to prevent waiting (Davis & Heineke, 1993). This study finding demonstrates the connection of the physical environment in shaping the service being provided, by providing further information if needed, comfortable seating and providing seating for the capacity of the space (Davis & Heineke, 1993). Within the space furniture layout has also seen to have a positive effect on both the patients and the attractiveness of the space. Holahan (1972) studied different seating arrangements on hospitalized male psychiatric patents. He observed that mixed seating (cluster) encouraged interaction and socialization, versus unstructured (linear) arrangements which discouraged interactions (Holahan, 1972). Similar studies supported Holahan (1972) findings (Peterson et al., 1977; Lepore et al., 1993). For instance, social interaction falls markedly when seating is arranged side by side along the walls of the room (Sommer and Ross, 1958). In addition, a desk may seem more approachable and staff friendlier in a waiting area when staff members have room to

display a few personal items and where unnecessary equipment is out of sight (Carpman & Grant, 2016). One study suggests that facilities avoid sliding glass windows that physically and symbolically separate staff from visitors (Pennachio, 2003). Reception- counter design should provide some acoustical privacy. (Carpman & Grant, 2016)

Choice. In healthcare it has emerged as a priority to provide patients with choice; the belief that giving patients control may positively influence their medical outcomes is growing (Ulrich, 1992). Ulrich (1992) examined the effect of the inability to control the selection of television programs. The blood donors in the waiting room of a blood bank had higher stress levels on days when the television was on than on days where the television was off. Ulrich (1992) concluded that the lack of program choice created more stress than not having the option of television at all. The issue of control was also studied with questionnaires that were administered to patient at 16 hemodialysis units. The questionnaire asked about their perceptions of control over four factors in their treatment environment: acoustics (noise), temperature, lighting and privacy (Steptoe & Appels, 1989). A significant number of patients reported no control or little over bright lighting, uncomfortable temperatures, high noise levels, and lack of privacy. In a hospital setting, lack of control can increase stress and negatively affect wellness (Ulrich, 1992). It also has been associated with depression, passivity, elevated blood pressure, and reduced immune system functioning (Ulrich, 1991).

Aesthetics/Style. Research suggests that the greater the perceived attractiveness of the waiting environment in a hospital, the more positive the appraisal of the wait (Pruyn & Smidts, 1998). Pruyn and Smidts (1998) also propose that attractiveness creates greater satisfaction with the service provided. This leads to the prevention of patients from becoming irritated or bored very quickly, even if they find the wait long in the waiting room. Tsai et al. (2007) examined 17

primary waiting areas using a survey to understand the perceptions of patients and the physical environment. Arneill and Devlin (2002) also show high ratings in waiting rooms in hospitals for attractive lighting, color and neatness. Results indicated attractiveness and the visual environment were ranked the highest, suggesting more attention should be paid to designing comfortable yet customized physical environments of waiting areas (Tsai et al., 2007).

A 12-month study was conducted by Dalke et al. (2006) of current practice in general hospitals throughout England in partnership with the color design research center at London South Bank University and the Building Research Establishment. They found visual environment, including quality of daylight and electric light, is a vital element influencing hospital staff morale and productivity; other studies have even reported that an enhanced visual environment has produced improved faster recovery rates by as much as 10 percent. Patients also wanted connections to the outside, watching the TV, email, and calling friends and family were important to keep them feeling positive. This study discusses the overuse of blue or green color. In medical interiors, for example, these colors has been widely observed especially in older institutional buildings and has been reported as having a negative effect on depression in mental healthcare environments. Dalke et al (2006) suggest that hospitals be more modern and keep up with trends in commercial environments.

Amenities and décor have been examined in many empirical studies. A study conducted by Cusack et al. (2010) asked 44 renal transplant patients attending the Dumfries Renal Unit to rate seven aspects of their clinic environment on a scale from 1 (not important) to 5 (very important). These included comfortable chairs, magazines, puzzle books, paintings on the wall, a 42-inch plasma screen TV, views from the windows, potted plants and computers with internet access. With a response rate of 89 percent (thirty-nine patients responded), the highest rating of

the clinic waiting room was the comfy chairs with an average of 4.4 followed by the magazines and puzzle books (3.6) , the plasma screen TV (3.6), and the wall paintings (3.4). The lowest rating was for the plotted plants (2.9). Catania *et al.* (2011) studied the moods and fears of cancer patients while waiting. A 15-item questionnaire was given to 355 patients, Eighty-three percent of patients felt that waiting has an emotional cost, 35 percent were upset talking about their condition with others, and 26 percent suffered a major emotional impact seeing other sick people and witnessing their clinical decline. Alternative activities were suggested by eighty-nine patients, including meetings with professional's doctors and psychologists be organized during the waiting period. Sixty-five percent suggested fun activities such as music therapy, drawing sources, library and TV. A large number of the patients asked if they could have the freedom to leave the room; they wanted to go elsewhere when their surroundings were too distressing. More than half of the patients believed that the hospital should offer alternatives, such as a hairdresser, a restaurant, or some shops, to make them feel like human beings living in the real world.

Spatial layout and style were examined in a few studies. Iedema *et al.* (2005) cite research at a Scottish Hospital (Marcus & Cameron, 2002) that found design of corridors, the layout of different function areas, and the provision and design of recreational facilities had major impacts on the quality of communication between staff, patients and visitors. Family members' reported "the need for a comfortable environment," in a study conducted by Kutash and Northrop (2007), which revealed the impact of the hospital's waiting room design on family member's well-being. A nouveau environment (new modern) was rated as being significantly more colorful, positive, stimulating, attractive, relaxed and comfortable in a study by Leather and colleagues (2003). Thus, findings suggest that patients preferred a more modern waiting room compared to a traditional room that is commonly seen in hospital waiting areas.

Floor/Finishes. Typical flooring in healthcare facilities could include hard surfaces (e.g. vinyl, wood, ceramic) or carpet. Hard materials may not significantly or consistently outperform carpet with respect to epidemiological concerns and certain health related environmental conditions (Ulrich, 2000). Carpet can improve social support as visitors stayed longer in waiting areas with patients compared to vinyl flooring. This will improve health outcomes via an effect of heightening social support (Harris, 2000; Wilmott, 1986), where he found that elderly patients walk more efficiently (have greater step length, speed) and feel more secure and confident walking on carpet compared to vinyl surfaces in a hospital setting. Not only does carpet make it easier to walk, but it can improve social support as visitors in the hospital stayed longer with patients compared to vinyl. Staff has an opposite opinion, preferring vinyl to carpet, primarily because of greater ease in cleaning up spills (Harris, 2000).

Way-finding/Signage. Patient-centered design can include nearly every aspect of a healthcare facility's environment, from the selection of pleasing lighting, to user friendly informational carts and kiosks, to an effective way-finding system (Robinson, Callister, Berry, & Dearing, 2008). Way-finding refers to information systems that guide people through a physical environment and enhance their understanding and experience of the space (Calori & Vandendynden, 2015). The overall environmental organization, which considers signage and systems of organizations for orientation in emergencies, spatial dimensions, comfort, sufficiency, and arrangement of furniture, and accessibility to restrooms can cause lack of fit and imbalance with the needs of the patients in hospital waiting rooms, by producing stress (Ortega-Andeane & Estrada-Rodriguez, 2010). Positive elements contributing to this include attractive colors, thoughtful acoustics, and well-designed way finding elements (Arneill & Frasca-Beaulieu, 2003).

Dalke et al. (2006) discusses how color and appropriate lighting are powerful tools for coding, navigation and way finding; color can also promote a sense of well-being and independence. The use of careful lighting and color in the design of healthcare environments can promote corporate “signage posting” of important areas such as reception desks and nursing stations. Easy navigation and way-finding can promote faster access, thereby reducing labor, frustration, and wasted time. Improvements in productivity and energy efficiency in lighting with reduced running costs would be another contribution, provided by clear, authoritative guidance on color design and lighting specification. Patients want an environment to be open so they can easily see the staff and key facility areas. In terms of accessibility, visual cues, clear signs and easy way finding were vital to assist visitors and patients who, upon entering the hospital for the first time, may be distressed or distracted by the reason for their visit (Dalke et al.,2006).

Servicescapes

The different design features discussed in the literature visually communicate to patients the type of service they may receive in a space. This highlights the importance of understanding of how different features in the physical environment have an effect on the perception of the service being provided. Bitner (1992) developed a framework that addresses the effects of the physical environment on consumer behavior in service studies. Bitner's (1992) servicescape model, has

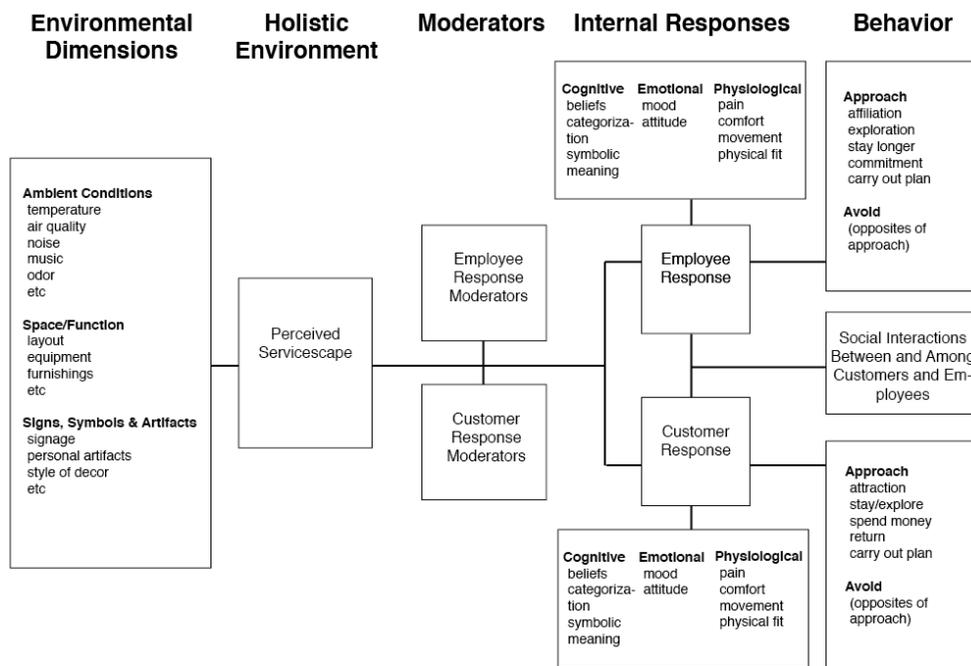


Figure 3: Bitner's (1992) servicescape conceptual model

three primary dimensions that influence the customers' holistic perceptions of the perceived quality of an environment (i.e., the servicescape) and their subsequent internal (i.e. satisfaction with the servicescape) and external responses (i.e. approach/avoidance, staying, reportage). These dimensions are 1) ambient conditions, 2) spatial layout and functionality, and 3) signs, symbols and artifacts (Figure 3). For example, there are many servicescapes that exist within a

hotel. Among them, a hotel lobby could be considered one of the most important servicescape because of its role in forming guests' first impressions. Based on Bitner (1992) propositions, first customers perceive environments holistically with the three dimensions affecting overall perception independently and/or through interaction with the other dimensions. Second, positive cognitions of the perceived servicescape can lead to positive beliefs and attributions being associated with the organization its people, and its products. Third, the physical environment serves as a mnemonic or a recognizable characteristic in helping customer differentiate among firms. The total experience of a servicescape includes the customer's general perception, behavior, satisfaction, and respectively a mixture of the three dimensions: ambient conditions, spatial layout, and signs, symbols and artifacts (Bitner 1992, p.65; Lovelock 2009, p.266).

Most of the servicescape research involves hotel or retail designs. The hotel lobby is the main area for guests and employees, and it is essential that designers achieve a balance between the aesthetic interior design and operational needs to avoid too much human traffic, noise, and an inhibited flow of circulation (Lawson 2007, p.213, 220; Collins, 2001, p.59; Mundy, 2008). A study conducted by Ali and Amin (2014), through face-to face interactions with guests at various locations in Chinese resort hotels at different times of the day, over 4-week period. Questionnaires were distributed to 500 customers with 170 returned, representing a response rate of 34 percent. Six hypotheses were tested in the questionnaire: that the physical environment is positively related to customer emotion and behavioral intentions; that customer emotions is positively related to customer's satisfaction and behavioral intentions; and that customer satisfaction is related to behavioral intentions. All of the six hypotheses were supported. Findings suggest the physical environment is a significant predictor of customer emotions, satisfaction and behavioral intentions. This is consistent with previous studies identifying the role of

atmospherics on customer emotions (Lin & Liang, 2011; Kim, J., Kim, M. & Lennon, 2009), and customers' satisfaction and post-consumption behaviors (Bitner, 1992; Ha & Jang, 2012; Martínez-Ruiz, Jiménez-Zarco, & Izquierdo-Yusta, 2012).

A number of studies have focused on how customers' perceptions of servicescape influence the level of satisfaction (Cornelius, Heerden, Botha, & Durieux, 2009; Wakefield & Blodgett, 1996; Statten, Krogh, & Connolley, 2011). In a study conducted by Zeithaml et al. (1993) customer satisfaction was studied by comparing their expectations and perceptions. They stated that customers have expectations regarding the physical environment of a service setting and once these expectations are met, customers are likely to be satisfied. Thus, aesthetic design and ambience of a physical environment attracts customers and directly affects their satisfaction levels (Han & Ryu, 2009; Ha & Jang, 2012). The roles of emotions while determining the effect of physical environment on the behavioral responses of the customers is one of the least studied issues in research (Lin & Liang, 2011; Slatten et al., 2009).

