Integrating Environmental Psychology to Benefit Your Clients

5 CE Hours

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Learning objectives

This workshop is designed to help learners:

- Explain concepts related to environmental psychology.
- Describe the historical development of environmental psychology.
- Discuss recent research in positive psychology and place science.
- Illustrate the impact of environment on mood and performance.
- Apply elements of environmental psychology in your occupation from a psychological, nursing, or social work perspective.
- Describe the differences between built and natural environments.
- Evaluate challenges of integrating new elements into work-related efforts.
- Recognize the impact of restorative environments.

Overview

Environmental psychology is a branch of psychology that focuses on the interaction between humans and their surroundings. The theories and ideas within this field provide a broad definition of environment, encompassing natural environments, social settings, built environments, learning environments, and informational environments.

While the field is one of the younger branches of psychology, it has received some recognition as its own topic; with some colleges and universities offering courses in the subject. However, the approach is often one of information rather than application. In the field, certain professions have begun to integrate the elements of environmental psychology into their work-related activities or general approach. This course focuses on how information from research within the field of environmental psychology can be applied, integrated, and utilized in a functional manner within three distinct professions:

- Psychology (and related positions).
- Nursing.
- Social Work.

Within the literature of clinical and counseling psychology, there are very few references to the therapeutic role of nature. However, more recent studies and those who are fine tuning their practice are starting to show a trend of utilizing environmental psychology to benefit clients. For many, the challenge becomes how to mesh information and process to develop this into a functional tool to use on a regular basis.

Nursing and health care have a long history within environmental psychology, as the field was instrumental in the development and application of evidence-based design to promote health, well-being, and recovery.

A study published in the Journal of Clinical Child Psychology and Psychiatry, described a nature-assisted approach to treatment of children referred by US Child Protective Services (Worsham & Goodvin, 2007). In this qualitative interview-based study, a garden environment as therapeutic setting is reported as being “especially conducive” to exploration and development of new adaptive skills and representational models in maltreated children.

It is suggested that over time, there has been an extraordinary disengagement of humans from the natural environment (Axelrod & Suedfeld, 1995; Beck & Katcher, 1996; Katcher & Beck, 1987). This is proposed based on the tremendous shift of people away from rural areas into cities (Katcher & Beck, 1987). In evolutionary terms, “the urban environment is a spontaneous, changeable, and historically unfamiliar habitat” (McMichael, 2001 (p. 252)).

Increasingly, people are spending less and less time in physical contact with animals and plants, and overall, the current and potential future consequences are unknown (Katcher & Beck, 1987). Already, some research has shown that too much artificial stimulation and an existence spent in purely human environments may cause exhaustion and produce a loss of vitality and health (Katcher & Beck, 1987; Stilgoe, 2001).

Society and advancements in technology have contributed to people avoiding outdoor environmental stimuli (Stilgoe, 2001) and regular contact with nature (Katcher & Beck, 1987). Some believe humans may not be fully adapted to an urban existence (Kellert & Wilson, 1993; Glendinning, 1995; Kellert, 1997; Burns, 1998; McMichael, 2001). Often times, parks and public nature reserves are the only means of accessing nature for people, and many urban-dwelling individuals may have all but forgotten their connections with the natural world.

Research has indicated that individuals with access to nearby natural settings are healthier overall than other individuals. The longer-term, indirect impacts of ‘nearby nature’ also include increased levels of satisfaction with one’s home, one’s job, and with life in general (Kaplan & Kaplan, 1989 (p. 173)).

When parks were first designed in the 19th century, researchers and city officials had a strong belief in the possible health advantages that would result from open space (Hamilton-Smith & Mercer, 1991; Rohde & Kendle, 1997). It was hoped that parks would reduce disease, crime, and social unrest as well as providing ‘green lungs’ for the city, and areas for recreation (Rohde & Kendle, 1997). Such assumptions were used as justification for providing parks and other natural areas in cities, and preserving wilderness areas outside of cities for public use (Parsons, 1991; Ulrich, 1993).

