

Using Evidence-Based Design to Support Cultural Differences in Healthcare Environments

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Understanding the relationships between cultures has become increasingly important to designers, as the frequency with which we interact with individuals outside our own background has increased. Evidence-based design¹ can be used to further our understanding of cultural needs and thereby help inform design decisions. Undesirable responses such as stress, anxiety and lowered satisfaction may take place when the physical environment does not reflect cultural requirements (Gesler, 1992). This is particularly problematic in healthcare facilities, and designers are in the position to mitigate these negative outcomes.

The diversity of our population is growing rapidly. In the United States, persons of color will represent over 40% of the population 2030 (Betancourt, Green & Carrillo, 2000). Acknowledging the diversity of our country is important because there is ample evidence that health services are perceived differently by different groups, and that the environments we are providing do not support a multicultural society.

One example of diverse health belief systems is the difference between western and eastern cultures. According to Thorne (1993), western medicine has been embraced as the only appropriate medicine, “rather than as one version of the larger concept of medicine as an interpretive and interventive social process” (p. 1932). The exclusionary nature of this attitude can be detrimental. Thorne notes that most medical staff would not attempt to challenge the principles of western medicine, although many would challenge its effectiveness. However, western and eastern approaches are not incompatible. Furnham and Smith (1988) note that individuals can

comfortably accommodate these seemingly conflicting worldviews. A hospital can support the highly rational approach of modern western medicine in spaces requiring intense technology, as well as incorporate the less sterile, soft-touch, eastern approach in healing gardens.

The range of sources of cultural differences is vast. Differences exist with regard to the culture of age, economic status, ethnicity, gender, health status, and place of origin. While it is clear that each individual represents a combination of these cultural dimensions, from the perspective of the designer, it is helpful think of users in clusters. Examples of these dimensions can be explored by summarizing the literature on attitudes towards health services as well as the literature on the environments that support those services.

CULTURE AND THE PERCEPTION OF HEALTH SERVICES

Examples of research and theories associated with each of these cultural dimensions relative to healthcare services are:

- Age. DeVoe (2009) surveyed patients regarding their perceptions of communications with medical staff. Older patients were more significantly more positive in their assessment than younger patients
- Economic status. Patients that were economically disadvantaged reported that their health issues were explained less frequently (DeVoe, 2009).

- **Ethnicity.** Hispanic patients in one study reported more positive communications with staff than non-Hispanic patients (DeVoe, 2009), while in another study researchers determined that Hispanics were significantly more likely to feel that they were treated unfairly in their medical system encounters (Betancourt, Green & Carillo, 2000).
- **Gender.** In the DeVoe 2009 communication study, men, more commonly than women, felt that medical practitioners had spent an appropriate amount of time with them.
- **Health status.** Patients form support groups and communities around their diagnoses and health conditions. This is pointedly true for individuals with disabilities, who must negotiate an environment designed for ambulatory people. Pain management is a critical part of many of the lives of individuals with disabilities and accessibility is essential to their independence and self-treatment.
- **Place of origin.** Access to healthcare has a huge impact on perception of healthcare services. While some people, for example, many Europeans, have ample access to services, other populations, such as the Chinese, are vastly underserved. Previous history regarding access may influence satisfaction with a current healthcare system.

CULTURE AND ENVIRONMENT

While a body of literature addresses how to train caregivers to become more aware of multicultural health service needs (Tate, 2003), there are very few studies that provide information to support architects and designers who are trying create culturally responsive environments. To understand potential need in designed environments, the dimensions of age, economic status, ethnicity, gender, health status, and place of origin can be explored. The influence of place of origin has several sub-themes including: proxemics, perceptual experience, and preference for the known (Figure 1).

Place of Origin

Proxemics. The issue of the various permutations of spatial behavior relative to culture was a common topic among architects beginning 50 years ago, stimulated by the works of individuals such as E.T. Hall (*Beyond Culture* (1976), *The Fourth Dimension in Architecture* (1975), *The Hidden Dimension* (1966), and *The Silent Language* (1959)) and Robert Sommer (*Personal Space*, 1969).