The physical environment is described as an outward appearance of the service provider, it can be critical in setting up customer expectations (K. Simpeh., M.Simpeh, Nasiru, & Tawiah, 2011) by providing evidence towards the quality of the intangible service through the tangible cues (Berry & Parasuraman, 1991). A physical environment that is a service setting is comprised of a variety of different elements including both the design and ambient factors such as color, air, illumination, scent, facilities and layout (Anderau, Bigné, Chumpitaz, & Swaen, 2006; Baker, Grewal, & Parasuraman, 1994; Lin & Liang, 2011; Han & Ryu, 2009). These factors are all interrelated and they work together (Mehrabian & Russell, 1974) to influence consumer behavior holistically, not as separate individual factors (Bitner, 1992). Service design is one of the most effective ways to differentiate in the highly competitive market, is to gain

advantage in delivering high quality service that will, in return, lead to satisfied customers (Han & Ryu, 2007).

Physical hotel design elements and associated operational features have been used in the healthcare field (Wu & Ko, 2013). Research suggests applying hospitality design (e.g. pleasing designs, home-like environments, sofas) (Hepple, Kipps & Thomson, 1990; Grote, Newman, & Sutaria, 2007) in healthcare spaces can increase the perceived quality of care (Fottler, Ford, Roberts, & Ford, 2000; Wu & Ko, 2013). Studies have revealed that hotel-style amenities in hospitals are associated with positive patient experiences (Randall & Senior, 1994; Sheehan-Smith, 2006). Patients of the more attractive settings rated their perceived interactions with the staff more favorably, rating the staff as more friendly, courteous, polite, caring and reassuring (Becker & Douglass, 2008).

Quality of care. Healthcare visitors and patients are aware of alternatives as their standards, perceptions and expectations of the service being provided increase (Cheng Lim & Tang, 2000). “Perceptions” refer to the customers’ evaluation of the service provider. Perceptions and perceived quality of care outcomes have been linked to the physical environment (Fottler, Ford, Roberts, & Ford, 2000; Wu & Ko, 2013). A study conducted by Arnetz and Arnetz (1996), measured patients’ views of the quality of care in a regional Swedish hospital. The instrument developed in this study was designed to assess patients’ perceptions of the quality of hospital services, staff working environment and overall satisfaction for the purpose of providing feedback for the hospital. The two significant predictors of quality of ratings were information concerning one’s illness, and perceptions of staff work environment. The three theories for this study are that care quality, the work environment quality and service quality are interactive and mutually dependent. Questionnaires were distributed by staff in-

hospital and returned by mail, with a response rate of 57 percent which are comparable to other studies using similar methods. Findings included improving patients' information about department routines, both verbally and written information. Staff involvement in the quality assurance process was largely responsible for improved patient ratings over time.

Becker and Jones-Douglas (2006) collected data on patient's perceived quality of care and the relationship between perceived quality of care and actual waiting times in waiting and exam rooms that were significantly different in physical attractiveness at Weill Cornell Medical center. Direct observation and patient surveys were used for 750 patients before they saw a doctor, and the result of the perceived quality of care was higher in more attractive physical environments. Findings also included that patients significantly overestimated waiting short periods of time (which associated with higher quality of care) and underestimated waiting longer periods of time (which associated with lower quality of care) in more attractive facilities. The ratings of the quality of their interaction with the staff were also higher in attractive facilities. This was important because patient's ratings of their interaction with staff were the most highly significant factor influencing perceived quality of care.

The Becker and Jones-Douglas (2006) study illustrates how research can shed light on one area in which designers and hospital planners have increasingly focused as they work to implement a more patient centered environment. Other research has shown the second area of concern is the how hospital design and new information technologies may contribute to improved quality of care by supporting more effective communication and interaction patterns among both clinical staff and patients, and among the diverse professionals that form the patient care team (Coiera, 2005). In a highly competitive healthcare marketplace, patients' perceived quality of care is a fundamental and highly valued business outcome (Berry & Bendapudi, 2007).

Quality of care could affect how patients think of cost, responsiveness levels, comparison amongst other facilities and overall satisfaction. These factors highly affect the extremely competitive healthcare industry. The healthcare industry recently has approached designing waiting areas with a servicescape lens (Lin & Worthley, 2012; Lee, 2011; Holder & Berndt, 2011) and this is particularly apparent in its incorporation of strategies from the hospitality design sector to improve the patient and visitor service experience (Lee, 2011).

Conceptual Framework

Servicescape theory supports this exploratory study as it aims to discover the impacts of waiting area design features (physical environment) and qualities on visitors' moods and perceptions of quality of care (service), including cultural differences. The conceptual framework for this study (Figure 4) was adapted from Bitner's (1992) servicescape model and modified to guide this study.

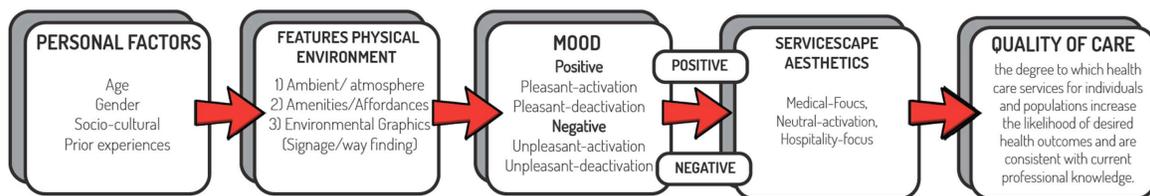


Figure 4: Conceptual framework adapted from Bitner's (1992) servicescape model

The conceptual framework addresses both parts of the study, the relationship between physical design features (lighting, views, furnishings, finishes and aesthetics) and mood, and how relationship between servicescape aesthetics and quality of care. Bitner's (1992) servicescape model differs from this conceptual framework in several ways. First, one of the study goals is to understand cultural differences, therefore personal factors were added before the environmental dimensions (Bitner, 1992). Second, direct communication is not included as a

factor since patient-staff communication is not a focus of this study. Third, the internal responses focus on one emotional response; mood; positive moods will inform the second part of the study. Lastly, instead of behavior, perceived quality of care will be assessed.

CHAPTER III

METHODOLOGY

This mixed-methods exploratory study aims to discover impacts of waiting room design features and qualities on visitors' moods and perceptions of quality of care, including cultural differences (between US and Kuwait population). The study was conducted in two parts: a card sort followed by an interview using photo elicitation.

Population and Recruitment

Data were collected for this study from adults (18+) living in the US and Kuwait. This age range was chosen because waiting areas for children and youth typically have different design features from those for adults (Dalke et al., 2006). Fifty participants from the US and 42 participants from Kuwait were recruited using purposive sampling for the card sort. The researcher emailed potential participants an informational letter (English or Arabic based on participants' preference) describing the research project. Demographic information (gender, age, socio-cultural background, and number of visits to healthcare facilities in the last six months) was collected before the start of the card sort, from all potential participants, who were recruited to maximize diversity. The card sort was available for ten days and participants' average completion time was 6.3 minutes. At completion of the card sort, participants were asked if they were willing to be contacted for participation in the second part (photo-elicitation) of the study. Two participants from the U.S and six participants from Kuwait agreed to continue participating in the second part of the study. Ten people from each country, matched by age category (young, middle-aged, and older adults) and gender, were invited to participate.

Participants were contacted by the researcher by email or phone to address any questions they may have and/or to schedule interviews.

Data Collection

Card Sort

The first part of the study explored perceived effects of healthcare design features on mood through the use of the electronic card sort. A card sort allows participants to pair images with words based on their first instinct. This method helps the researcher understand what is most important to the user, breaking down larger concepts and makes a structured survey more engaging (Bialystok & Martin, 2004; Faiks & Hyland, 2000). The card sort was chosen to provide insights about how participants organize concepts to reflect their mental representation of the way these concepts are related (Sanders et al., 2005). *Optimal Workshop's* Optimal Sort was used because it is accessed through a website, it does not limit the number of participants, and it is convenient because it does not require participants download any software. Another advantage is the ease of distribution among populations in difference geographic locations, given the web-based platform and the ability to use multiple languages (English or Arabic). The card sort included 23 images of waiting design features and qualities such as lighting, views, furnishings, colors, environmental graphics, and nature element. For example, for direct lighting versus ambient lighting would be sorted using images matched (Figure 5).



Figure 5: Card sort sample images of ambient (left) and direct (right) lighting

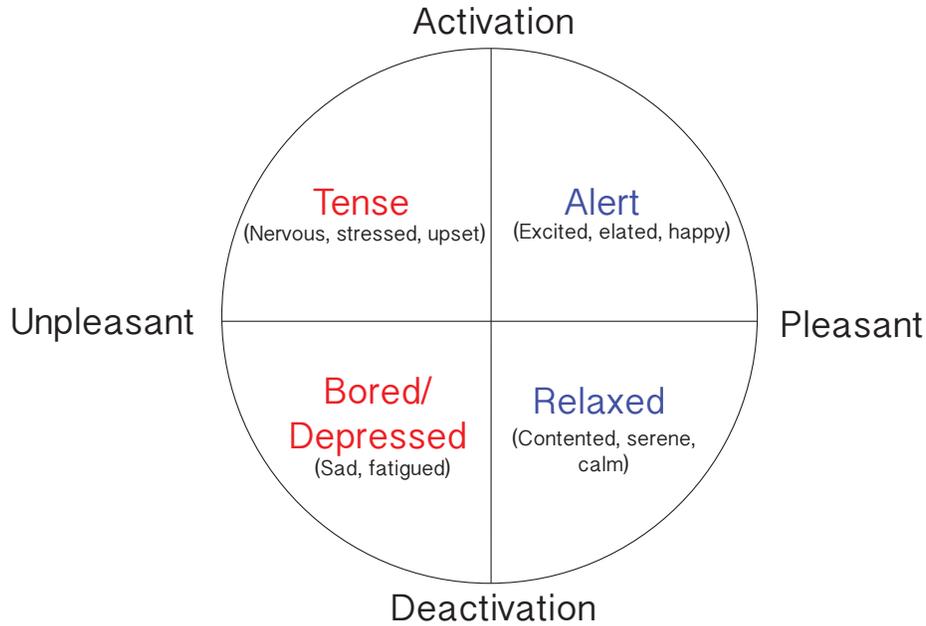


Figure 6: *Modified Circumplex Model* developed by Plutchik and Conte (1997)

A link for the card sort website was sent via email to each selected participant.

Participants were asked to sort images according to the *Circumplex Model* developed by Plutchik and Conte (1997) (i.e. activation, pleasant, deactivation, unpleasant). This mood scale was chosen for this research project because the terminology is simple and easily understandable by both populations, to help them distinguish positive and negative moods. The Circumplex Model (Figure 6) has been validated (Larsen & Diener, 1992; Russell, 2003) and successfully used in a number of studies examining mood and emotions (Tett & Burnett, 2003; Cowie & Cornelius, 2003; Ashkanasy & Dorris, 2017).

A closed card sort was used, with the researcher providing the mood categories for participants to sort design images into. Participants placed an image in the mood category that best represented the feelings it evoked. This allowed participants to conceptualize the information from the Circumplex model that fits within the conceptual framework of this study. A pilot study was conducted to test the images and moods, eight moods and approximately 50

cards were tested. Based on results from the pilot study, number of cards was reduced and a common term was chosen for each of the four mood categories. These terms were alert, relaxed, bored/depressed, and tense. Therefore, twenty-three cards (JPG images of design features) were used, sized to a maximum width of 200px to have consistency among images ("Card Sorting Software," 2017). These design features associated with positive mood (pleasant-activation and pleasant-deactivation) were used in part two of this study.

Photo-elicitation Interview

The second part of this study examined perceptions of three servicescape designs for a waiting area (medical-focus, neutral-activation, and hospitality-focus) using a purposive sample. 3D modeling software (Revit) was used to create the designs using features identified from the card sort as "pleasant". Digital photo-realistic images were generated from the 3D models to be used for photo elicitation during interviews.

An in-depth, semi-structured approach was used for the interview process. The intent of having interviews guided by photo-elicitation was to evoke feelings, memories and thick description (Ziller, 1990; Zaltman, 2003). Data gathered are used to develop a greater understanding about perceptions of quality of service communicated by the servicescape atmosphere and affordances (views, lighting, furnishings, etc.) in the different designs (medical, neutral/combo, and hospitality like). Interviews were conducted in participants' native language (English or Arabic) using video-conferencing software and recorded with participants' verbal agreement. Semi-structured interviews provide insight into personal experiences/stories that could emerge beyond the images being provided. To avoid "leading" participants, interview questions were phrased in an open-ended manner and were used to loosely guide and develop

topics of conversation between the researcher and the participant. (See interview questions in Appendix II).

Interviews were conducted with 10 adult participants from each country (US and Kuwait) via Skype or FaceTime for a duration of less than one hour. Most interviews ranged from between approximately twenty to thirty minutes. The digital images and study information were sent via email prior to the interview. Skype or FaceTime were used to reduce the cost of research, as well as reach a larger number of people on the other side of the world to examine cultural differences. The video calls were recorded using the software *Ecam* once permission was obtained from the participants.