Environmental psychology is not just about exposure to nature or the design of parks or buildings. It also lends itself to discussion about the impact of the environment on the human senses. A good portion of such discussion lies within the world of physical and psychological well-being.

Many people may view environmental psychology as its own individual branch of psychology. However, environmental psychology is an element that can be tied into already existing approaches to nursing and health care, psychology and therapeutic approach, and social workers and their work that relies heavily on the constant analysis of the interaction between people and their environment.
Environmental psychology has officially been recognized as a branch of psychology since the late 1960’s, making it one of the more recent psychology-based fields.

Brunswik (1903–1955) and Lewin (1890–1947) are generally regarded as the “founding fathers” of environmental psychology (Gifford, 2007a). What is interesting about this though is that at the time, they had no empirical research to support their ideas and concepts. However, their ideas, such as the interaction between physical environment and psychological processes and studying human behaviors in actual life settings instead of artificial environments, were influential for many future studies on human-environment interactions.

Egon Brunswik was one of the first psychologists to propose that psychology should give as much attention to the properties of the organism’s environment as it does to the organism itself. He believed that the physical environment can affect psychological processes subconsciously.

Kurt Lewin similarly argued that research should be driven by real-world social problems. He introduced the term ‘social action research’ including a non-reductionist, problem-focused approach that applies theories in practice and thereby emphasizes the importance of discovering ways to use research to solve social problems (Benjamin, 2007).

Similar to Brunswik, Lewin hypothesized that the environment is a key determinant of behavior. He argued that behavior is a function of the person and the environment, combined (Lewin, 1951). Lewin directed most of his focus on the social and interpersonal influences rather than the physical environment, but he inspired many students to continue and expand on his ideas (Wohlwill, 1970).

Pol (2006) argued that Hellpach was one of the first scholars who introduced the term ‘environmental psychology’ in the first half of the 20th century. Hellpach (1911) studied the impact of different environmental stimuli, such as color and form, the sun and the moon, and extreme environments on human activities.

In his later work, Hellpach conducted research on urban phenomena and environmental stressors, such as crowding and overstimulation. Further, he identified, compared, and contrasted different types of environments in his studies such as:
- Natural.
- Social.
- Historical-cultural environments.

Over time, the field began to develop and transform in the eyes of researchers and scholars. In the 1940’s and 1950’s, researchers began to look at:
- Human factors in work performance.
- The quality of lighting in homes.
- Child behaviors.

During this time, systematic research in everyday physical settings and psychological processes slowly increased with some pioneering studies of human factors in work performance (Mayo, 1933), the lighting of homes (Chapman & Thomas, 1944) and child behaviors in natural settings (Barker & Wright, 1955).

The field formerly known as architectural psychology

In the 1950’s and 1960’s, the field became labeled as “architectural psychology.” It was not until this time period that human behavior interactions began to receive increased recognition as a full discipline. As most of the studies focused on how different environments influenced people’s perceptions and behaviors, they were labeled as studies in ‘architectural psychology’ to show the distinction with the more traditional forms of psychology (Canter, 1969; Pol, 2007; Winkel, Saegert, & Evans, 2009).

During this period of environmental psychology, much attention was given to the built physical environment (i.e. architecture, technology, and engineering) and how it affected human behavior and well-being (Bonnes & Bonaruto, 2002). This focus on the built environment was highly influenced by the political and social context of the time. Modern architecture tried to address the post-war challenges of providing decent housing and facilities for the general public (Pol, 2006). Questions such as how homes, offices, or hospitals could best be built for their potential users and how environmental stressors (i.e. extreme temperatures, humidity, crowding) would affect human performance and well-being were the focus of many environmental psychological studies (Craik, 1973; Wohlwill, 1970). As a result, environmental psychology as a study to design buildings to facilitate behavioral functions was officially born.

