Music as Environmental Design

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ABSTRACT

Research has shown that the appropriate use of music can lower stress levels, anxiety, and mitigate pain. Using music as environmental design moves music — and other sounds — from an individual experience to a collective and organization context. This paper takes a look at the relationship between music and noise and how the appropriate music can be a positive and proactive participant in the therapeutic process.

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In her Notes on Hospitals (1859), Florence Nightingale clearly stated that hospitals should "do no harm." It is in this same spirit that the question of moving from harm to support, from degenerative to restorative, drives efforts to create healing healthcare environments. This paper explores the role of music as a qualitative auditory component in the design of healing environments.

The earliest hospitals operated on the overarching belief in mythological gods protecting the ill, determining death and disease -- at times even choosing those who were to survive and those who would succumb. Aesclepian temples, named after the Greek God of Healing, have been depicted in art as garden settings offering solace and care to patients in what could be an outpatient clinic today. The gentle surroundings of these temples were reminiscent of the contemporary spa.

Nonetheless, the earliest medical journals, documenting the physiology and biology of the human body, portrayed the ill in various stages of disease, often graphically illustrating a dissected body as it was understood and studied. Renee Descartes, hundreds of years later, created what is now called the "mind-body conundrum," theorizing that the mind and body were distinct, that while the body operated according to the laws of nature, the mind did not. Rather, the mind operated according to the "passions of the soul" and subjective perception. Descartes was frustrated with a world based on perception, which would change in each person, and he and others craved for objective reality that was predictable and generalizable. Thus, medical science took on this definition of science and placed all belief's, perceptions, attitude, emotional and spiritual health as being irrelevant to scientific fact.

Today, there has been a shift in understanding of what actually creates health to the point that the patient experience and perception, their understanding and assumptions, and their participation in their own recovery have come to be understood as proactive factors in health outcomes. Hospital administrators are challenged to create an environment and organization to support and acknowledge both of these worldviews, with measurable and non-measurable factors. With the introduction of patient satisfaction measures, HCAHPS, and research that correlates qualitative and quantitative outcomes, administrators now must address both clinical and human factors. Even evidence-based medicine includes as one of its three components, the patients' values, unique circumstances, and preferences (Sackett, 1996). What makes for humane care and respect for the process of caring for the ill is often set aside for what cures. The body is engineered into recovery while the person suffers the experience.

The differences between healing and curing have been discussed for well over 20 years, beginning with

the onset of AIDS and other incurable conditions where the curative model of care left the medical community wondering if it still had a role to play. Healing modalities, while often marginalized as alternative or complementary, belong to the whole patient experience. Research has shown that the sensory interface between patients, their conditions, and the environments in which they are cared for informs their experiences and outcomes.

What People See & Hear

Sounds of the hospital are characterized by beepers, pagers, unknown persons walking down corridors that echo footsteps, chatter, carts, alarms, elevator rumblings, ventilation systems, ringing phones, new construction, and renovations. Visually, the hospital environment is most known for IV poles, wheelchairs, gurneys, endless corridors, televisions, and other medical equipment. However, the view from the pillow of a hospital bed is far different then the view from an adjacent chair or doorway. What is heard by a visitor or staff member is hardly what is heard by a highly medicated patient, who may be in various degrees of consciousness -- or fully awake, but wrapped inside a prison of fear for what is ahead.

Environmental psychologist Roger Ulrich, Ph.D., wrote that healthcare environments should "eliminate environmental characteristics that are known to be stressful or can have direct negative impacts on outcomes (loud noise, for instance) [and include] characteristics and opportunities in the environment that research indicates can calm patients, reduce stress, and strengthen coping resources and healthful processes."

According to Ulrich, Supportive Healthcare Environments are Ones That:

- Foster control, including privacy

- Promote social support

- Provide access to nature and other positive distractions

The Gap Between Music & Noise

While musicians and music lovers may claim that what is beautiful in music and what is healing is universal, research has shown that listener preference trumps the narrow boundaries of any genre. Furthermore, generation, culture, religion, education, and socio-economic factors are determinants in what kind of music we are exposed to and, hence, what we prefer. Salamon measured the role of preference on how music impacted anxiety and thus demonstrated that musical preference was the strongest indicator of effectiveness. Similarly, it was found that when the listener is not educated in the ways that music may be used therapeutically, listening might create preference rather than a response. (Salamon, Bernstein, Kim, Kim, & Stefano, 2003). Perreti further showed that one piece of music, even selected for its affective quality, would elicit significant differences between varying populations (male vs. female, young vs. old, music student vs. non-music student). (Peretti & Zweifel, 1983)

While the issue of preference has been consistent for therapy-patient interaction, the challenge remains regarding the use of music as environmental design. Music as environmental design expands the common use of background music from being an "add-on," or distraction, to being a proactive component in an intentionally designed environment. It also takes into account the whole auditory environment. This practice considers all ambient components, both auditory and visual, to integrate seamlessly into the patient experience.