Analysis

The data from the closed card sort were intended to examine associations between design features and positive or negative moods. Results were analyzed with respect to demographic differences (cultural factors, gender and age). Features with the highest agreement (approximately 60 percent or greater) for positive mood were identified for incorporation into the second part of the study. Once the analysis was complete, positively associated design features were incorporated into waiting areas designs for the second part of the study (See appendix VII)

Interview data from the photo-elicitation were transcribed and analyzed using thematic analysis that included the use of memos, open coding, emotion coding, and axial coding, including thick description (Corbin & Strass, 2008; Merriam, 2009). As stories emerged about participants' waiting area experiences, narrative descriptions were used to deconstruct the transcripts and analyze the data. With this approach, meanings were discovered using constant comparative process among themes (Glaser & Strauss, 1967). Key concepts were developed by

segmenting transcripts into meaningful fragments (Guetzkow, 1950). The researcher constantly compared, re-explored and expanded upon the preliminary coding schemes. Memos were used to acknowledge frameworks and highlight connections between categories and concepts (Merriam, 2009). The researcher continued to search for new themes and meanings that emerged within the data both during and after the codes were applied to the data.

Finally, the researcher used “axial” and “selective” coding to search for higher connecting themes within the data (Corbin & Strass, 2008). The researcher specifically: (a) explored the data for connections and patterns among emerging themes (selective coding) and (b) examined the contexts that gave rise to various themes (axial coding). For the purpose of this research project interest in these analyses included perceived quality of care among different cultures in three distinct waiting area service designs.

Human Subjects Approval

The protocol for this study was reviewed by the Research Integrity and Compliance Review Office’s Institutional Review Board (IRB) at Colorado State University and determined to be in compliance with NIH CFR 46 and the federal regulations governing review of research involving human subjects (See appendix VIII)

Research Quality

Validity and reliability are typical criteria for assessing quality in quantitative research studies (Morse, Barrett, Mayan, Olson, & Spiers, 2002), however Guba (1981) proposed four criteria specific to qualitative studies: credibility (internal validity), transferability (external validity), dependability (reliability) and conformability (objectivity).

Credibility

Credibility describes believability, or confidence people can place in the research findings (Patton, 1999). Credibility was accounted for in several ways: use of published instruments, triangulation of methods, peer examination, and thick description. First, the study used a published instrument, Plutchik and Conte's (1997) Circumplex Model, to measure self-perceived moods. Second, data were collected through multiple methods including card sort and photo-elicitation interviews. This study used multiple methods to reduce bias, making comparisons across data to examine integrity of participants' responses. Finally, committee members conducted peer examination of analysis processes, findings, and interpretations.

Transferability

Transferability refers to the degree to which findings from the study have wider application to other situations (Krefting, 1991). According to Denzin (1989), "thick descriptions are deep, dense, detailed accounts." Thick description creates verisimilitude, statements that produce feelings that readers have, or could experience, the events described in the study (Creswell & Miller, 2000). Therefore, transferability can be established as the reader who reads the narrative feels that they were part of that setting or situation (Creswell & Miller, 2000). Semi-structured interviews provided data that were context-rich, meaningful and thick and results retained participants' voices through use of extensive quotes.

Dependability

Dependability is comparing the data with the research findings and interpretations, conducting a research audit (Thomas, 2006). To assure dependability analytic memos results were consistent with the data, analytic memos were written in order to reflect on the coding

process. Journals and memos were used to minimize bias during the data collection. Lastly, committee members have made data quality checks during the process of this research project.

Conformability

Conformability criteria describe objectivity in a study (Shenton, 2004). This is achieved through the analysis of the data, demonstrating how findings have emerged from the data and not from the researchers own predispositions or assumptions.

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APPENDIX I: MANUSCRIPT

PERCEPTIONS OF HEALTHCARE WAITING AREA SERVICESCAPE DESIGNS: COMPARING TWO CULTURES

Introduction

The healthcare construction industry is booming around the world, driven by a growing and aging world population, expansion to new markets, and advances in medical technologies (Deloitte, 2018). In 2016 United States (U.S.) construction costs totaled \$39 billion (Fminet, 2018) and Kuwait is expected to reach 15.5 billion U.S. dollars in healthcare construction spending by 2020 (Alpine Capital, 2016). Medical facilities are among the most challenging to design due, in part, to, higher service expectations from diverse user groups, rapidly changing technology, and rising costs of construction and services (Cheng Lim & Tang, 2000; Zimring, Joseph, & Choudhary, 2004; Francis, 2010). Further complicating design complexity, healthcare organizations in many countries compete for clients and, as a result, must consider how to upgrade their service design to attract and retain their patients — often looking to the hospitality sector for strategies (Fottler, Ford, Roberts, & Ford 2000; Lee, 2011).

Service design describes intentional “arrangements that combine facilities, staff and service users in the co-production of care” (Hyde & Davies, 2004). Although people do not typically view healthcare as a service (Wennberg & Fisher, 2006), it does share aspects with hospitality service, among these the intention to promote visitor repatronage (Cheng Lim & Tang, 2000). Public spaces, such as lobbies and waiting areas, are often the first settings healthcare organizations consider from the servicescape framework; these set the tone for visitor experiences. A medical visit can be a stressful. Waiting areas patrons may be in pain, fearful, or

confused because they have more questions than answers, and thus require a supportive environment to help reduce negative psychological and physiological experiences (Ulrich, 2000; Carpman & Grant, 2016). Unlike the long history of service design in the hospitality sector, healthcare designs have only recently been considered from the servicescape perspective (Lin, B., Leu, Breen, & Lin, W., 2008; Holder & Berndt, 2011; Lee, 2011), thus there are few studies examining impacts of design strategies in shaping users' service experiences and expectations of the quality of care they will receive (J.Arnetz & B.Arnetz, 1996; Becker & Jones-Douglas, 2006). Furthermore, architects and designers increasingly practice in a competitive and globalized field, making it all the more critical they understand how to design healthcare settings to support users of different ages, genders, and abilities as well as cultural values (Figueroa, 2016).

Although medical service models vary greatly among different countries, healthcare settings often look remarkably alike. A visual comparison of waiting areas in public hospitals, private hospitals, and clinics in the U.S. and Kuwait revealed similar colors, furnishings, and seating arrangements.



Figure 7: U.S. public hospital (top-left), Kuwait public hospital (top-right)

U.S. private medical facility (bottom-left), Kuwait private medical facility (bottom-right)

Yet, healthcare delivery is quite different in these two nations. The U.S. does not have a universal healthcare system or universal healthcare coverage. Most Americans receive health insurance through their employers (Prager, 2016) or the government (e.g., retirees, veterans, and the disabled), and in some cases this determines which doctors or healthcare systems they may use. Those without insurance (9.1 percent of the population in 2015) can pay for services in urgent care facilities or be seen, regardless of their ability to pay, in non-profit hospitals. Kuwait, an oil-rich nation, provides health insurance to Kuwaiti citizens, which enables them to receive free services in public hospitals. Citizens may also seek care from private doctors and hospitals, however they must pay for those services or use private insurance offered through select non-government employers. Kuwait's public hospitals segregate waiting areas by gender due to Islamic religious purposes as stated by the government (Elie, 2004; Figueroa, 2016). Private offices and hospitals are not required to provide segregated waiting areas.

This paper explores how healthcare waiting area designs affect users' mood and perceived quality of care, considering potential cultural differences between the United States

(US) and Kuwait. Understanding the role of culture aids in designing supportive environments (Ulrich, 1991) using empirical evidence in healthcare spaces where stress and anxiety could be high amongst patients and their loved ones (Ulrich, 1991). By unraveling how individuals respond to certain design features that affect their mood and their perceived quality of care, this paper approaches healthcare waiting areas through the lens of servicescape (Bitner, 1992), highlighting the importance of the physical environment in relation to such variables.

Positive distractions. Documenting the impact of the physical environment in healthcare settings has become increasingly important for researchers in the last two decades. Evidence-based design (EBD) (Hamilton, 2003; The Center for Health Design), and supportive design theory (SDT) (Ulrich, 1991) have proven to be cost effective because they help create spaces that function well for patients and staff, and are more likely to generate the expected outcomes (Becker & Parsons, 2007). Evidence-based design is “the process of basing decisions about the built environment on credible research to achieve the best possible outcomes” (The Center for Health Design, 2018). Supportive design theory is an evidence-based approach specifically geared toward healthcare environments. It considers the importance of physical environment factors, including nature elements, such as daylighting and plants, in reducing patients’ stress (Ulrich, 1991).

Within the literature, a number of studies have reported positive patient outcomes when people are exposed to artificial lighting, natural lighting and views in healthcare waiting areas (Birren, 1978; Verderber, 1986; Ulrich 2000; Leather et al., 2003). Frasca-Beaulieu (1999) suggests that variations in lighting, nature, and textures in ambulatory care waiting areas can create a calming environment and are significant in helping to reduce stress levels amongst visitors. Arneill & Devlin (2002), used slides to show images of physicians’ waiting rooms to

investigate the perceived quality of care within the physical environment. Participants had higher ratings for perceived quality of care for waiting areas that were nicely furnished, contained artwork, well-lighted and were warm in appearance-when compared to waiting areas that had outdated furnishings, no artwork, and were dark with cool appearance (Arneill & Devlin, 2002). Pruyn and Smidts (1998) also propose that attractiveness creates greater satisfaction with the service provided.

Previous studies have identified environmental qualities that can have negative outcomes on patient wellbeing, such as noise, lack of control for television programs, and interpersonal closeness in seating (Steptoe & Appels, 1989; Bitner, 1992; Cusack et al., 2010). When noise levels are high, it can produce widespread annoyance among patients and perceived stress in staff (Hilton, 1985; Schweitzer et al., 2004). While noise is undesirable in hospital settings, in part because it exacerbates stress, music has been found to have a positive impact on people in waiting areas (Walworth, 2005). Pleasant music (therapeutic), especially when controllable (eg. volume levels), often can reduce anxiety or stress and helps some patients cope with pain (Standley, 1986; Menegazzi et al., 1991; Routhieaux & Tansik, 1997; Thomas et al., 2015). Stress was also examined by Ulrich (1992) to understand the effect of the inability to control the selection of television programs amongst blood donors in waiting rooms. Findings suggest that the lack of program choice created more stress than not having the option of television at all. With respect to seating, a minimal number of studies have examined cultural differences regarding sensitivity of each group to the presence and reaction of other people, confirming that cultural differences affect where people chose to sit (Noesjirwan, 1977; Figueroa, 2016).

Servicescape/quality of care. Healthcare is a service that people do not necessary want, but is, arguably, the most personal and important service they buy. Yet many studies document

wide variation in the quality of care delivered in waiting areas (Wennberg & Fisher, 2006) and in patients' ability to evaluate that quality (Adams & Biros, 2002). A number of studies have focused on how customers' perceptions of servicescape influence the level of satisfaction (Cornelius, Heerden, Botha, & Durieux, 2009; Wakefield & Blodgett, 1996; Statten, Krogh, & Connolley, 2011). Servicescape is a concept developed by Bitner (1992) to describe the role the physical environment design plays in shaping people's service experiences. For example, a study conducted by Zeithaml et al. (1993) examined customer satisfaction by comparing peoples' expectations and perceptions of the physical service environment. They found that customers have specific expectations regarding the physical environment of a service setting and once these expectations are met, they are likely to be satisfied.

Standards, perceptions and expectations of service have increased, and healthcare visitors and patients are aware they have choices (Cheng Lim & Tang, 2000). "Perceptions" refer to the customers' evaluation of the service provider. Perceptions and perceived quality of care outcomes have been linked to the physical environment (Fottler, Ford, Roberts, & Ford, 2000; Wu & Ko, 2013). In a highly competitive healthcare marketplace, patients' perceived quality of care is fundamental and highly valued business outcome (Berry & Bendapudi, 2007). The healthcare industry recently has approached designing waiting areas with a servicescape lens (Lin & Worthley, 2012; Lee, 2011; Holder & Berndt, 2011) and this is particularly apparent in its incorporation of strategies from the hospitality design sector to improve the patient and visitor service experience (Lee, 2011).

Bitner (1992) developed a framework that addresses the effects of the physical environment on consumer behavior in service studies. Bitner's (1992) servicescape model, has

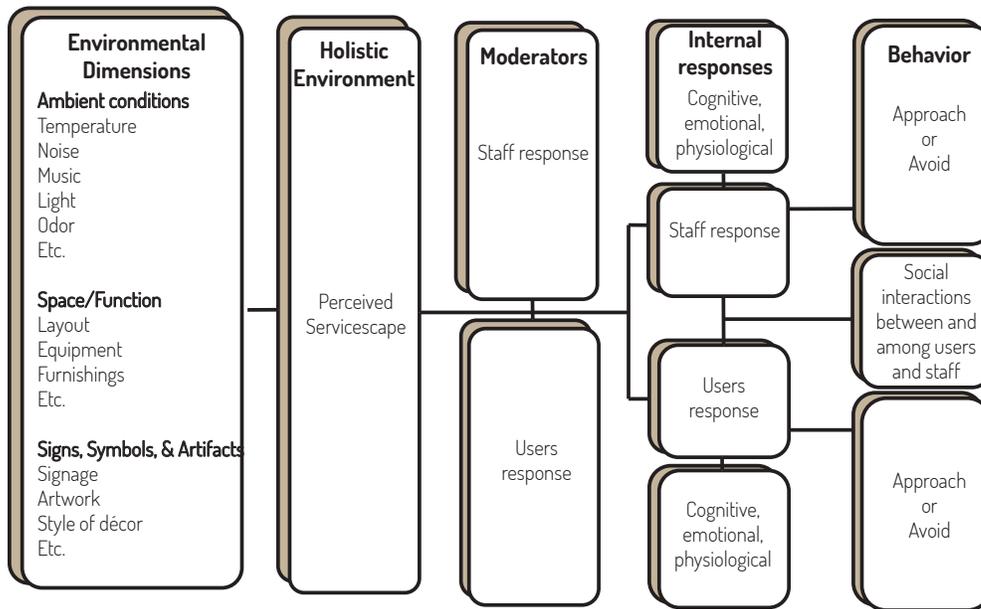


Figure 8: Bitner's (1992) servicescape model

three primary dimensions that influence the customers' holistic perceptions of the perceived quality of an environment (i.e., the servicescape) and their subsequent internal (i.e. satisfaction with the servicescape) and external responses (i.e. approach/avoidance, staying, reportage). These dimensions are 1) ambient conditions, 2) spatial layout and functionality, and 3) signs, symbols and artifacts (Figure 8). For instance, a lobby could be considered one of the most important servicescape because of its role in shaping guests' first impressions. Based on Bitner (1992) propositions, first customers perceive the environment holistically. Second, positive cognitions of the perceived servicescape can lead to positive beliefs and attributions associated with the organization, including the people and the product. Third, the physical environment serves as a mnemonic or a recognizable characteristic in helping customer differentiate among businesses. The total experience of a servicescape includes the customer's general perception,

behavior, satisfaction, and respectively a mixture of the three dimensions: ambient conditions, spatial layout, and signs, symbols and artifacts (Bitner 1992, p65; Lovelock 2009, p.266).

