



## HEALTHCARE DESIGN

# The Necessity of Evidence-Based Visual Cues in Any Setting with Individuals Under Stress

### HEALTHCARE DESIGN SERVICES

#### EVIDENCE-BASED IMAGERY

- Visual Cues
- Therapeutic Art

#### WAYFINDING SOLUTIONS

- Toxic Cue Assessments
- Medical/Design Input
- Interior/Exterior
- Modular Systems
- Custom Fabrications
- Picture Integration

#### COMMUNICATION BOARDS

- Patient Communication Boards
- Prevention Reminder Boards
- Time-Out Boards
- Brand/Marketing Boards
- Holder Accessories

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Evidence-based design is the process of basing decisions about the built environment on credible research to achieve the best possible atmosphere and outcomes. Much of that research has been done in the field of healthcare, including behavioral health settings, with the intent of reducing the stress and anxiety that may be associated with an unfamiliar and intimidating setting. As designers, we should consider, though, that various settings outside of healthcare per se (e.g., court houses, schools, libraries, pharmacies) may have end-users with some level of behavioral health issue and that these spaces may benefit from the same sorts of environmental adjustments as are being made across the country in our most effective and prestigious healthcare settings.

Kneisl and Trigoboff (2009) define stress as “a broad class of experiences in which a demanding situation taxes a person’s resources or coping capabilities, causing a negative effect” (p. 137). A stressor (source of stress) produces an internal state of “tension, anxiety, or strain” (p. 137), any of these being an experience of uneasiness or discomfort. As we have all experienced, anxiety or tension (running from mild to a state of panic) can affect our thoughts and behaviors. High levels of frustration may even lead to occasional violence (Hathorn, 2000).

Visual art\* as stand-alone pieces and as landmarking cues has been increasingly utilized as an easily introduced and effective, evidence-based tool for alleviating stress and consequent anxiety in people experiencing such in a setting that is not under their control (Hathorn & Nanda, 2008). This calming influence of visual art can positively affect the experience within such a setting, with possible impact on communication, cooperation, and perception of interactions (Nanda, Chanaud, Nelson, Bajema, & Jansen, 2012).

It is, however, not just any old pretty picture or a new coat of paint that will elicit favorable responses. Research in both laboratories and real-world settings has demonstrated that, while interior “views” may substitute for actual views of nature through windows (e.g., Verderber, 1986), those surrogate “views” must have carefully selected content and complexity. Images depicting nonthreatening scenes of nature, composed with careful attention to included features, general shapes, color contrasts, and mathematically determined complexity have been

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\*“Visual art” is defined for purposes of this document as a visual point of focus that depicts an image (representational or readily interpretable, but less representational) in a visual modality. It could be looped imagery, as in a slide show style, or can be purely static, like art on a still medium, hanging or affixed to a surface. It has the intent of being a positive distraction that is a permanent environmental feature. Additionally, properly placed natural colors on environmental surfaces can simulate imagery in that they can be seen and interpreted as part of a natural “scene.”

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demonstrated across more than 30 years of experimentation to be the most effective at evoking desirable psychological responses (reduced anxiety, decreased perception of discomforts, decreased anger, increased sense of cooperative spirit) and physiological responses (reduced blood pressure, reduced heart rate, slower pace of breathing, brain waves indicative of relaxed-but-aware state of mind, and decreased sweaty-palms). Lack of art or abstract art or art depicting urban scenes dominated by linearity can all have the exact opposite effects. A comprehensive list of the literature is beyond the scope of this document, but we would be happy to have our in-house expert on this subject discuss more details, should you wish to pursue this background. One source for a general overview of the studies may be found in the book *Biophilic Design: Theory, Science, and Practice* (Ulrich, 2008).

The interaction between viewer and image need not be prolonged – good news for facilities where users



LANDMARKING CUES WITH CAREFULLY SELECTED IMAGERY AND COLORS REDUCE ANXIETY IN THE WAYFINDING PROCESS

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are passing by or moving from space to space. Even short visual contact (measured in seconds) with such an image can result in positive effects. Research from neuroscience supports the belief that reaction to visual art in the environment is rooted in lower brain regions, a primal response, not a function of higher cortical processes and learning. Our brains might be organized to quickly extract elements of a “safe” scene and relax in light of no warning signs of potentially dangerous elements (Bar & Neta, 2007).

Specifically with regard to clientele with behavioral health issues, two studies stand out as significant (Nanda, Eisen, Zadeh, & Owen, 2010; Nanda, Chanaud, Nelson, Bajema, & Jansen, 2012). Combined, these demonstrated reduction in disconcerting staring behavior, in anxiety, in

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**CAREFULLY SELECTED SCENES BASED ON EVIDENCE-BASED CRITERIA CAN HAVE A CALMING EFFECT**

agitation and restlessness, and in perceived waiting time when appropriately composed visual images were in the area. These behaviors can be disruptive to one's own attention and ability to interact appropriately, and also may alarm or heighten undesirable states in others. Also, an increase in desirable socialization (calm conversation) was shown in one of the studies. This can promote supportive interactions.