The second period of rapid development in environmental psychology started during the late 1960’s when people became cognizant of environmental problems. This resulted in studies on environmental issues. Popular studies during this time frame targeted the explanation and changing of negative influences of human activity on the biophysical environment, and on the negative effects of these human-caused problems on human health and well-being. Some examples of areas of focus included studies on:
- Air pollution.
- Urban noise.
- The appraisal of environmental quality.

In the 1970’s, the focus of the field shifted to perceptions of risks and risk assessment associated with growing technologies (Fischhoff, Slovic, Lichtenstein, Read, & Combs, 1978).

The 1980’s saw the first studies that focused on efforts promoting conservation behavior, such as relationships between consumer attitudes and behavior (Cone & Hayes, 1980; Stern & Gardner, 1981). By the beginning of the 21st century, it became evident that certain environmental problems such as pollution, deforestation, and climate change are increasingly affecting the world’s ecosystems (Millennium Ecosystem Assessment, 2005). It is also generally recognized that human behavior is one of the main causes of these environmental problems.

A growing interest of environmental psychology is to find ways to change people’s behavior to reverse environmental problems, while at the same time preserving human well-being and quality of life. Essentially, a broad concept of sustainability has been widely adopted (World Commission on Environment and Development, 1987). Sustainability encompasses environmental as well as social and economic aspects. It is commonly defined as the ability to use natural resources without them being completely used up or destroyed so that human and animal life can endure for a long time.

This broad concept of sustainability has increasingly become a central guiding and unifying principle for research in environmental psychology (Giuliani & Scopellitti, 2009). It is interesting to note that it has been suggested that, over the past decades, the field of environmental psychology has gradually evolved into a ‘psychology of sustainability,’ (Gifford, 2007) which is a much different approach and reputation of the field than what was once referred to as architectural psychology.

Let’s take a closer look at four important types of environmental psychology that characterize the field in its current state:
1. A focus on human-environment interactions.
2. An interdisciplinary approach.
3. An applied focus.
4. The use of a diversity of methods.
Interactive approach

As the definition of environmental psychology already indicates, its primary focus is the interaction between humans and the built and natural environment. It also openly considers how the environment influences behavior, as well as how behavior results in changes in the environment.

Environmental conditions such as the presence of nature in the environment of childhood may influence people’s connectedness to nature and enthusiasm to support nature conservation efforts. Additionally, people’s support for nature conservation measures may influence environmental conditions such as biodiversity. Essentially, humans and the environment are related in a reciprocal, dynamic way. As an example, the framework of public and private transportation may influence the level of car use, while in turn, the level of car use may influence the significance of environmental problems such as air pollution and global warming.

Interdisciplinary approach

Many environmental psychologists work in interdisciplinary settings and collaborate closely with scholars from other disciplines. Each discipline provides a different view, while in combination, they provide a comprehensive picture of the problem at stake.

Interdisciplinary collaboration has mostly occurred in three domains:
1. Environmental psychology has always worked closely with the disciplines of architecture and geography to ensure an accurate representation of the physical-spatial components of human-environment relationships.
2. Theoretical and methodological development in environmental psychology has been influenced strongly by the psychological disciplines of social and cognitive psychology.
3. When studying and encouraging pro-environmental behavior, environmental psychologists have partnered with environmental scientists to correctly assess the environmental impact of different behaviors.

Applied focus: a problem-focused approach

Environmental psychologists do not conduct studies merely out of scientific curiosity about some phenomenon, but they also try to solve real-life problems. This is not meant to infer that environmental psychologists are not interested in theories. A great deal of attention is given to building and testing theories in order to understand, explain, and predict human-environment interactions.

It is important to understand that the theoretical development in environmental psychology is strongly connected to identifying the most effective solutions to real-life problems. The problems and potential solutions that are studied vary across local, state, national, international, and global levels.