Ulrich (1991) states the importance of physical design features for supporting health and wellness, reinforcing the role of interior design in healthcare facilities, and identifying the quality of care (service) and patient outcome. Interior designers need to be aware of users' psychological; as well as social and physical-needs in order to create environments that promote wellness and do not increase stress. Thus, aesthetic design and atmosphere of a physical environment attract customers and directly affect their satisfaction levels (Han & Ryu, 2009; Ha & Jang, 2012). The roles of emotions while determining the effect of physical environment on the behavioral responses of the customers, however, is one of the least studied issues in research (Lin & Liang, 2011; Slatten et al., 2009).

A limited number of studies have examined the effect of healthcare waiting area design on users' mood (Ulrich, 2000; Dijkstra et al., 2008) or on perceived quality of care (Arnetz. J & Arnetz. B, 1996; Becker & Jones-Douglas, 2006), particularly with a qualitative insight. Lacking in the literature are explorations that seek to develop deeper understandings of gender and cultural differences informing perceptions of waiting area designs (Noesjirwan, 1977; Figueroa, 2016).

Conceptual Framework

Servicescape theory provided the theoretical underpinning for this mixed methods study as it aimed to a) unravel how individual design features of healthcare waiting areas affect mood (e.g., color, lighting, views, style, etc.) and b) examine how holistic servicescape aesthetics affect people's perceptions of the quality of care they will receive, including how perceptions may vary

among different cultures. The conceptual framework for this study (Figure 9) was adapted from Bitner's (1992) servicescape model and modified to guide this study.

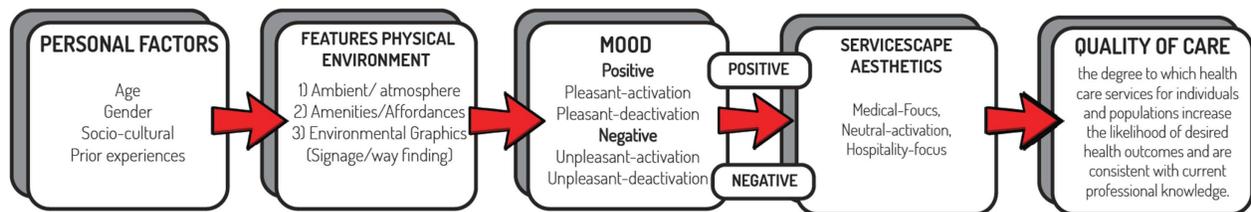


Figure 9: Conceptual model guiding this study adapted from Bitner's (1992) servicescape model

The conceptual framework guides both parts of the study, the examination of physical design features (lighting, views, furnishings, finishes and aesthetics) on mood and how holistic servicescape designs are associated with perceived quality of care. Bitner's (1992) servicescape model differs from this framework in several ways. First, one of the study's goals is to understand the cultural differences; personal factors were added before the environmental dimensions because it is predicted that prior cultural experiences will shape perceptions of the physical environment. Second, direct communication was removed from the framework because this study does not include staff (moderators) as a variable. Third, internal response focuses on one emotional response: mood. Lastly, instead of behavior, perceived quality of care will be assessed.

Methodology

A mixed methods approach was conducted in two parts: a card sort followed by a semi-structured interview using photo-elicitation. Participants were limited to adults (18+) living in the U.S. (mid-west) and Kuwait. A link to the card sort was sent via email to participants and posted on social media platforms. Demographic information (gender, age, socio-cultural background, and number of visits to healthcare facilities in the last six months) was collected

before the start of the card sort. Fifty respondents from the U.S. and 42 respondents from Kuwait completed the study. The majority of participants were female (90 percent for U.S. participants and 78 percent for Kuwait participants). At completion of the card sort, participants were asked if they were willing to be interviewed for the second part of the study; two participants from the U.S. and six participants from Kuwait volunteered. Snowball sampling was used to recruit additional interview participants, matched by age category (young, middle-aged, and older adults), gender, and culture to total 10 participants (five males and five females) from each country. Pseudonyms were used to protect the privacy of participants.

Table 1. Participants interviewed for the photo-elicitation

Pseudonyms	Country	Gender	Age range	Degree	Profession	Visits	Marital Status	Completed P1
Joseph	USA	Male	26-35	Masters Degree	Research specialist at a mental drawback center	5-10	Married	No
John	USA	Male	26-36	Bachelor Degree	Civil consultant	1-5	Married	No
Jake	USA	Male	26-35	Bachelor Degree	Electrical engineer	1-5	Single	No
Caleb	USA	Male	18-25	Masters Degree	Electrical engineer	1-5	Single	No
Albert	USA	Male	45-55	Bachelor Degree	Construction Manager	1-5	Married	No
Lauren	USA	Female	26-35	Masters Degree	Executive director of a non-profit	5-10	Married	No
Mariah	USA	Female	55+	PhD	Higher Education - Professor	0	Single	Yes
Mackenzie	USA	Female	36-45	Masters Degree	Graduate assistant	0	Single	No
Cassie	USA	Female	18-25	Bachelor Degree	Director of design	0	Single	Yes
Kylie	USA	Female	36-45	Bachelor Degree	Registered nurse	10+	Single	No
Hamad	Kuwait	Male	55+	Diploma	Retired business man	10+	Married	Yes
Fahad	Kuwait	Male	26-35	Bachelor Degree	Field service engineer	1-5	Married	Yes
Nahid	Kuwait	Male	26-36	Bachelor Degree	Dietitian and life coach	1-5	Married	No
Ahmed	Kuwait	Male	18-25	High school diploma	Student	10+	Single	No
Abdulrahman	Kuwait	Male	18-25	Bachelor Degree	Mechanical engineer	1-5	Single	No
Anwar	Kuwait	Female	46-55	Bachelor Degree	Higher Education - Instructor	1-5	Married	Yes
Faiza	Kuwait	Female	26-35	Masters Degree	Lighting designer	1-5	Single	No
Fareda	Kuwait	Female	18-25	Bachelor Degree	Unemployed	10+	Married	No
Ebthal	Kuwait	Female	26-35	Bachelor Degree	Teacher	5-10	Married	Yes
Hanan	Kuwait	Female	18-25	Bachelor Degree	Dentist	1-5	Single	Yes

The card sort was used to examine relationships between individual features and qualities of healthcare waiting area designs and participants' mood. A website-based platform was used for the card sort for convenience with identical versions made available to participants in Arabic and English. Images for the card sort were collected from healthcare design magazines and

websites, and then cropped to isolate individual design features. A pilot study was conducted to determine the optimal number of images and mood terms for the sort. Twenty-three images of waiting areas in healthcare settings were included in the final study. These focused on features such as day-lighting, ambient/artificial lighting, high/low level lighting, cool/warm colors, neutral/colorful, curved/angular millwork, linear/curvilinear seating, low/high variety seating, fixed/movable seating, basic/upgrade seating, environmental graphics (signage/artwork), and plants. Participants were asked to sort images according to the Circumplex Model (1997) because its terminology is simple and distinguishes moods according to pleasant/unpleasant and activation/deactivation (Figure 10). The Circumplex Model has been validated (Larsen & Diener, 1992; Russell, 2003) and successfully used in a number of studies examining mood and emotions (Cowie & Cornelius, 2003; Tett & Burnett, 2003; Ashkanasy & Dorris, 2017). Based on results from the pilot study, four common terms were chosen from each category in the model to be used in the card sort. These terms were alert, relaxed, bored/depressed, and tense. The card sort was available for ten days and participants' average completion time was 6.3 minutes.

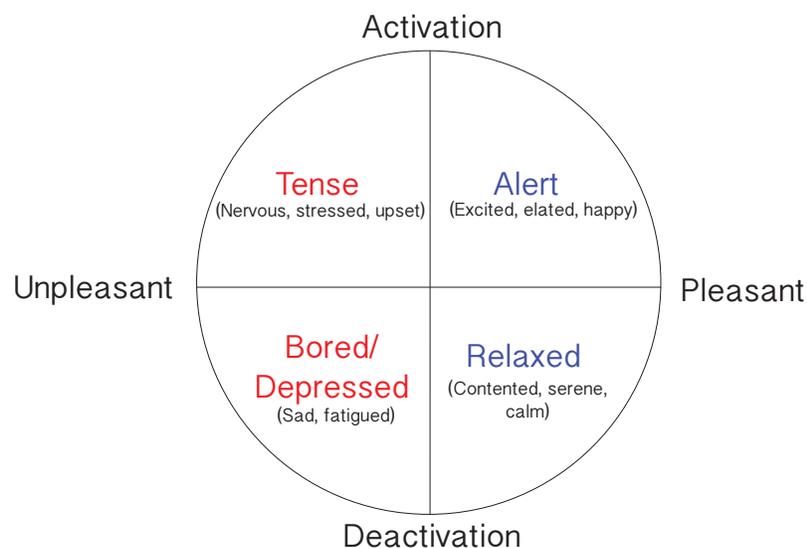


Figure 10: Circumplex Model developed by Plutchik and Conte (1997) modified to indicate terms used in the card sort, shown inside the circle quadrants

Semi-structured interviews incorporated photo-elicitation to examine perceptions of three different servicescape designs for a healthcare waiting room: medical-focus, neutral-activation, and hospitality-focus. Interviews were conducted in participants' native language (English or Arabic) using video-conferencing software and recorded with participants' verbal agreement. 3D modeling software was used to create photorealistic images of the waiting area designs that incorporated features identified from the card sort as "pleasant" and these were emailed to participants immediately prior to the scheduled interview. The intent of having interviews guided by photo-elicitation was to evoke feelings, memories and thick description (Zaltman, 2003; Ziller, 1990) to provide insight into personal experiences/stories that could emerge beyond the images provided.

Findings

Part one: Card sort analysis. Response to the card sort task was instantiated in a computer program. Data for U.S. and Kuwait populations were analyzed individually to compare cultural preferences (Table 2).

Table 2: Summary of Card Sort Results

	Positive				Negative			
	Alert		Relaxed		Tense		Bored/Depressed	
	U.S.	KW	U.S.	KW	U.S.	KW	U.S.	KW
LIGHTING								
Day-lighting	38%	17%	58%	79%	0%	3%	4%	3%
	29%		68%		1%		3%	
Artificial Ambient	26%	40%	56%	36%	12%	14%	6%	10%
	33%		47%		13%		7%	
Artificial Direct	28%	29%	2%	7%	36%	33%	34%	31%
	28%		4%		35%		33%	
High level	30%	14%	8%	43%	48%	21%	14%	21%
	23%		24%		36%		17%	
Low level	40%	29%	20%	31%	28%	26%	12%	14%
	35%		25%		27%		13%	
COLORS								
Cool	22%	19%	24%	31%	8%	31%	46%	19%
	21%		27%		18%		34%	
Warm	58%	35%	18%	43%	22%	13%	2%	8%
	49%		28%		18%		5%	
Neutral	26%	14%	64%	74%	2%	2%	8%	10%
	21%		68%		2%		9%	
Colorful	38%	31%	8%	21%	36%	24%	18%	26%
	35%		15%		29%		21%	
MILLWORK								
Curved	52%	33%	18%	21%	8%	31%	22%	17%
	42%		19%		18%		20%	
Angular	24%	17%	34%	21%	36%	17%	6%	45%
	21%		27%		28%		24%	
SEATING								
Linear	24%	17%	32%	42%	22%	7%	22%	33%
	21%		38%		15%		26%	
Curvilinear	10%	14%	48%	55%	26%	12%	16%	19%
	12%		51%		20%		17%	
Low variety	20%	12%	48%	63%	8%	7%	24%	18%
	16%		54%		8%		22%	
High variety	44%	29%	26%	36%	16%	10%	14%	24%
	31%		30%		14%		18%	
Fixed	4%	3%	4%	2%	42%	34%	50%	62%
	3%		3%		38%		56%	
Movable	8%	17%	0%	12%	24%	25%	68%	46%
	12%		5%		25%		58%	
Basic	6%	7%	0%	5%	30%	31%	64%	57%
	7%		2%		30%		61%	
Upgrade	14%	19%	12%	14%	32%	24%	42%	43%
	16%		13%		29%		42%	
ENVIRONMENTAL GRAPHIC/ BRANDING								
Informational/ branding (Signage)	38%	26%	52%	55%	8%	7%	2%	12%
	32%		53%		8%		7%	
Artwork (No signage)	34%	19%	58%	74%	6%	2%	2%	5%
	32%		53%		8%		7%	
NATURE								
Plants	10%	21%	84%	69%	2%	8%	4%	2%
	15%		77%		5%		3%	

Participants from both the U.S. and Kuwait largely associated positive moods with daylighting, artificial ambient lighting, warm colors, neutral colors, high-variety seating, informational brand/signage, artwork, and plants. For positive mood, colorful spaces (with both

warm and cool hues) and curved reception desk were generally associated with activation (e.g., alertness) whereas daylighting and neutral hues were more often associated with deactivation (e.g. relaxation). Relaxed mood was also mostly associated with curvilinear and low-variety seating images for participants from both cultures. There was similar agreement on negative mood association for artificial direct lighting and seating images showing fixed, moveable, basic finishes and upgraded finishes. Negative mood association for basic and upgraded seating materials suggests participants may have been responding to the similar style and/or arrangement of the seating in those images (armless chairs in a linear/fixed configuration). Additionally, artificial direct lighting, low lighting levels, colorful spaces, and curved reception desk showed similar split mood associations across both positive and negative dimensions.