Hall introduced and explored the topic of *proxemic*² behavior, as a means of addressing international diversity. Hall's observations could be interpreted from our contemporary perspective as stereotyping, and some of these behaviors might have changed due to increased interaction among cultures due to media and travel. Additionally, many of

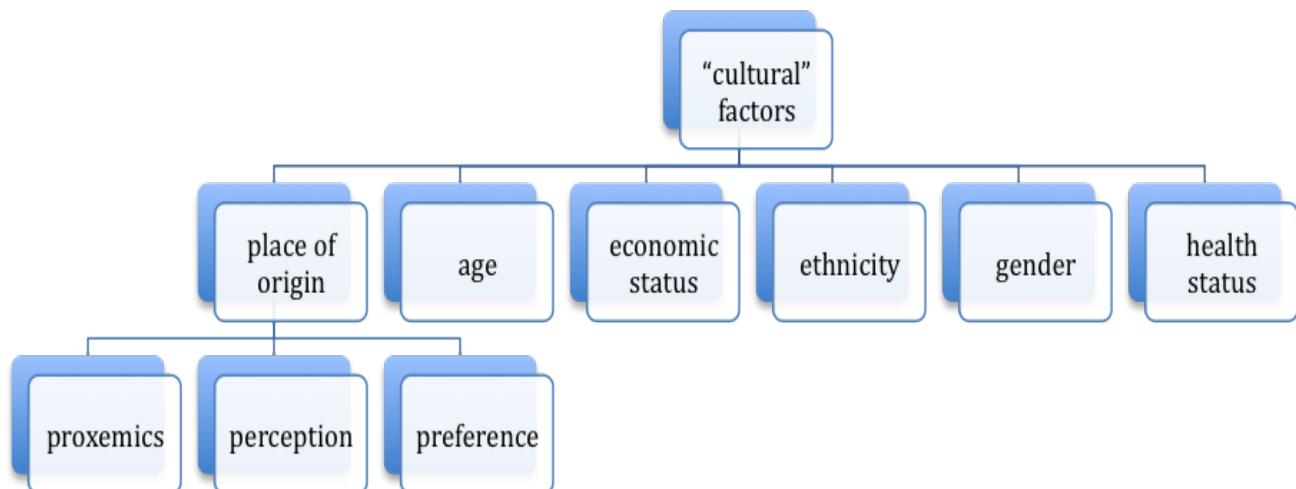


Figure 1. Dimensions of cultures

Nationality	Spatial Behavior Example
United States	Entry into a space is only considered to be intrusive if the visitor fully enters the space. Invisible boundaries exist around small conversational groups – location in the same room is not considered to be intrusive unless the circle is entered. Open doors are common. US natives think of space as empty volumes with objects within.
German	Even partial entry into a room is perceived as intruding; Germans sense space as an extension of their ego. Closed doors are common.
English	English conditioning to shared space results in invisible, internalized spatial barriers. Adjacency does not give permission to intrude.
French	French emphasize sensory experience, and tend to use the home for family and the outdoors for socializing.
Japanese	Japanese consider the house and immediate adjacent zone to be private. Japanese think of space as having meaning and perceive the shape and arrangement of spaces (<i>ma</i>).
Arab	Arabs carry a sense of private space around them as they move. The private zone is lies firmly within the body.

Table 1. Examples of spatial behavior derived from Hall (1966)

these concepts have not been verified through evidence-based design research. However, they provide an excellent platform for developing grounded theories on the topic of cultural competency. As Hall's theories are rarely discussed in contemporary literature, we have summarized some of his observations in Table 1.