In support of this theory, there have been studies that have looked at the relationship between music and ambient noise to quantify the perceived relationship between the two by patients. Looking at measures of Acceptable Noise Levels (ANL) defined as "the maximum level of background noise that an individual is willing to accept while listening to speech," the question was whether this level varied with the quality or content of the background noise. The study compared music background (various styles) to a babble equal to 12 talking people, also considering preferences for the music samples. The results

showed that listeners were more willing to accept music as background noise than speech babble and, further, that the ANL for music samples were not correlated to music preference. The researchers concluded that music was heard and perceived differently then speech background (Gordon-Hickey and Moore, 2007).

There are several issues of significance in this study. First, that acceptable noise levels behind speech (which could also include talk television and other programming) are increased for music in comparison to other kinds of sounds. That music as background is considered positive without regard to personal preference supports more flexibility in designing an appropriate sound environment. There have been other studies that have shown that different kinds of music can impact behavior. And, there is an assumption that the music is not experienced without some other activity/dialogue/focus going on simultaneously.

Person-Environment Theory

Person-environment theory clearly states that the context in which individuals find themselves bonds with environment through their sensory and cognitive perceptions. "The whole (person-in-environment system) [can be defined/described as] people embedded in their physical, interpersonal, and socio-cultural environments. One must treat the totality rather than deal with one aspect of the whole (person or environment) without treating the other." (Walsh, Craik, & Price, 2000). This supports the concept that music as environmental design must consider the whole auditory environment, not merely a single music recording or performance, as well as the concept that music has a complex pluralistic function, not merely one of entertainment or distraction.

The appropriate music can support the objectives of the hospital and the hospital room. In his "Theory of Supportive Environments," Ulrich clearly states that " ... supportive design [emphasizes] ...the inclusion of characteristics and opportunities in the environment that research indicates can calm patients, reduce stress, and strengthen coping resources and healthful

processes." (Ulrich, 1991, 1999, 2000a) Appropriately used, music has been shown to be a positive distraction and, in addition, to mask unwanted noise. (Dijkstra K., 2006; Gordon-Hickey & Moore, 2007; McCaffrey, 2008; White, 1999; Zimmerman, Pierson, & Marker, 1988)

Choices or Decisions

The concern about patient control forces the question of why most of us do not question selections played at church on Sunday. There are times in our lives when our control is demonstrated by showing up or not showing up; however, once in the church, or in the hospital, there are aspects of what we are offered that we turn over to those to whom we trust with our hospital experience. In acute-care facilities, the higher the acuity of the patient, the more difficult it becomes to deal with multiple options.

For this reason, television content for patients is provided, with control belonging to the patient, with the caveat that the channel line-up is generally screened by the hospital (family-appropriate movies, for example). Music channels may also be offered. When considering the repertoire for public areas in the hospital, genre-based programming is an option, with the caveat that commercial providers intentionally bias the music selection to one specific demographic. Given that today's patient may be surrounded by up to four or more generations of family members, providing an environment that is directed to a specific population is not the best strategy. Furthermore, this kind of discrimination would not fulfill Ulrich's theory of providing social support that would, by its definition, be inclusive rather than discriminating.

Because music lives in time and not in space, it is unlike other elements that may be installed and fixed until changed. In the hospital, it can be a welcome addition to the sound environment, which is built with physical design (acoustics) and auditory outcomes in mind. "Auditory outcomes" include noise, necessary distractions, positive distractions, quality of communications, risks of miscommunication, speech privacy, and direct clinical risks of high pain,

stress, and anxiety. The sound environment has been affected by each of these factors that are controllable within the scope of a well-designed auditory environment. (Baker, 1993; Baker, Garvin, Kennedy, & Polivka, 1993; Berlet & Binet, 1979; Biley, 1994; Busch-Vishniac, et al., 2005; Kangogaku, 1966; Lally, 2001; Mazer, 2006, 2008; Topf, 1992)

In a study done by Busch and Vishniac at Johns Hopkins (2005; Orellana, Busch-Vishniac, and West, 2007), it was clear that acoustics play an active role in how the sound environment in its totality affects patients, staff, and families. If the sound literally bounces off the walls, then what could be appropriate? Necessary sounds move from being pleasant or at the least, acceptable, to being noise, and the subsequent outcomes fit the data: agitation, sleep deprivation, increased pain, staff stress, and more. Working with noise control engineers, it is possible to not only mitigate poor acoustics, but can help avoid poor auditory outcomes.