Differences between U.S. and Kuwait respondents were found for lighting, color, reception desk and seating. First, high level lighting was sorted by 43 percent of Kuwaiti population as relaxed (positive) while 48 percent of Americans sorted it as tense (negative). Although low-level lighting was mostly associated with positive mood, Kuwaitis mostly assigned it to activating moods whereas many Americans associated it with relaxation. Angular reception desk, was negative (bored/depressed) for 45 percent of Kuwaiti respondents, and was split by U.S. participant with 36 percent sorting it as tense (negative) and 34 percent as relaxed (positive). This divided response is also seen with the curved reception desk, where the highest agreement was alert (positive) for both populations, but 31 percent of Kuwaiti respondents sorted the curved reception desk as tense (negative). Warm colors were more likely to be associated with positive-activation by Americans whereas Kuwaitis mostly associated this quality with positive-deactivation. High variety seating was similarly more often associated with alertness by Americans and relaxation by Kuwaitis.

Design features and qualities that were most strongly associated with pleasant-activation and pleasant-deactivation dimensions by both populations were used to inform three different servicescape designs for a healthcare waiting area. Day-lighting and moderate levels of ambient artificial lighting were used in all the images because of the positive associations with daylighting and negative/mixed mood associations with higher and lower lighting levels. All settings also included plants and the same views from windows. Differences were in entourage images, to represent waiting area guests and medical staff more typically seen in each country. The servicescape approaches used different pleasant –activation and pleasant deactivation moods, however, not all features were used in each space, in order to fit the settings’ design intentions.

The medical-focus setting was designed using pleasant-deactivation (relaxing) mood features and qualities such as cool color palette, a moderate variety of seating, more linear than curvilinear forms, informational signage and artwork. Artwork, décor, and amenities in this setting are intended to focus the user on healthcare issues. The neutral-activation setting incorporated pleasant-activation features (alert) and qualities such as a mix of brighter warm and cool colors, curved reception desk, and higher variety of seating. Curvilinear shapes are used in the desk, seating, flooring and ceiling. This setting used pleasant-activation intentionally to stimulate high positive distraction away from medical issue. Lastly, the hospitality-focus design features used a combination of pleasant-activation and pleasant deactivation (relaxed and alert) design features. It also used a higher ceiling devoid of acoustical tile and had fewer, larger chairs (less dense seating) than the medical-focus and neutral-activation settings, which had the same number of seats. Finally, each setting was populated with photos of people to represent visitors and staff in dress appropriate for the culture. Images were labeled with A (medical-focus setting), B (neutral-activation setting), and C (hospitality-focus setting) and referred by these labels

during the interview so as not to communicate design intentions to the participants. The images used for the photo-elicitation interviews are shown in Figure 11.

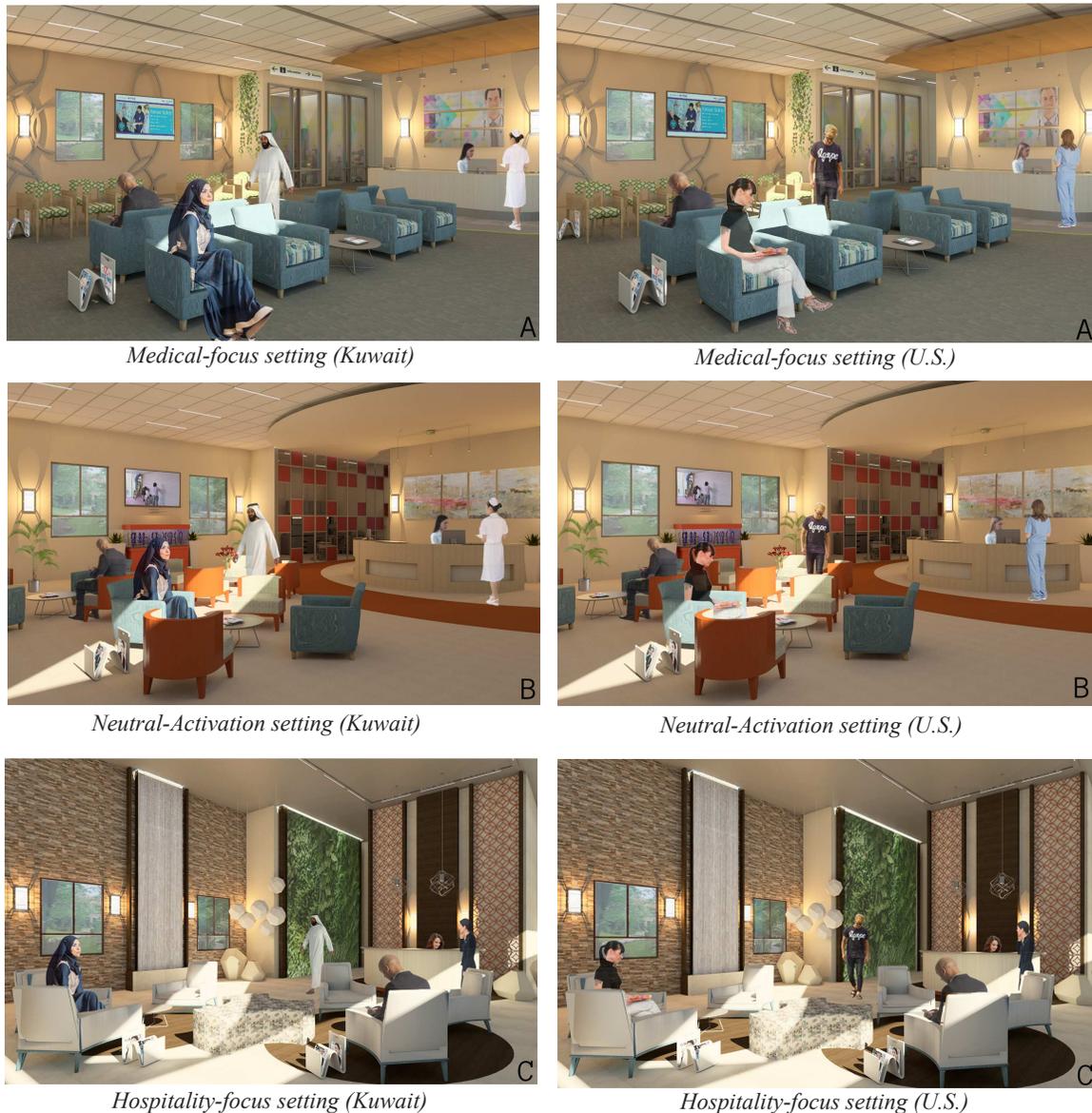


Figure 11: Images used for photo-elicitation interviews

Part two: Photo-elicitation interview analysis. Content analysis of interview transcripts used a priori, open, and axial coding (Guetzkow, 1950; Glaser & Strauss, 1967; Corbin & Strass,

2008; Merriam, 2009). A priori codes, informed by the conceptual framework and findings from part one of the study, were: atmospheric qualities of light, color, and nature elements; functional affordances of seating, reception desk, and amenities; signs/symbols of artwork, environmental graphics, and style; mood; aesthetic preference; and perceived quality of care. Open coding revealed additional themes related to ceiling design, sound, aroma, cleanliness, technology, and staff communication. Axial coding was used to explore relationships between themes, examine cultural and individual differences, and compare these against the conceptual framework. Analysis suggests connection to nature, seating configuration and style, and technology access were important issues for participants from both countries. However aesthetic preference and perception of servicescape revealed cultural and individual difference. Pseudonyms are used to protect participant privacy.

Atmosphere: 'Nature' promotes positive distraction and mood. Many participants talked about how the ambience or atmosphere of a setting was important to them for promoting positive distraction and pleasant mood. A sense of connection to nature was often brought up with respect to setting C (50 percent) and, to a lesser extent, B (30 percent) and A (10 percent). Some participants described the color and density of setting B as “café-like” or “cute,” positive for social distraction and uplifting mood. Whereas others felt a café-like atmosphere was inappropriate e.g., “chill-out area” or “waiting to drink my coffee”) or unpleasant. The atmosphere of setting A was discussed rarely by U.S. participants and often negatively by Kuwaiti participants (50 percent) – because it looked like the basic waiting area they typically encounter or reminded them of illness (as expressed by Ahmed, young male; Nahid, mid-age male).

Sixty-five percent (eight from Kuwait, five from U.S; seven females, and six males) of the participants mentioned a preference for nature elements in the waiting area. They discussed the settings as “having a sense of the outdoors”, “open”, “relaxing”, “comfortable”, and “calming” (pleasant-deactivation). Five participants (two males and three females) from both cultures specifically described how a sense of nature in a setting helped distract them from where they were (i.e., a healthcare facility). Ahmed from Kuwait stated: “it can probably take my mind off of everything.” People felt a connection to nature through daylighting, window views, plants, colors and materials that “are closer to nature”, and amenities (fish tank and water feature). Three participants (two males, one female) associated visual connection to nature with sound, describing a sense of “quiet” in the setting. One participant talked about how the lack of nature views in a healthcare setting made him “feel depressed” (Ahmed).

Nature-related amenities in the settings were discussed with respect to visual as well as auditory ambience. Many participants described the water feature (65 percent) in setting C and fish tank (45 percent) in setting B as positive distractions, although they were perceived differently. Participants from both countries perceived the water feature as a positive distraction that “relaxes [the] soul” (Ebthal, mid-age female). They described its strong association with nature: “A water feature, I think, that would be very relaxing - just to have that water trickling in the background, more presence, or more at least simulated presence, of nature” (Mariah, older female). A male from Kuwait also stated: “the waterfall and also the sound, it’s soothing” (Abdulrahman, young male). U.S. Participants associated the fish tank with children’s waiting areas: “As a kid I loved watching the fish tank, and now when I see a fish tank I think of “oh the doctor has a fish tank”. And it’s funny remembering loving watching the fish, but it’s also a negative thing” (Mackenzie, mid-age female). One Kuwaiti participant perceived the fish tank as

“noisy” and a negative distraction. Additionally, one participant suggested the television could be used to incorporate nature into the space also (Cassie, young female). Some (15 percent) of the U.S. population described liking the idea of having a fish tank.

Affordances: Furnishings mediate social interaction. A significant theme in the interviews was how furnishings mediate social interactions. Although they were not asked about seating arrangements or style, 100 percent of the participants discussed how they felt setting configurations facilitated or inhibited their communication and/or privacy needs. Seating style was deliberated upon by almost half of the participants with respect to social interactions, 50 percent described its relation to psychological and physical to comfort, and 55 percent explained the role (seven from Kuwait, three from U.S) it played in peoples’ ability to identify, communicate with, and trust the medical staff (six negative, five positive; four from Kuwait, seven from U.S.).

Participants who discussed seating arrangements typically using the terms “clusters” to describe the seating in settings B and C and “linear” for the seating configuration in setting A. Cluster seating (70 percent) was generally preferred over linear seating (30 percent), however there were cultural and gender differences for these preferences. Six participants (3 males, 3 females) from the U.S. preferred sitting in linear seating arrangements individually (alone). One U.S. male described how linear seating suggested efficient service (positive) whereas two (U.S. participants) males associated linear seating with negative experiences such as long wait times at the Department of Motor Vehicles. All Kuwaiti participants and four participants from the U.S. (seven males; seven females) favored cluster seating, however, some preferred the arrangement for social interaction and others because they felt it afforded privacy. Five males (three from Kuwait; two from U.S.) preferred to sit alone in cluster seating because they felt they would not

be directly facing a stranger (as they would in a linear configuration), would have more space between the chairs (than setting A), and could better control their view of staff or positive distractions through choice of chair orientation. Only two Kuwaiti males wanted to sit with others in cluster seating, whereas only two Kuwaiti females wanted to sit alone in cluster seating. Five females (two U.S. and three from Kuwait) described how they preferred sitting with other people in cluster seating arrangement. Seven participants (five females; two males) explained that a cluster arrangement is important for social support, because it facilitates communication with family and friends. Female participants expressed a stronger dislike for linear arrangements than males because of difficulty communicating with the person seated next to them. Ebthal expressed, “I hate how they put them all next to each other, next to each other, next to each other!”

The style of seating was mentioned by 16 participants (80 percent) with respect to sense of privacy (10), mood (six females, three from each country), and physical comfort (10). Some participants expressed preference for the hospitality-focus seating because it had higher arms and seat back, was larger in scale giving a sense of privacy and psychological protection (“coziness”), helping people controlling their social interaction experiences whether they were alone or with family. Yet, it raised concerns about “cleanliness” (medical sanitation) for U.S. participants in particular, (three females, one working in the healthcare field). The seating in the neutral-activation setting was viewed as café-like because the low seatback and arm height afforded less privacy and might cause more social interaction than was ideal to seven participants (five from Kuwait; two from U.S.). For example, “I don’t go to hospitals or doctors waiting rooms and expect to start a relationship with a complete stranger” (Mariah). One participant who had worked in healthcare suggested linear seating was preferred to locate patients more easily.