Diversity of methods

Overall, environmental psychology uses the same (or similar) quantitative and qualitative methods as other branches of psychology. However, while other psychological disciplines often have one dominant research model, environmental psychology is characterized by the use of a wide diversity of methods.

Each research method has strengths and weaknesses. This results in a need to assess between internal and external validity. Low external validity of a finding may be problematic if the goal is designing an intervention to solve a specific problem. However, it may be less relevant if the purpose of the research is testing theory, because in this case, the main concern is to achieve a high internal validity. Ideally, environmental psychologists try to replicate findings on the same phenomenon using different research methods. In other words, weaknesses of one research method may be compensated by the strengths of another.

Built environments

The term *built environment* refers to the human-made surroundings that provide the setting for human activity, ranging from buildings and parks or green space to neighborhoods and cities that can often include their supporting infrastructure, such as water supply or energy networks.

A common definition of built environment is “the human-made space in which people live, work, and recreate on a day-to-day basis” (Roof & Oleru, 2008). In recent years, public health research has expanded the definition of “built environment” to include healthy food access, community gardens, “walkability,” and “bikeability.”

The characteristics and quality of housing are believed to directly impact people’s physical and mental health. A home that is cold and damp or has allergens may cause respiratory illnesses and asthma in the residents (Shaw, 2004; Wigle, 2003).

Research has also indicated that the height and size of housing can affect health. High-rise housing is associated with psychological stress, particularly among low-income mothers of young children (Evans, et al., 2003). One study showed that children who lived in 14-story public housing were found to have greater behavioral problems than those living in three-story public housing (Saegert, 1982). One potential explanation for this is social isolation. Parents may be less likely to let their kids play outside if they live high up in a large building (Kim, 1997). Additionally, studies on crowding have indicated detrimental effects on both mental and physical health (Evans, 2001).

In public health, built environment refers to physical environments that are designed with health and wellness as integral parts of the communities. Hospitals and recovery centers have learned to utilize information provided from results of environmental psychology studies to create environments that support high levels of relaxation and recovery.

Research has indicated that the way neighborhoods are created can affect both the physical activity and mental health of the communities’ residents (Proshansky, 1987). Studies have shown that built environments that were designed specifically to improve physical activity are linked to higher rates of physical activity, which in turn, positively affects health.

Neighborhoods with more walkability had lower rates of obesity as well as increased physical activity among its residents. Such neighborhoods also had lower rates of depression and less alcohol abuse. Individuals who prefer to walk and live in walkable environments often have...
lower obesity rates and drive less over those who preferred living in auto-dependent environments. Elements of walkability in these neighborhoods include safety, sidewalk construction, as well as destinations in which to walk (Proshansky, 1987).

Walkability has often been determined through the use of assessment tools, such as a program known as Street Smart Walk Score. This assessment tool determines distances to grocery stores and other amenities, as well as connectivity and intersection frequency using specific addresses. Assessments such as Street Smart Walk Score can be utilized by city and county planning departments to improve existing walkability of communities.

Public health also addresses additional components of built environments through assessing “bikeability” and healthy food access, such as proximity to grocery stores and community gardens. Bikeability refers to the access that an area has granted to safe biking through multiple bike paths and bike lanes (Proshansky, 1987). Both walkability and bikeability have been cited as strong indicators of ongoing physical activity.

A higher density of convenience stores has been associated with obesity in children. In contrast, improved access to community supermarkets and farmer’s markets correlates with lower overweight status. The strength of the evidence for reducing obesity through environment has been highlighted by the Centers for Disease Control in its Common Community Measures for Obesity Prevention Project, which includes measures of healthy food access and physical activity environments. Specifically in low income neighborhoods, the presence of a local grocery store correlates with lower BMI/overweight risk. (Proshansky, 1987).

Community gardens are another interesting part of built environment efforts and have been shown to increase fruit and vegetable intake among gardeners. Research studies suggest that community gardens have positive social and psychological impacts that lead to lower levels of stress, hypertension, and an improved sense of wellness, affecting the overall health of the individual and the community.