Conclusion

In Summary:

> •Music is a positive and proactive participant in therapeutic processes
>
> •There is ample data to support the use of music as therapy
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> •Music as environmental design moves music from an individual experience to a collective and organizational context along with other sounds
>
> •The hospital should minimize noise or unpleasant, erratic sounds, and to support positive ones, such as music and necessary communications

Providing viable and effective options for environmental use of music, while, at the same time accepting that the television and personal music players will offer patients ample control, means that the hospital staff is taking responsibility for the patient experience. The stakes for the organization

are not just about music preference; rather the sound environment holds within it patient privacy and confidentiality, pain management, palliative care, staff effectiveness, and quality of care. Therefore, the healing environment involves not only fixed components, but lives as a dynamic, changeable space that merges with the culture of the hospital and with those who reside and recover within it.

References

Baker, C. F. (1993). Annoyance to ICU noise: a model of patient discomfort. Crit Care Nurs Q, 16(2), 83-90.

Baker, C. F., Garvin, B. J., Kennedy, C. W., & Polivka, B. J. (1993). The effect of environmental sound and communication on CCU patients' heart rate and blood pressure. Res Nurs Health, 16(6), 415-421.

Berlet, M. H., & Binet, F. (1979). [Environment and quality of sleep in the hospital milieu]. Soins, 24(23), 35-39.

Biley, F. C. (1994). Effects of noise in hospitals. Br J Nurs, 3(3), 110-113.

Busch-Vishniac, I. J., West, J. E., Barnhill, C., Hunter, T., Orellana, D., & Chivukula, R. (2005). Noise levels in Johns Hopkins Hospital. J Acoust Soc Am, 118(6), 3629-3645.

Dijkstra K., P. M. P. A. (2006). Physical environmental stimuli that turn healthcare facilities into healing environments through psychologically mediated effects: systematic review. Journal of Advanced Nursing, 56(2), 166-181.

Gordon-Hickey, S., & Moore, R. E. (2007). Influence of music and music preference on acceptable noise levels in listeners with normal hearing. J Am Acad Audiol, 18(5), 417-427.

Kangogaku, Z. (1966). Noise in the hospital. The Japanese journal of nursing, 30(9), 65-73.

Lally, J. F. (2001). Hospitals and the culture of noise: whither the sound of silence? Del Med J, 73(6), 243-244.

Mazer, S., & Smith, D. (1999). Sound Choices:

Designing the Environments in Which You Live, Work, and Heal. Carlsbad, CA: Hay House, Inc.

Mazer, S. E. (2006). Increase patient safety by creating a quieter hospital environment. Biomed Instrum Technol, 40(2), 145-146.

Mazer, S. E. (2008). Sound Management for Better Patient Outcomes: Ten Steps to Improve the Sound Environment of Hospitals: Practice Green Health.

McCaffrey, R. (2008). Music listening: its effects in creating a healing environment. J Psychosoc Nurs Ment Health Serv, 46(10), 39-44.

Orellana, D., Busch-Vishniac, I. J., & West, J. E. (2007). Noise in the adult emergency department of Johns Hopkins Hospital. J Acoust Soc Am, 121(4), 1996-1999.

Peretti, P. O., & Zweifel, J. (1983). Affect of musical preference on anxiety as determined by physiological skin responses. Acta Psychiatr Belg, 83(5), 437-442.

Sackett, D.L. (1996). Evidence based medicine: what it is and what it isn't. British Medical Journal 312(312): 71-72.

Salamon, E., Bernstein, S. R., Kim, S. A., Kim, M., & Stefano, G. B. (2003). The effects of auditory perception and musical preference on anxiety in naive human subjects. Med Sci Monit, 9(9), CR396-399.

Topf, M. (1992). Stress effects of personal control over hospital noise. Behav Med, 18(2), 84-94.

Ulrich, R. S. (2000). Effects of healthcare environmental design on medical outcomes. Paper presented at the DHCP 2000.

White, J. M. (1999). Effects of relaxing music on cardiac autonomic balance and anxiety after acute myocardial infarction. Am J Crit Care, 8(4), 220-230.

Zimmerman, L. M., Pierson, M. A., & Marker, J. (1988). Effects of music on patient anxiety in coronary care units. Heart Lung, 17(5), 560-566.

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