Perceptual Experience. Since Hall's and Sommer's theories with regard to culture became widely known, the frequency of interactions between cultures has continued to grow. Conscientious designers are engaged in understanding the implications of this evolution relative to the creation of socially responsible facilities. In addition to accounting for

differing proxemic behaviors, researchers (e.g., Masuda, 2003; Miyamoto, Nisbett, & Masuda, 2006) suggest that the perceptual experience may also vary between cultures. As an example, they argue that, because the Japanese visual environment is more complex, the Japanese develop a higher awareness of context than North Americans. The authors conclude that an environment in which a person develops may influence their perceptual analysis of buildings and spaces.

Preference for the known. Similarly, research has been conducted regarding preference behavior and prior experience. Preferences may be strong for a visual environment with which an individual has familiarity (Hunt, 1970), particularly when an individual is stressed. Researchers found that urban children may have a lower preference for informal nature environments than children who have grown up in rural environments (Simmons, 1994). While a variety of researchers would agree that the need to access nature is universal, observations by Gesler and Kearns (2002) suggest that what is ideal for one patient may not be ideal for another.

CULTURE AND HEALTHCARE ENVIRONMENTS

Research suggests that there are two major ways healthcare architects can support multicultural environments: 1) we can support caregivers who in turn support patients, or 2) we can support patients directly (Figure 2).

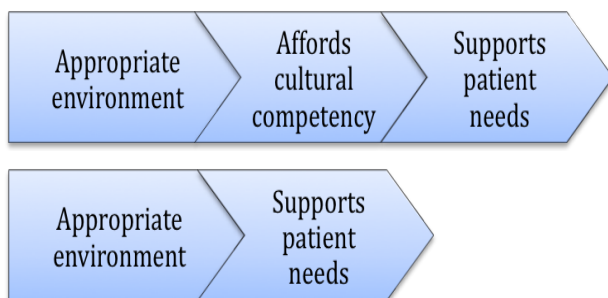


Figure 2. Indirect support and direct support of cultural needs

Supporting caregivers who support patients. When staff understand the culture of their clients, it influences staff performance (Chiang & Carlson, 2003). If designers are not responsive to cultural needs, conflicts may occur between patients/families and staff, in spite of the best intentions of staff members.

The primary way in which designers can support caregivers is by supporting the communication process. Several authors cite difficulty in communication as a significant factor in establishing cross-cultural understanding when providing medical services (e.g., Betancourt, Green & Carrillo, 2000). As many as 20 languages may be spoken by staff and patients in a typical facility (Thiederman, 1996).

Apart from national languages, providers engage in jargon that is specific to medicine. Gesler (1999) notes that people use different languages for different environments and that these environments provide a context for communication. In other words, some settings promote the use of nomenclature that may be too complex for patients to understand.

Gesler (1999) notes that specific rooms may also influence the content of conversation. He cites a report by Fisher (1993) in which young Caucasian women receiving care in a teaching hospital clinic were recommended to have less radical treatments than older Hispanic women receiving care in a community clinic. The former had separate consulting and exam rooms, which may have accounted for this difference; a specific ambience is created in a consulting room via books and photographs (Helman, 1994), and this environment might have impacted the approach of the diagnostician.

Supporting Patients Directly. As mentioned, range of literature is available regarding cultural needs and the provision of healthcare, but little is proffered regarding cultural needs and the physical environment. Differences in needs apply to patients/families and staff who have expressed dissimilar preferences for color, art, and spatial interaction in healthcare settings. Families from different cultures engaging in health care services may also have different environmental requirements, as the size of families that participate in the healthcare setting may vary.

The healthcare environment has different meanings depending on the users' cultural preference, and these meanings impact the manner in which spaces are perceived. Critical cultural activities such as the birthing and dying processes, and activities of daily living such as washing, and eating are common to healthcare settings, are subject to manipulation by the environment. Varying needs for privacy play a significant role regarding these

activities and impact space programs. While studies have addressed the need for privacy in health-care settings, few have written about the relationship between culture and privacy.