It is also important to recognize two other types of built environments: engineering and technology. The two highly impact the way people work, live, and learn. Therefore, the focus on interaction between people and various types of technology or engineering has increased tremendously over recent decades and is likely to continue to grow with changes in their perspective fields.

Without doubt, medical technology is indispensable to people’s health and improved quality of life. It also contributes billions of dollars to the economy. There are many benefits that innovative technology brings to the table when it comes to healthcare.

For example, the widespread acceptance and utilization of electronic health records has resulted in significant savings in healthcare costs as well as improved patient health and safety. In more and more healthcare facilities, patient files are being kept in databases that can be accessed from anywhere in the facility. This is not only a time saver, but it also results in better data coordination and management.

It is also technological innovation that has opened the door to more non-invasive procedures. Diagnostics have never been easier and more accurate, especially due to advancements in areas like nuclear medicine. Today, numerous methods of imaging allow for technicians and physicians to examine a patient’s anatomy without needing invasive procedures to form a diagnosis (Nickerson, 2003).

Minimally invasive surgeries, especially within the disciplines of cardiovascular and thoracic surgery, have also become more common in recent years. The development of better instruments and more advanced technology have allowed surgeons to perform procedures in minimally invasive ways that just wasn’t possible a few years ago.

**Natural environments**

The natural environment refers to all living and non-living things occurring naturally on Earth. It is an environment that encompasses the interaction of all living species. The concept of the natural environment can be defined by the following components:

- Complete ecological units that function as natural systems without massive human intervention, including all vegetation, microorganisms, soil, rocks, atmosphere, and natural phenomena that occur within their boundaries.
- Universal natural resources and physical phenomena that lack clear-cut boundaries, such as air, water, and climate, as well as energy, radiation, electric charge, and magnetism, not originating from human activity.

Research has shown that exposure to elements of natural environment results in positive physical and mental health outcomes for both adults and children. It serves as a mechanism for rejuvenating personal energy, helps with focus, reduces stress, and aids in recovery from illness.

Studies have shown children’s attraction to nature and natural settings, which ultimately would promote children’s well-being. It is suggested that nature buffers the impact of stress on children and promotes their resilience (Wells & Evans, 2003). It is also suggested that higher levels of access to nature had an even greater buffering effect for children dealing with stressful life events. The buffering effect has shown to be the greatest for the most vulnerable children who were experiencing the greatest life stress, such as family relocation, or being picked on or punished at school.

Therefore, it is suggested that parents should:
- Give children plenty of opportunities to play outside in natural settings.
- Landscape their yard to enhance natural window views.
- Position their child’s desk to face a natural window view.
- Take family outings to natural areas.

- If possible, choose a house or apartment with access to nearby nature or at least views of nature.
- Walk more and increase outdoor physical activity.

**Using natural environments in healing/recovery**

Having natural areas nearby promotes well-being. Exposure to water, natural sounds, and sunlight can be very therapeutic. While these elements can be created within built environments such as hospitals and recovery centers, the direct contact with natural elements can prove highly effective for clients.

Access to or views of the natural environment improve cognitive functioning and recovery from surgery and illness. People who live near parks and open space are more physically active.

Studies conducted in nursing facilities indicated that older residents who have places to walk and access to parks and tree-lined streets live longer. Additionally, it is suggested that trees and natural areas may bolster a sense of community by drawing people together and enhancing social connections.

The term, therapeutic typically refers to a process that promotes overall well-being. According to Cooper-Marcus and Barnes (1995), therapeutic settings often involve one or a mixture of the following processes:
- Relief from physical symptoms.
- Illness or trauma.
- Stress reduction.
- Increased levels of comfort for individuals dealing with emotionally and/or physically tiring experiences.
- An improvement in the overall sense of well-being.