Older U.S. participants and healthcare professionals (7 participants; three from Kuwait, four from U.S.) spoke about how they would like seating options, particularly given the concern for privacy. Females generally expressed more need for social support than males. Additionally, participants expressed different physical needs for seating, such as no arm rests due to body size or needing to move between different seating styles to alleviate pain, and several wanted control over views from seating (e.g., nature, TV) to manage stress.

Over a third of participants discussed the reception desk, articulating the need to have clear visibility to staff, with demarcation by design features such of the floor and ceiling to promote way-finding and facilitate communication. Over half the participants discussed the importance of staff communication in general. Three preferred the desk style in the hospitality-focus setting because of aesthetics, and one participant preferred that staff is sitting higher in that setting, more eye-level. Two healthcare professionals from both countries explained how the desk should allow some privacy between the patient and the receptionist from the people in the waiting area. Several people described how the physical environment and the staff work together for the participant's experience, either in a positive or negative way. One participant also described how she felt "the attitude of the staff is somewhat affected by the environment that they work in" (Cassie).

Signs, symbols, and style communicate character of patient-staff interactions. All participants described how environmental graphics, artwork, technology, and style of décor- as well as staff dress-shape expectations of the type and quality of communications they might have in a waiting area setting. Technology was a significant theme raised by eight participants as a resource to facilitate communication with healthcare staff and as a positive distraction preferable to television shows and magazines typically provided in waiting areas. Although not the purview

of interior design, staff dress was also discussed as key aspect of the waiting area servicescape, with most participants preferring medical uniforms even in the hospitality-focus setting.

Approximately half of the participants (55 percent) felt it important that staff be welcoming, efficient in answering their questions, and cater to their needs (quality of care/service). For example, a participant from Kuwait expressed how small things such as approaching visitors and talking to them while they wait, being patient, or asking visitors how to make their experience better (Ebthal). Another participant added: “they need to be friendly with the patient ...instead the patient feels they are not important” (Fareda, young female). Also, a male from the U.S. elaborated on how staff help in general made his prior experience positive (Caleb, young male).

Eighty percent of the participants described how direct, clear environmental graphics are important to them in healthcare settings, with this topic raised most often when referring to the medical-focus setting (20 percent). Twenty percent of participants identified access to information through way-finding strategies, such as through signage, artwork, and changes in floor and ceiling materials, leading them to the reception area and beyond. Easily understanding the flow of service upon entering a space seemed to instill confidence or ease anxiety for some participants. “It is linear...you know that you will go to the desk first, and then you will go around where the offices are... so there [are] some visual cues” (James, mid-age male). Although there was a general preference for abstract artwork, one participant liked how art could be used to signal the type of experience he might have in the facility, commenting on setting (A): “the doctor picture on the wall — he looks like a nice guy” (John, mid-age male).

The role of technology in signaling effective communication was a significant theme (six participants), including the use of television monitors and charging stations to support personal

device applications. There was a general preference to use televisions to communicate specific information about facility services, such as wait times or other health-service relevant information, instead of for entertainment. “I would ... see if a patient is done with x-rays and is now heading to surgery, this is very important to me as a person assisting a patient” (Anwar, older male). Those mentioning the television for entertainment more often considered it a nuisance. The mobile phone, or other personal device (e.g. computer, iPad), charging stations, and Wi-Fi were a preferred positive distraction and means of communication with staff. Personal devices provide control over entertainment preferences (shows, music, reading materials, email, etc.) and are considered more sanitary than magazines in a public waiting area. “I don’t like to touch magazines ... that is disgusting!” (Mackenzie). “You ... grab ... your cellphone. So I think having distractions on a [television] screen is less critical today ...” (James). Some participants described charging stations as “ubiquitous”. Other participants preferred personal devices for staff communication. For instance, “if they call me it’s easier for me, instead of having to lift my head up, when they call me I know it’s time to close my phone and get up, it’s just more convenient” (Faiza, mid-age female).

Interestingly, staff attire was described by 85 percent of participants, with nine (4 males; 5 females) stating a preference for medical attire. Four people associated medical dress with sense of trust and five said they wanted to be able to easily identify/recognize healthcare professionals in a setting. There was more acceptance (four) of business attire for staff positioned full-time in the waiting area, such as a receptionist, in the hospitality-focused setting only. Participants who feared doctors or clinics also preferred non-medical dress. “...[T]he scrubs and all that... for me relate to, oh injuries, scary things, sickness, death, ...” (Ahmed).

Mood: Individual and cultural difference. The terminologies that were coded for mood included: comfort, familiarity, calming, relaxing, fear, and stress. Participants described moods associated with settings atmospherics more generally as well as specific design features. These were compared against the Circumplex mood model (Figure 12). Moods mostly described were either unpleasant-activating or pleasant-deactivating, with only one participant (Cameron, young female) using a mood term in the pleasant-activation category and two referring to unpleasant-deactivation moods. The moods that participants associated with waiting area designs were seemingly primarily influenced by their personal attitudes toward healthcare environments, and secondarily shaped by cultural differences, including healthcare expectations. Participants from both cultures who were fearful of doctors or clinics associated the medical-focus setting with unpleasant-activation moods. For the majority of participants who did not express fear of healthcare settings, pleasant-deactivation moods were associated with different design features and qualities for U.S. versus Kuwaiti participants, including color, density, and materials (upholstery and interior finishes). Finally, participants from both cultures described setting A as “familiar”, however familiarity was associated more often with positive mood for U.S. versus negative mood for Kuwaiti populations.

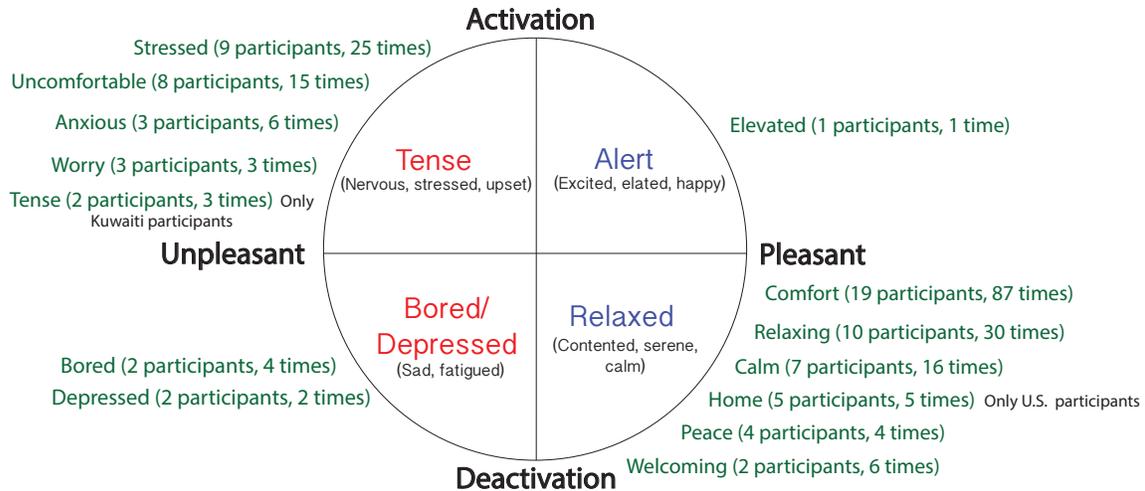


Figure 12: Circumplex Model developed by Plutchik and Conte (1997) modified to indicate terms used in the interviews

Photo-elicitation is a method commonly used to evoke memories, and findings revealed imagery prompted participants to describe prior experiences in healthcare settings. Five participants (two from U.S. and three Kuwaiti) related stories of fear/avoidance associated with prior healthcare visits. For most of these participants, the medical-focus setting (A) was perceived as anxiety-promoting and the hospitality-focus setting (C) described as “calming.” A young male participant (Abdulrahman) recalled a positive healthcare experience while viewing image (C): “The space was beautiful - everything was so nice, was so relaxing the whole time, that the stress really just left my body.” Positive moods were generally higher for C than other settings, but this was particularly so for Kuwaiti participants (eight), who described the waiting area as “comfortable”, “relaxed”, “feels warm”, “elegant”, “luxurious”, “calm”, “safe”, and “prestigious”. Seven U.S. participants also associated positive moods with “C” such as “comfortable”, “settle”, “soothing”, and “relaxing.” Although he associated setting C with positive distraction, one participant warned that design features that were too obviously distracting from the healthcare services are also worrying: “You feel like they want to trick you not to notice what is happening” (Abdulrahman, young male).

There were general cultural differences with respect to colors, density, and materials. Kuwaiti participants associated more colorful and visually dense spaces (such as setting B) with positive-deactivating moods, whereas U.S. participants often associated these with negative-activating moods. This settings' objective of being positive-activating revealed strong and dissimilar mood associations with the colorful space; Kuwaiti participants associated the warm hues with positive-deactivation moods whereas U.S. participants associating them with negative-activation moods. Anwar (older male) said "I feel like ... the yellow tones the red is giving the space beauty... I feel peace and quiet in this space." Cassie, a female from the U.S. associated color with fear: "in B the red is a scary color in those spaces". Kuwait participants associated higher seating density with "cozy", "comfortable", and "homey", positive-deactivation moods. Some said they felt this way because it reminded them of a public space they enjoyed. "[T]he seating makes me feel like I am in a café waiting to drink my coffee" (Ebhtal). Whereas U.S participants generally associated the higher density of seating (B) and visual complexity of materials (B and C), with negative-activation moods as "busy", "anxious", "little strange", "too intimate", "squished" and "uncomfortable". "Some of those areas where you would be starring in a closed group, um...it seems a bit too intimate for a medical environment" (Jake, mid-age male).

Although all participants described setting A as "usual" or "familiar", the design was more often associated as comforting to U.S. participants, but discomfoting to Kuwaiti participants. U.S participants (8) suggested they found the space comfortable because of a sense of trust that the place was professional and efficient (positive) - although two said it was efficient but boring (because it's familiar, negative). Four Kuwaiti participants explicitly expressed negative mood associations with the setting, feeling that it was uncomfortable or felt like

“illness” (negative-activating) “[b]ecause these are the waiting rooms we see our whole life” (Hanan).

Cultural differences in aesthetic preferences for waiting area designs. Participants were asked which spaces they found most and least aesthetically appealing. U.S. participants preferred setting A slightly more than C (5-4), and most found B unappealing. Conversely, none of the Kuwaiti participants described setting A appealing, and C was preferred over B by more participants (4-2). Colors (75 percent), furniture configuration, atmosphere, lighting, and ceiling design were features most often mentioned with respect to aesthetic preference.

Table 3: Summary of participants preferences.

U.S									
	Medical-focus (A)			Neutral-activation (B)			Hospitality-focus (C)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Most appealing	3	2	5	1	0	1	1	3	4
Least appealing	0	2	2	2	3	5	3	0	3
Other	2	1	3	2	2	4	1	2	3
Kuwait									
Most appealing	0	0	0	1	3	4	4	2	6
Least appealing	3	2	5	1	2	3	1	1	2
Other	2	3	5	3	0	3	0	2	2

Waiting area design A was slightly preferred by U.S. participants, however some (four participants) who described fearing doctors or clinics selected setting C as most appealing. Those who preferred setting described the colors (cool tones) as “nice” and “calming”. Participants also explained they selected design A because it was “familiar”, they liked the linear seating configuration, and perceived the space to be “clean.” One U.S. participant explained he preferred the ceiling height in A because “the ceiling is at a comfortable level ...”. The two female participants from the U.S. who rated setting A as least appealing found the space “boring” or associated it with bad memories. All Kuwaiti participants found A unappealing, most often

rationalizing that it was because the design is “typical”, a “basic hospital waiting area”, for which they had mostly negative association. Kuwaiti’s also often described the colors as unappealing: “The colors are “Blah,” it’s not very fun, it’s mostly all monotone, all blue grey to me these are depressing colors” (Ahmed, young male).

Waiting area design B was favored by some Kuwaiti participants (one male, three females), whereas half the U.S. participants chose the design as the least appealing – either because it was too visually complex or because it seemed more appropriate for children. Kuwaiti’s preferred the lighting, color combination of orange and beige, and the clustered seating arrangement. Some described the setting atmosphere as café-like (positive). Only one U.S. participant (male) ranked design B as most appealing, describing the modern atmosphere and ambient lighting. Colors was also a strong determination for those who found the space least appealing (3), and café-like (negative). The more densely clustered seating and colorful design was considered by some as “busy” (negative). Four U.S. participants did not rate the design as least or most appealing, primarily because they associated it with a children’s waiting area due to the vibrant colors and fish tank.

Waiting area design C was preferred by many Kuwaiti participants (four men and two women) who found the atmosphere “luxurious” and “elegant”, that did “not look like a hospital” (positive). Kuwaiti’s typically described the “open feeling”, “good colors”, and “comfy” seating. U.S participants (four) who classified this setting as most appealing liked the colors, décor elements, wall finishes, and lighting, which made the space feel “high end”. Half of the participants favored the height and style of the ceiling in setting (C) as opposed to the acoustic ceilings in settings A and B, which they negatively associated with healthcare spaces. However, one U.S. participant felt the high ceiling would make him “feel a little bit isolated.” U.S. (six)

and Kuwaiti (four) participants who did not prefer setting C, rationalized that the atmosphere felt “strange” and not like a healthcare space.