In Sommer's *Personal Space* (1969), he makes the following observation regarding patient privacy:

Hospital patients complain not only that their personal space and their very bodies are continually violated by nurses, interns, and physicians who do not bother to introduce themselves or explain their activities, but that their territories are violated by well-meaning visitors who will ignore "No Visitors" signs. Frequent patients are too sick or too sensitive to repel intruders. Once surgery is finished or the medical treatment has been instituted, the patient is left to his own devices to find peace and privacy (p. 28).

Returning to the specific dimensions of culture described in Figure 1, research has been done that suggests differing healthcare environment cultural needs:

- **Age.** When the prosthetic architectural devices that support seniors are in place, the environment becomes more usable by all populations. These devices include legible signage, grab rails, ramps, and slip-resistant flooring.
- **Economic status.** All patients enjoy a comfortable environment regardless of their socio-economic status, however, materials and furniture that appear to be frail or expensive might make users concerned about potential damage. Researchers who conducted a post-occupancy evaluation in a free clinic found that the new design received a lower evaluation than the old with regard to comfort, although it was evaluated more positively in all other ways (Shepley, Duffy Day, Huffcut, & Pasha, 2010).
- **Ethnicity/religious heritage.** There are several commonly accepted tenets on this topic. Ethnic minorities are more frequently engaged in caregiving and have poorer personal health than Caucasians (McCann et al, 2000).

Among the studies on environment and ethnicity/religion, the work of Kopec and Han (2008) is particularly informative. The authors make multiple observations about the design of patient rooms for individuals of Islamic heritage. Kopec and Han point out that Muslim traditions

emphasize auditory and visual privacy. The religion encourages visits to ill persons, which is likely to increase the number of individuals in patient rooms.

- **Gender.** Regarding gender, several researchers have explored the possibility that men and women differ in their environmental preferences, regarding aesthetics, as well as functional attributes. In the 1960s and 1970s feminists promoted proactive engagement in the selection of environments for the birthing process (Gesler & Kearns, 2002). This cultural shift undoubtedly led to the currently pervasive model of single room maternity care.
- **Health status.** Individuals with mobility handicaps create a culture based on the need for accessibility. Multiple researchers have identified shortcomings in the physical environment, regardless of code requirements imposed by the Americans with Disabilities Act and similar documents.
- **Place of origin.** Douglas (2005) found that people from the United States prefer single patient rooms, while the "British" prefer spacious, shared environments. In light of research on the positive impact of private rooms on infection control, decisions regarding room density must be explored thoroughly.

TOWARDS HEALTHCARE ARCHITECTURAL CULTURAL COMPETENCE

Anderson, Scrimshaw, Fullilove, fielding and Normand (2003) list five mechanisms for achieving cultural competency for healthcare providers which can be readily applied to architectural practice:

1. Recruit staff who reflect the diversity of the community.
2. Employ bilingual staff.
3. Provide proficiency competency training.
4. Provide appropriate education materials.
5. Provide "culturally specific healthcare settings."

With regard to increasing the competency of architects per se, there are no specific models. How-

ever, Campinha-Bacote (2002) proposes a model for culturally competent health service providers involving five components that can effectively be applied to other professions. The primary components are: cultural knowledge, cultural skill, cultural awareness, cultural desire and cultural encounters (Figure 3). In particular, the concept of cultural knowledge can be readily interpreted as evidence-based design. This model serves as a starting point for a theoretical construct for achieving culturally competent healthcare design. Evidence-based design research can contribute to guidelines for effective and supportive healthcare environments.