Theory about the mechanism for these desirable responses to natural colors and images suggests that the human mind is predisposed by "hard wiring" to feel comfortable with nonthreatening scenes (configurations that appear to favor survival and well-being) and to react otherwise to abstract (difficult to interpret) or urban (more threatening) scenes (Appleton, 1975; Orians, 1980;

Orians, 1986; Orians & Heerwagen, 1992; Wilson, 1993; Wohlwill, 1983). The same response, calming and restorative reactions, are seen across ethnicities and despite an individual's present location or location of upbringing (Ulrich, 1983; Ulrich, 1993; Hertzog, Herbert, Kaplan, & Crooks, 2000).

The built environment can function as a psychoactive tool to calm, soothe, generate positive feelings toward others, and facilitate communication and supportive interaction. In a setting likely to serve persons with behavioral health issues, the built environment can be a crucial source of visual cues that can affect both clientele and internal staff in desirable ways. Visual cues of natural scenes and natural colors are an easily added feature that can have invaluable impact.

At ID Signsystems, we look at every project through the lens of evidence-based design – particularly for selection of imagery, but even for selection of colors, patterns, text (font, size and spacing), and shapes that may be components of a wayfinding or branding package. Our in-house expert is certified by The Center for Health Design in evidence-based design (EDAC certification). We utilize this expertise and consider any evidence that may exist for the design of all projects that allow for it. We would be happy to further discuss the research and ideas presented above and their application to your project.

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### REFERENCES

- Appleton, J. (1975). Behavior and environment. In *The experience of landscape* (pp. 58-80). New York: John Wiley & Sons.
- Bar, M., & Neta, M. (2007). Visual elements of subjective preference modulate amygdala activation. *Neuropsychologia*, 45(10), 2191–2200.
- Hathorn, K. (2000). The use of art in a health care setting. In *Health care interior finishes: Problems and solutions - an environmental services perspective* (pp. 1-11). Washington, DC: American Hospital Association.
- Hathorn, K., & Nanda, U. (2008). A guide to evidence-based art (a white paper for the Environmental Standards Council). Concord, CA: Center for Health Design.
- Hertzog, T., Herbert, E., Kaplan, R., & Crooks, C. (2000). Cultural and developmental comparisons of landscape perceptions and preferences. *Environment and Behavior*, 32, 323-346.
- Kneisl, C. R., & Trigoboff, E. (2009). *Contemporary psychiatric nursing* (2nd ed.). Upper Saddle River, NJ: Pearson Education.
- Nanda, U., Chanaud, C., Nelson, M., Bajema, R., & Jansen, B. (2012). Impact of visual art on waiting behavior in the emergency department. *The Journal of Emergency Medicine*, 43(1), 172-181.
- Nanda, U., Eisen, S., Zadeh, R. S., & Owen, D. (2010). Effect of visual art on patient anxiety and agitation in a mental health facility and implications for the business case. *Journal of Psychiatric and Mental Health Nursing*, 18(5). 386-393.
- Orians, G.H. (1980). Habitat selection: General theory and application to human behavior. In J. S. Lockard (Ed.), *The evolution of human social behavior* (pp. 49-66). Chicago: Elsevier.
- Orians, G. H. (1986). An ecological and evolutionary approach to landscape aesthetics. In E. C. Penning-Roswell & D. I. Lowenthal (Eds.), *Landscape meaning and values* (pp. 3-25). London: Allen and Unwin.
- Orians, G. H., & Heerwagen, J. H. (1992). Evolved responses to landscape. In J. Barckow, L. Cosmides, & J. Tooby (Eds.), *Adapted mind: Evolutionary psychology and the generation of culture* (pp. 555-580). Oxford, U. K.: Oxford University Press.
- Ulrich, R. S. (1983). Aesthetic and affective response to natural environment. In I. Altman & J. F. Wohlwill (Eds.), *Behavior and the natural environment* (Vol. 6, pp. 85-125). New York: Plenum Press.
- Ulrich, R. S. (1993). Biophilia, biophobia, and natural landscapes. In S. R. Kellert & E. O. Wilson (Eds.), *The biophilia hypothesis* (pp. 73-137). Washington, DC: Island Press.
- Ulrich, R. S. (2008). Biophilic theory and research for health design. In S. Kellert, J. Heerwagen, & M. Mador (Eds.), *Biophilic design: Theory, science, and practice* (pp. 87-106). New York: Wiley.
- Verderber, S. (1986). Dimensions of person-window transactions in the hospital environment. *Environment and Behavior*, 18, 450-466.
- Wilson, E. O. (1993). Biophilia and the conservation ethic. In S. R. Kellert & E. O. Wilson (Eds.), *The biophilia hypothesis* (pp. 31-41). Washington, DC: Island Press.
- Wohlwill, J. F. (1983). The concept of nature: A psychologist's view. In I. Altman & J.F. Wohlwill (Eds.), *Behavior and the natural environment* (pp. 5-37). New York: Plenum.