Cultural differences in perceptions of servicescape and quality of care. Cultural differences were evident in how participants perceived the servicescape and quality of care experiences they expected from the different waiting area designs. These perceptions aligned with aesthetic and mood relationships discussed previously, with expectations also seemingly shaped by the medical systems in each country. Most participants perceived a higher quality of care in the setting they preferred aesthetically, however some, - particularly those who preferred setting C - felt the care might be of lesser quality in spaces where it appeared the costs of the interior design were higher. This was particularly true for U.S. participants; Kuwaiti participants more often equated a nicer environment with a higher quality, person-centered approach to care services.

U.S. participants perceived the linear forms (seating and reception desk) along with simplicity and functionality of design A as an indication of professionalism and efficiency in the care that would be provided. Several participants described this setting as “clean”, associating the visually simplicity of the design with appropriateness for medical sanitation processes. Thus, they felt this waiting area organization was focused on the serious business of medicine and not the décor. Yet, Kuwaiti participants almost universally associated the quality of care in setting A to be “standard” (merely average), because it looked like a typical government/public hospital. However, two Kuwaiti females (Faiza, Fareeda) felt the care experience would be best in a medical-focused design like setting A, even though they did not prefer the aesthetics of the waiting area. “If the space looks really medical and functional, without paying much attention to aesthetics, the quality of healthcare would be better” (Faiza).

Waiting area B was largely perceived by the U.S. participants as a children's healthcare facility. This was due to the colorful setting, amenities (fish tank), and seating style, density and configuration. Because they did not perceive the design as appropriate for an adult waiting area, some felt the quality of care in setting B would be inferior to A. Kuwaiti participants did not associate setting B with a children's facility, and several preferred for the colors, and perceived its "cozy" and "café-like" atmosphere as an indicator that the quality of care would be high. They described that because it is different from government/public hospitals, it would support a, more personalized care experience, including positive distractions and clustered seating to enable social support from friends and family.

U.S. participants had mixed expectations for the quality of care in setting C, with nearly all equating it with high costs. Several participants associated the design with a plastic surgery or similar elective medical service provider, where a focus on aesthetics would be appropriate but also very expensive. Some spoke about how they would expect a space with décor like setting A to have many amenities, such as Wi-Fi, charging stations, free food and beverages. The unfamiliarity of the décor led one participant to state that the space does not indicate what kind of quality of care he would get because it doesn't look like a medical setting: "I have no idea" (Albert, older male). Additionally, three participants (U.S.) perceived an inferior quality of care because they were concerned about cleanliness of materials. However, Kuwaiti participants described the setting as "clean" because they felt, given the costly design, there would be sufficient cleaning staff to maintain cleanliness. Most Kuwaiti's considered setting C to provide the highest quality of person-centered care. They noted that if healthcare facilities put thought and attention to the design of the space, it reflected positively the high quality of care that will be provided to patients and visitors. For example, a mid-age adult (Fahad, male) stated his care

experience would be: “Very high. Because so much attention is paid to the atmosphere and design...”

Discussion

This research establishes that people feel that healthcare waiting areas affect their moods and shape expectations of the quality of care they will receive. As Bitner (1992) suggests, the environment is a form of non-verbal communication. Evident in the data from this study is that mood was highly associated with certain design features in both parts of the study and that the physical waiting area environment has potential to positively affect mood and quality of care. Cultural factors, however, shape perceptions. Thus, interior designers practicing in a global context must understand differences in how people from different cultures perceive design features and qualities such as color, spatial density, visual complexity, atmosphere and servicescape.

Waiting areas designs, as servicescapes, should be sensitive to individual and cultural needs: psychological, sociological, and physiological. A number of participants expressed having fear/anxiety when visiting a healthcare facility; these spaces should keep such psychological factors in consideration, including the use of positive distractions and nature elements to help promote psychological comfort and calmer mood. Accommodating sociological needs, including spatial arrangements that facilitate social support from family, friends, and staff - as well as areas for privacy is important for visitor’s positive experiences. For example, a female participant articulated: “space that allowed people to have space for themselves if they needed it, together if they needed it... having space where you can step away and not be in the middle of everything is good” (Lauren, middle age female). As found in previous studies (Arneill & Devlin, 2002; Catania et al., 2010) “comfortable chairs” were considered important for a positive experience.

Chairs that are larger in scale and with higher arms and backs were perceived as providing psychological comfort. A variety of chair styles, heights, and firmness afford physical comfort for people of different sizes and abilities. Furniture configurations can facilitate social support, privacy, and views of staff or positive distractions in a setting. The preferred density and arrangement of seating in a space may differ by culture. This study underscores the importance of knowing users' preferences. For example, a recent study conducted by Figueroa (2016) observed public hospital waiting areas in Kuwait, with findings indicating the need for segregated spaces for males and females due to culture and religion. However, in this study none of the participants expressed a need or desire for segregated waiting area, instead they preferred to have a single waiting area which provided choices of sitting with family and friends as well as places for more privacy. Figueroa (2016) observed gender separation, however she did not interview people to ask them about their seating choices.

There may be design elements that are beneficial to people of diverse cultural backgrounds, such as nature elements. This study found no cultural differences regarding the perceived positive benefits of daylighting, windows with nature views, indoor plants, sights and sounds associated with nature (waterfall feature), and natural colors and materials (provided they are durable and cleanable). Many researchers have found that people prefer scenes of nature instead of urban environments (Kaplan et al., 1972), and that nature scenes have positive effects on psychophysiological states (Ulrich, 1981, Nanda et al., 2002). Findings from this study suggest benefits of incorporating biophilic design principles in waiting areas to help reduce psychological and physiological distress. Biophilic designs (Kellert, Heerwagen, & Mador, 2011) are based on the understanding that people have a biologic affinity with nature and thus prefer (and benefit from) spaces that incorporate natural materials (e.g., wood, stone, fibers),

views of nature (windows, plants, and artwork), and day lighting and incorporate organic shapes and forms in architectural elements, furniture, and décor. Although biophilic design also recommends use of organic shapes, preferences for curvilinear forms in this study were mixed, with U.S. participants more often expressing greater preference for linear and angular forms and Kuwaiti participants generally preferring curvilinear. This may be because linear and angular forms are more typically used in U.S. healthcare designs or because U.S. participants associate these forms with professionalism and efficiency.

Patient-centered design can include nearly every aspect of a healthcare facility's environment, from the selection of pleasing lighting, to user friendly informational carts and kiosks, to an effective way-finding system (Robinson, Callister, Berry, & Dearing, 2008). This study revealed different perceptions of what is a patient-centered servicescape by the two cultures. The medical-focus setting was positively associated with familiar healthcare facilities for U.S. participants, perceived as efficient and professional, and associated with high-quality patient-centered care. Yet, the medical-focus setting was negatively associated with care for the Kuwaiti population, in part for its perceived efficiency (impersonal atmosphere) reminding participants of the public hospitals. The Kuwaiti participants preferred the hospitality-focus setting because they perceived it showed care and attention to the needs of visitors and families. A space that is perceived as not supporting user needs can produce increased stress in a situation that is often already stressful (Ortega-Andeane & Estrada-Rodriguez, 2010). Cultural differences in servicescape perceptions may be shaped by the medical systems in place. The traditional medical model in the U.S. focuses on treatment of disease and may be described as more "impersonal" (Morgan & Yoder, 2012); this may influence how U.S. participants perceive efficiency and quality of healthcare services. Findings from this study are summarized (Figure

13) focusing on personal factors arranged based on their significance: prior experiences, socio-cultural and gender.

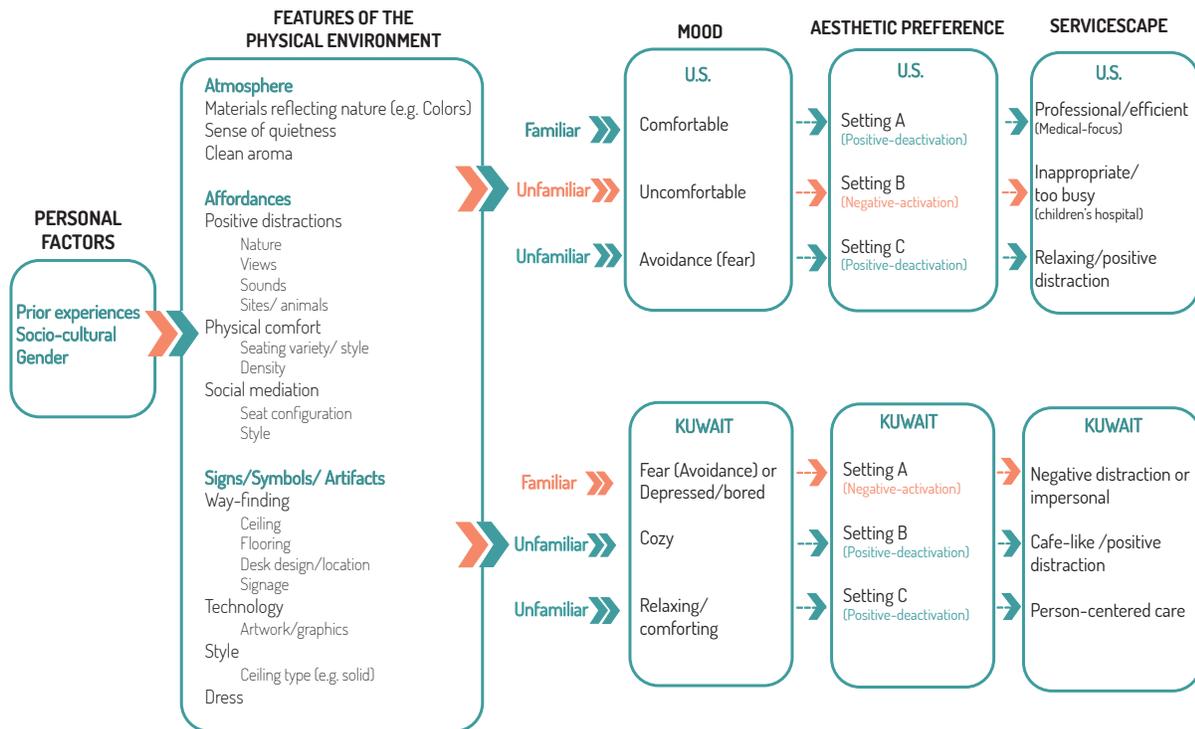


Figure 13: Findings model

Healthcare facilities such as hospitals and clinics are complex; they consist of many forms and spaces. Planning for compatibility and coherence is a particularly challenging task for designers and architects. With advancements in technology, interior designers will need to become more knowledgeable about how embedded technologies become part of the atmosphere and servicescape in a setting. Embedded technology has the potential to add value to the business strategy and services of a healthcare facility. As revealed in this study, people from both cultures feel that technology should be ubiquitous in healthcare waiting areas. Typical positive distractions that were traditionally used, such as magazines and televisions, are no longer perceived positively (e.g., unsanitary, a noisy nuisance). Wi-Fi for internet access and charging

stations are considered basic amenities by participants in this study. Technology is playing a more significant role in healthcare settings by creating positive distraction to improve mood or ease pain and facilitating the information and communication with healthcare providers. Participants in this study viewed technology as an integral component of the types of amenities they would like in a waiting area. Findings from this study align with other studies showing that the wellbeing of patients and their families include access to information, food and beverages, and comfortable environments (Browning & Warren, 2006), as well as the ability to engage in distracting activities while waiting provided by spaces to read, listen to music, work on computers, chat, or avoid other patients (Catania et al., 2010).

Limitations and Conclusion

This study was limited to examining people's perceptions of feature and qualities of healthcare designs. Participants reacted to purely visual stimuli using photographic images and reflected on prior experiences in healthcare settings. Their perceptions may be biased by lack of other sensory information and shaped by past events that occurred in settings of similar design. Furthermore, they viewed digital images on their own device, thus colors and quality may have varied, possibly affecting their responses. Participants for this study were selected through purposive sampling and may not be representative of the larger population. U.S. participants were mostly from the mid-west; results could differ in other regions of the country. Finally, half of the interviews were conducted in Arabic and translated to English for analysis; some meanings could have been lost in the translation.

The waiting area, a place of change that can impact the overall visitor experience positively or negatively, has largely been unexamined (Steelcase, 2015). This study contributes to the literature by helping to elucidate features and qualities of healthcare waiting areas designs

that impact user experiences and perceived quality of care. Importantly, it examined individual and cultural differences, underscoring benefits of biophilic design and embedded technologies in waiting area servicescapes for both U.S. and Kuwait populations. It also revealed important cultural differences with respect to atmospheres and affordances that promote wellbeing in waiting areas, including colors, density, visual complexity, style, and spatial configuration. Finally, it revealed differences in the experiences people expect in determining quality of care. Further research is needed to explore more deeply the relationship between healthcare service models and waiting area designs. Perceptions do not always align with actual behavior in a setting. Although research in healthcare environments is challenging, future studies should aim to include observations, as well as psychological, and physiological measures in waiting area environments to more accurately assess impacts of design features and qualities on moods and behaviors.

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APPENDIX II: SEMI-STRUCTURED INTERVIEW QUESTIONS

- 1) Choose the waiting area design that appeals the most to you.
 - i) How does this make you feel? Why?
 - ii) Are there certain features that lead you to this decision?
 - iii) Does this image evoke memories? Please elaborate. What kind of care experience do you think you would have in this place?
- 2) Choose the waiting area that is the least appealing to you.
 - i) How does this make you feel? Why?
 - ii) Are there certain features that lead you to this decision?
 - iii) Does this image evoke memories? Please elaborate. What kind of care experience do you think you would have in this place?
- 3) Why do think this image was not selected previously (as appealing, unappealing)?
 - i) How does this make you feel? Why?
 - ii) Are there certain features that lead you to this decision?
 - iii) Does this image evoke memories? Please elaborate. What kind of care experience do you think you would have in this place?