The term, therapeutic landscape has traditionally been used to describe environments with “enduring reputation for achieving physical, mental and spiritual healing” (Gesler, 1993). Research focused on places that had achieved this reputation for healing such as Lourdes, Bath, or the
Navajo territory (Gesler, 1996, 1998; Dobbs, 1997), but the concept is being adapted and expanded to cover not only healing places, but places that promote well-being and maintain health with the goal of analyzing what it is that influences visitor experience (Palka, 1999; Williams, 1999).

Multiple theories and approaches have been developed in order to explain and assess the influence of landscapes on human health. Contemporary theories, such as Ulrich’s “Stress Recovery Theory” (Ulrich, 1983, 1999), predict that natural scenes tend to reduce stress, whereas settings in the built environment tend to hinder recovery from stress.

Evolutionary theories of landscape preferences explain the benefits of natural scenes as reflecting landscape qualities that satisfy human biological needs. Researchers within environmental psychology have evaluated whether the restorative effect of natural landscapes is one of the reasons why people prefer natural landscapes over urban ones (Hartig & Staats, 2006; Van den Berg et al., 2007).

Stress recovery theory

According to the Roger Ulrich (1983), environments that provide opportunities for restoration from stress contain certain visual stimulus characteristics that directly elicit generalized states of positive affect, reduce demands for vigilance, and help return autonomic arousal levels to normal (Ulrich, 1983; Ulrich et al., 1991).

Ulrich proposed that perception of gross structural properties of the visual array, such as particular patterns of vegetation (i.e. savannah-like landscapes), the presence of water, in addition to moderate depth, moderate complexity, and the presence of a focal point are thought to rapidly evoke automatic positive affective and calming, relaxation, pleasantness, and fascination. In other words, this theory suggests that certain natural features elicit primary limbic-mediated processes of affective and physiological response leading to stress restorative outcomes.

Ulrich hypothesized that we have evolved to instinctively ‘tune in’ to scenery that induces such positive responses, because this adaptive strategy would have been significant for the survival of our early ancestors (Ulrich, 1983). Pigram (1993) supports this hypothesis, claiming that humans have “a genetically coded pre-disposition to respond positively to natural environmental content” (Pigram, 1993).

This evolutionary outlook on the stress-regulating effects of certain natural surroundings, is shared by several other authors, who have described distinctive cognitive processes of affordance perception, which determine appropriate affective, physiological and behavioral responses to landscape (Herzog et al., 1997; Appleton, 1996).

Hartig and Evans (1993) have referred to these as “preference responses,” which although no longer of such relevance to human survival, still “retain benefit value in that they signal positive states (e.g. aesthetic, satisfaction, lack of anxiety)” (Hartig & Evans, 1993).

Stress restoration theory

Based on a series of studies on the effect of nature on human psychology, environmental psychologists, Stephen and Rachel Kaplan, developed a theory of stress restoration with a decided emphasis on cognitive functioning and the concept of stress as mental fatigue.

They proposed that natural settings provide optimal environments for recuperation in situations where resources of higher cognitive functioning/executive functioning have become depleted (Kaplan & Kaplan, 1989; Kaplan 1995). Inspired by the work of William James and his distinction between voluntary and involuntary attention (James, 1892), the Kaplans theorized that the capacity for so-called ‘directed attention’ requires great effort/energy (i.e. inhibiting information irrelevant to the task in hand) and that this attention is a finite resource (Kaplan & Kaplan, 1989; Kaplan, 2001). In other words, mental capacity of this nature can become fatigued; a state, which Hartig has described as “cognitive overload” (Hartig, 2004).

Interestingly, stress-related psychological disorders are often characterized by a range of symptoms representing depletion of higher cognitive functioning (Netterstrom, 2007; Bruhn, 2002). This includes: lower concentration, inability to make decisions, and decreased short-term memory. Stress patients often find it difficult to make decisions (Milsted, 2006) and demonstrate general lowered functioning in other higher cognitive capacities, which has been linked to neo-cortex paralysis by Bruhn (2002).