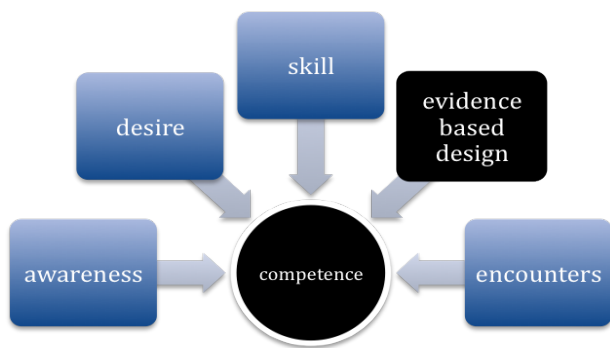


Figure 3. Cultural competent health facility design and research based on the Campinha-Bacote model (2002)

Campinha-Bacote (2002) cautions that five assumptions must be heeded when endorsing this model. Adjusting the assumptions somewhat to reflect the role of the physical environment, they include:

1. Cultural competence is a process, as opposed to single event.
2. Competence includes knowledge, awareness, skill, encounters and desire.
3. There are more differences within an ethnic group than between ethnic groups.
4. A relationship exists between the level of competence of healthcare architects and their ability to produce culturally appropriate health care design.
5. Cultural competency is critical to producing effective and responsive healthcare design solutions that support diverse patient populations.

Specific Goals

In pursuit of evidence-based design cultural competency, I suggest the following goals.

Process Goals:

1. Conduct multiple programming sessions with transparent procedures. Interactions with end-users of varying backgrounds can be inhibited by mistrust.
2. Access a representative group of end-users, and incorporate their input in the design process. Provide translators, if necessary.
3. Utilize tools such as the Empathic Model³ for expanding knowledge of user needs.

Design Goals:

1. Accommodate individual spiritual needs (e.g. provide space for a shrine in patient room) (Lehman, Fena & Hollinger-Smith, n.d.).
2. Provide a communication board (Lehman, Fena & Hollinger-Smith, n.d.).
3. Provide spaces of various sizes to accommodate differing needs.
4. Consider shared versus private rooms depending on health status of individuals.
5. Provide clear orientation and wayfinding systems that don't rely solely on language/signage.
6. Generate modifiable design components that both support the current occupant and can be adjusted for subsequent occupants (Kopec & Han, 2008). The use of an art cart, as proposed by the Planetree Model⁴, is an example of how to accomplish this.
7. Provide window coverings that can be manipulated by the patient to support varying needs for privacy (Kopec & Han, 2008).
8. Provide choices during delivery (Maputie & Jali, 2006), particularly with regard to alternative labor positions (Lepori, 1994).
9. Provide plasma screen for virtual spiritual experiences (Kopec & Han, 2008).
10. Provide décor that can be modified to endorse cultural color preferences (e.g. natural green

color for Muslims) (Kopec & Han, 2008).

11. Provide storage for personal items used for cultural and religious purposes.

EBD Goals:

Kirk Hamilton's requirements for an evidence-based design practitioner (Hamilton, 2009) provide a structure for cultural competence in research. With a slight modification to reflect this area of research, they include:

1. Review literature on cultural needs and generate design guidelines.
2. Incorporate guidelines in design solutions.
3. Conduct research on effectiveness of design solutions.
4. Disseminate results.

CONCLUSION

The purpose of this paper was to provide a structure for viewing the challenges of cultural competency in health care design and research, to summarize some of what is known about differing cultural healthcare needs, and to provide potential guidelines for using evidence-based design to pursue appropriate healthcare environments for a multicultural population. In the words of Kopec and Han, "given the profound effects of culture and spirituality on one's identity and subsequent behaviors, it stands to reason that a physical environment that supports cultural and spiritual beliefs would contribute positively to one's health and recovery" (Kopec & Han, 2008, 116). More evidence-based research is needed to increase the cultural competence of designers and architects.

ENDNOTES

1 Evidence-based design (EBD) is the process of basing decisions about the built environment on credible research to achieve the best possible outcomes

2 Proxemics is a concept associated with "interrelated observations and theories of man's use of space as specialized elaboration of culture" (Hall, 1966, p. 1).

3 The Empathic Model, developed by Lee Pastalan, simulates the experience of an aging person to enhance the awareness of young designers

4 Planetree is an operational and environmental model that emphasizes patient-center care.

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