APPENDIX III: PART ONE: PARTICIPANT RECRUITMENT LETTER – ENGLISH

E-mail Consent and Recruitment (Card Sort)

Dear Participant,

My name is Noor Abdal and I am a graduate student conducting my thesis research at Colorado State University in the Design and Merchandising department. We are conducting a research study examining features of healthcare designs on mood. We believe that understanding how people perceive interior design features affect their moods can help designers and healthcare facility planners improve experience of healthcare visitors. The Principal Investigator is Dr. Laura Malinin; and I am the Co-Principle Investigator.

We would like you to take an online survey, called a card sort. Participation will take approximately 15-20 minutes. Your participation in this research is voluntary. If you decide to participate in the study, you may withdraw your consent and stop participation at any time without penalty. An interview will be conducted for the second part of the study. If you are interested you can inform the researcher via email, so you can be contacted for the interview.

We will be collecting name, gender, age, socio-cultural background, educational level, nationality, profession, and if you have visited a hospital in the last 6 months, and prior experiences in healthcare waiting areas. When we report and share the data to others, we will combine the data from all participants. We will keep your data confidential; your name will not be collected unless you wish to participate in the second part of the study. Your name and data will be kept separately safely stored on computer secured by password accessible only to the research team. While there are no direct benefits to you, you may enjoy the card sort activity and we hope to gain more knowledge about how people feel waiting areas designs affect their mood.

It is not possible to identify all potential risks in research procedures, but the researchers have taken reasonable safeguards to minimize any known and potential (but unknown) risks.

To indicate your willingness to participate in this research and to continue on to the survey, click here: <https://interiordesigncardsort.optimalworkshop.com/optimalsort/1n85bl81>.

If you have any questions about the research, please contact me at noorabdal@outlook.com or Dr. Laura Malinin at laura.malinin@colostate.edu. If you have any questions about your rights as a volunteer in this research, contact the CSU IRB at: RICRO_IRB@mail.colostate.edu; 970-491- 1553.

Noor Abdal, Graduate Student

Laura Malinin, PhD, AIA

APPENDIX IV: PART ONE: PARTICPANT RECRUITMENT LETTER – ARABIC

الموافقة عبر الإيميل (Card Sort)

عزيزي المشارك :

إسمي نور عبدال وأنا طالبة خريجة وأطبق البحث الخاص برسالتني في جامعة ولاية كولورادو في قسم التصميم والتسويق . إننا نجري بحثا لدراسة الكيفية التي تؤثر بها ميزات تصميم الخدمات الصحية على جودة الخدمة . نحن نؤمن بأن فهم الأسلوب الذي يستقبل فيه الناس ميزات التصميم الداخلي وكيف يؤثر على مزاجهم ، يساعد المصممين والمخططين لمنشآت الخدمات الصحية لتحسين تجربة رواد هذه الخدمات . إن الباحث الرئيسي هو الدكتور مالينين وأنا الباحث المساعد .

نود أن تشارك في استبيان عبر الإنترنت باسم card sort . سوف تستغرق المشاركة 15-20 دقيقة تقريبا . إن مشاركتك تطوعية . في حال قررت المشاركة في هذه الدراسة فيمكنك سحب الموافقة والتوقف عن المشاركة في أي وقت وبدون عقوبة .

سنقوم بجمع الاسم والجنس والعمر والخلفية الاجتماعية والثقافية والمستوى التعليمي والجنسية والمهنة، وإذا كنت قد زرت المستشفى في الأشهر الستة الماضية، والخبرات السابقة في مناطق الانتظار الرعاية الصحية. عندما نعلن البيانات للآخرين سوف نجمع البيانات من جميع المشاركين وسنحافظ على سرية بياناتك ولن نأخذ إسمك إلا في حال رغبتكم بالمشاركة في الجزء الثاني من الدراسة . سوف نحتفظ ببياناتك بشكل منفصل على جهاز الكمبيوتر وستكون محمية برقم سري والمسموح لهم بالدخول هو أعضاء فريق البحث فقط إن المشاركة في هذه الدراسة لا فوائد لها مباشرة بالنسبة لك ولكنك يمكن الاستمتاع بنشاط ال card sort. ونحن تأمل أن تكتسب المزيد من المعرفة بتأثر تصميم غرف الانتظار في المنشآت الصحية على الناس .

لا يمكن التعرف على جميع المخاطر في اجراءات البحث ولكن الباحثين قد اتخذوا وقاية معقولة لتقليل أي خطورة كامنة .

للمشاركة في هذا البحث والاستمرار في الاستبيان الرجاء الضغط هنا

<https://interiordesigncardsort.optimalworkshop.com/optimalsort/j81j11xs>

في حال لديكم أي سؤال بخصوص البحث الرجاء التواصل معي على noorabdal@outlook.com

أو Dr.Laura Malinin at laura.malinin@colostate.edu

إذا كان لديكم أي أسئلة بخصوص حقوقكم كمتطوعين في هذا البحث الرجاء التواصل مع

CSU IRB على RICRO_IRB@mail.colostate.edu 0970-491-1553

نور عبدال ، طالبة خريجة

لورا مالينين ، دكتوراه

APPENDIX V: PART TWO: PARTICIPANT RECRUITMENT E-MAIL– ENGLISH

Dear (Participant's name),

We are conducting a research study examining how healthcare design features, affect perceived quality of care. We believe that understanding how people perceive interior design features affect their moods can help designers and healthcare facility planners improve experience of healthcare visitors. The principle investigator is Dr. Malinin; and I am the Co-Principle Investigator.

You are being asked to take part in a research study of how design features in a healthcare waiting room has an affect on the perceived quality of care. Please read this information carefully and ask any question you may have before agreeing to take part in this study. If you decide to participate in this study, you may withdraw your consent and stop participation at any time without penalty.

What is the study about: The purpose of this study is to understand, what effects, if any, do design features in healthcare waiting areas have on perceived quality of care.

What we will ask you: If you agree to be in this study, we will conduct an interview with you via Skype or FaceTime. Your video call will be recorded. You will be given three images and asked which images is most and least appealing to you, how these images make you feel, and what features led you to this decision, if images evoke memories, and experience do you think you might have in each waiting area design.

Risk and benefits: I do not anticipate any risks to you participating in this study other than those encountered in day-to-day life. There are no benefits to you, but we hope you gain more knowledge on different design features in the healthcare facilities.

Taking part is voluntary: Taking part in this study is completely voluntary. You may skip any questions that you do not want to answer. If you take part, you are free to withdraw at anytime.

We will be collecting name, age, gender, marital status and nationality. When we report and share the data to others, we will combine the data from all participants. We will keep your data confidential; your name and data will be kept separately safely stored on a computer secured by password accessible only to the research team.

If you have any questions about the research, please contact me at noorabdal@outlook.com or [Dr. Laura Malinin at laura.malinin@colostate.edu](mailto:laura.malinin@colostate.edu). If you have any questions about your rights as a volunteer in this research, contact the CSU IRB at: RICRO_IRB@mail.colostate.edu; 970-491-1553.

Noor Abdal, Graduate Student

Laura Malinin, PHD, AIA

APPENDIX VI: PART TWO: PARTICPANT RECRUITMENT E-MAIL– ARABIC

عزيزي المشارك :

إسمي نور عبدال وأنا طالبة خريجة وأطبق البحث الخاص برسالتني في جامعة ولاية كولورادو في قسم التصميم والترويج . إننا نجري بحثا لدراسة الكيفية التي تؤثر بها ميزات تصميم الخدمات الصحية على جودة الخدمة . نحن نؤمن بأن فهم الأسلوب الذي يستقبل فيه الناس ميزات التصميم الداخلي وكيف يؤثر على مزاجهم ، يساعد المصممين والمخططين لمنشآت الخدمات الصحية لتحسين تجربة رواد هذه الخدمات . إن الباحث الرئيسي هو الدكتور .مالينين وأنا الباحث المساعد .

الرجاء المشاركة في هذه الدراسة التي تبحث عن تأثير غرفة الإنتظار في موقع الخدمات الصحية على تصور المريض بمدى جودة الخدمة . الرجاء قراءة هذه المعلومات بعناية ويمكنك السؤال عن أي شيء قبل الموافقة على المشاركة في هذه الدراسة . إذا قررت المشاركة فباستطاعتكم التراجع عن الموافقة والتوقف عن المشاركة في أي وقت وبدون عقوبة .

موضوع الدراسة : إن الغرض من هذه الدراسة هو فهم التأثيرات – إن وجدت – لغرفة الإنتظار في موقع الخدمات الصحية على تصور المريض بمدى جودة الخدمة .

ما ستسأل عنه : في حال موافقتك على المشاركة في هذه الدراسة ، سوف نجري مقابلة معك عن طريق برنامج سكايب حيث سيتم تسجيل مكالمة الفيديو . ستعطى ثلاثة صور ويتم سؤالك أي منها الأكثر والأقل جذبا بالنسبة لك ، وبما تحسبك هذه الصور وأي الصفات التي قادتك لإتخاذ هذا القرار وأي الصور تستحضر ذكرياتك وما هي التجارب التي تتوقع أن تخوضها في كل غرفة إنتظار؟

الخطورة والفائدة : لا أتوقع وجود أي خطر ينتج عن مشاركتك في هذه الدراسة غير تلك التي تواجهها في الحياة اليومية .لا توجد فوائد بالنسبة لك ولكننا تأمل أن تكتسب المزيد من المعرفة بمختلف صفات التصميم لمنشآت الرعاية الصحية .

المشاركة تطوعية : إن المشاركة في هذه الدراسة أمر اختياري بالكامل . يمكنك تخطي الأسئلة التي لا ترغب الإجابة عليها . وإن شاركت فيمكنك التراجع في أي وقت .

سنقوم بجمع الاسم والجنس والعمر والخلفية الاجتماعية والثقافية والمستوى التعليمي والجنسية والمهنة، وإذا كنت قد زرت المستشفى في الأشهر الستة الماضية، والخبرات السابقة في مناطق الانتظار الرعاية الصحية والجنسية .عندما نعلن البيانات للآخرين سوف نجمع البيانات من جميع المشاركين وسنحافظ على سرية بياناتك وسوف نحتفظ باسمك وبياناتك بشكل منفصل على الكمبيوتر ومحمية برقم سري والمسموح للدخول هو فريق البحث فقط .

في حال لديكم أي سؤال بخصوص البحث الرجاء التواصل معي على noorabdal@outlook.com

أو Dr. Laura Malinin at laura.malinin@colostate.edu

إذا كان لديكم أي أسئلة بخصوص حقوقكم كمتطوعين في هذا البحث الرجاء التواصل مع

CSU IRB على RICRO_IRB@mail.colostate.edu 0970-491-1553

نور عبدال ، طالبة خريجة

لورا مالينين ، دكتوراه

APPENDIX VII: PHOTO-ELICITATION IMAGES



Medical-focus setting (Kuwait)



Medical-focus setting (U.S.)

Designed using pleasant-deactivation (relaxing) mood. Using design features such as cool tones, linear seating, medical/hospital like branding/signage, back-wall with clear glass to see medical equipment, medical magazines, staff in medical attire and patient information on the TV screen.



Neutral-Activation setting (Kuwait)



Neutral-Activation setting (U.S.)

Designed using pleasant-activation (alert) mood. Using design features such as warm colors, abstract art, distractions such as the TV (HGTV) and fish tank, non-medical magazines, squares at the back-wall, and staff in medical attire.



Hospitality-focus setting (Kuwait)



Hospitality-focus setting (U.S.)

Designed using pleasant-activation and deactivation (alert and relaxing) moods. Using design features such as warm and cool tones combined, high ceilings, larger scale features, water feature, geometric shapes, green wall, and staff in business attire.

APPENDIX VIII: IRB APPROVAL FORM



Research Integrity & Compliance Review Office
Office of Vice President for Research
Fort Collins, CO 80523-2011
(970) 491-1553
FAX (970) 491-2293

Date: June 28, 2017

To: Laura Malinin, Ph.D., Design and Merchandising
Noor Abdal, Design and Merchandising

From: IRB Coordinator, Research Integrity & Compliance Review Office
(RICRO_IRB@mail.colostate.edu)

Re: Exploring Perceptions of Waiting Area Design Features on Mood and Quality of Care

Funding: Unfunded

IRB ID: 121 -18H **Review Date:** June 28, 2017
This project is valid from three years from the review date.

The Institutional Review Board (IRB) Coordinator has reviewed this project and has declared the study exempt from the requirements of the human subject protections regulations with conditions as described above and as described in 45 CFR 46.101(b):

Category 2 - Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

The IRB determination of exemption means that:

- **This project is valid for three years from the initial review.** After the three years, the file will be closed and no further research should be conducted. If the research needs to continue, please let the IRB Coordinator know before the end of the three years. You do not need to submit an application for annual continuing review.
- You must carry out the research as proposed in the Exempt application, including obtaining and documenting (signed) informed consent if stated in your application or if required by the IRB.
- Any modification of this research should be submitted to the IRB through an email to the IRB Coordinator, prior to implementing any changes, to determine if the project still meets the Federal criteria for exemption.
- Please notify the IRB Coordinator (RICRO_IRB@mail.colostate.edu) if any problems or complaints of the research occur.

Please note that you must submit all research involving human participants for review by the IRB. **Only the IRB or designee may make the determination of exemption**, even if you conduct a similar study in the future.