The Kaplans found that natural settings provide an optimally restorative context because they allow a different form of cognitive functioning to take over; a form of effortless or involuntary attention, which they termed “fascination” and which allows the directed attention system (DAS). Their explanation of fascination describes neo-cortical processes of executive functioning, such as sorting impressions, evaluating, prioritizing, and planning, and being able to rest and recover (Kaplan & Kaplan, 1989; Grahn, 2006).

Fascination is supposedly engaged by objects or events or by processes of aesthetic appreciation, exploration and reflection of the environment. According to the Kaplans, restorative environments are further characterized by the following:

- **Extent**—that the environment is large enough to encourage exploration and yet coherent enough to allow the client to make sense of it as a connected whole.
- **Compatibility**—that there must be a fit between person’s resources, needs, and inclinations and the demands of the environment.
- **Getting away**—an experience of distance due to a change in scenery as well as an escape from aspects of normal everyday life (Kaplan & Kaplan, 1989).
Expanding on the concept of getting away, it is described as escape from cognitive, sensory, affective, and relational burdens, from general distractions, and from the pursuit of given goals and purposes such as work-related demands.

The Kaplans’ theory is known as the Attention Restoration Theory (ART), and much of the literature on restorative environments is built directly on this theoretical fundament (Hartig et al., 2003). Hartig and colleagues have validated these four aspects of ART as being more closely associated with natural than urban environments using the Perceived Restorativeness Scale (Hartig et al., 1997). The Perceived Restorativeness Scale (PRS) had been tested in several earlier studies for its reliability and validity (Hartig et al., 1991; Korpela & Hartig, 1996; Korpela et al., 2001). It is based on 5-point Likert-type scales of being away, fascination, extent/compatibility and coherence (Hartig et al., 1991). Laumann and colleagues have also developed a set of rating scale measures of the perceived restorativeness of environments based on the Kaplans’ four-factor structure. Same group ratings of natural versus urban settings have shown significantly higher scores of perceived restorativeness in the case of natural environments, and therefore, may be also interpreted as yielding results in agreement with the Kaplan’s theory (Laumann et al., 2001).

Attention Restoration Theory (ART) has also served as the foundation for an intriguing study focusing on the effect of nature exposure on children with Attention Deficit Disorder (ADD) (Taylor et al., 2001). Children with ADD were exposed to leisure activities in different environmental settings, and thereafter, attentional functioning was assessed using parental ratings. Both within- and between-subject data was correlated. Results indicated that exposure to green outdoor settings showed the strongest relationship to decreased ADD symptomatology and positive outcomes on cognitive functioning.

**EMOTIONS AND YOUR SURROUNDINGS**

**Place science**

The design of a physical place influences the mental state of the people in that space. That shapes their attitudes and behavior. Applying place science is challenging. People are complicated. They are a complex combination of rational and irrational thoughts and emotions, so their responses to places are complicated also (Vischer, 2005). However, the understanding of such information can benefit those who provide enhanced services or direct care to individuals.

Those who create places that enhance human lives need to focus on a range of details and make a lot of decisions. All people have associations to things around them because of groups that they’re in, and they have additional associations and memories that influence individual responses to the space around them. Place-related memories were very important for human survival in the past. People had to remember where camp was and where it was safe to sleep. Now, each individualized set of place memories influences the design of the spaces where people can thrive (Israel, 2003).

Accessing place memories is key to designing a successful space. These personal place memories mean that no two people will ever respond in exactly the same way to the same space.

Senses play a large role in daily life. Smells, colors, textures, and other sensory inputs can take on a special meaning for individuals. However, different scents or visuals may take on different meaning for different people. For example, peppermint is generally an energizing scent, but if a man’s mom always chewed peppermint gum when she rubbed his back as he fell asleep at night, he may find the smell of peppermint relaxing.

**Dominant senses**

Since Adler (1968), psychologists have known that for every person, there is one sense that is extra potent, that is a compelling way into his or her heart and head. It’s an individual’s dominant sense. When someone is creating spaces that one or a few people will use, they should recognize the dominant senses of those users.

Dominant senses help determine what information from the physical world makes its way into their psychological world, and what influence it has once it arrives. One of the surest ways to reach through the muddled stream of sensory signals is through the dominant sense. Human beings can take in a lot of information through their senses, but can’t consciously absorb everything going on in their environment.

In order to apply place science successfully, designers of a space need to consider what people will be doing in that space or provide recommendations to reach a certain goal. A space for working on a routine task should be different from a space for brainstorming, and a space for socializing should be different from a space for meditating. People do something that doesn’t require much concentration, and something creative and something social and something spiritual, better when they are in particular mental states. With place science, people can reliably create those states.

A well-designed space is a place where the right things happen. Well-designed spaces can help people to fall asleep, learn, or be creative. A “well-designed space” can be defined in psychological terms. Its design enhances life experiences and it is essential for happiness. It provides people with energy and supports their need to communicate with others. It supplies inspiration and comfort that enhances lives on a continuing basis. In it, people achieve their concrete and psychological goals. Being in a well-designed place leads to a desirable emotional state.

Well-designed places allow people to socialize with others when desired and to be alone when desired. Human beings, even the most...
apparently antisocial ones, need contact with other people. Socializing is a key element to the human experience.

Without communication and comfort, quality of life becomes greatly diminished. As a result, people lose their ability to process information in a sophisticated way and may become so stressed that tension distracts them from things they need to focus on. Socializing with other people is vital for mental health (Nickerson, 2003). Perhaps that is why solitary confinement for adults, or bedroom lockdown for children, is such an effective punishment. Being alone by choice is a different situation called “privacy,” which is a good thing.

The physical environment itself supports or hinders our interactions with other people. In a formal situation where discussions are scripted, rows of chairs arranged like church pews is conducive to lectures and the like.

Certain instances don’t require or warrant interaction with others; for example, if people are jammed together on a subway car or an airplane, both of which violate society’s personal space norms. In those instances, it’s fine for individuals to sit in ways that keep them from making eye contact.

People who are doing work that requires individual concentration should sit so that they cannot catch each other’s eyes. Children doing their homework around a kitchen table will, inevitably, talk to each other; the same children seated with their backs to the same table likely will not.

People can also restock their mental energy in a well-designed space. Each day, people use their minds over and over again to solve complicated problems, which lowers cognitive batteries. Eventually, people need to recharge those batteries. They can accomplish this through experiences such as looking at natural flames or fish tanks or being in an absorbing place that is effortlessly interesting, such as a museum.

A home or workplace can be a well-designed space. Likewise, so can a car, school, store, healthcare facility, or public space that people inhabit temporarily. The physical objectives of a well-designed place are similar in every environment but different – types of designed environments take different forms.

Healthcare facilities and evidence-based design

Healthcare and hospitals in particular have been the front-runner in actually utilizing place science and environmental psychology. Numerous research studies lead to the development of what is known as “evidence-based design” and its subsequent integration into the practices of the nursing field. Evidence-based design is commonly known as the process of basing decisions about the built environment on credible research to achieve the best possible outcomes. In the world of healthcare, five outcomes typically link to the physical environment:

- Reduce patient stress.
- Reduce staff stress.
- Improve safety.
- Improve quality.
- Increase operational efficiency.

Initially, hospitals focused on the development of the built environment specific to the patient rooms. They addressed windows and outdoor views from the location of the bed to the proximity of the bathroom, as well as the general layout of the room in order to promote increased relaxation and recovery efforts (Nickerson, 2003).

Recently, the focus has shifted to the design and location of nursing stations. Many factors drove the need to increase the quality of hospital spaces, and in particular, nursing spaces. A key driver is the tremendous and costly turnover in nursing staff. Nursing staff satisfaction is closely linked to quality of patient care and satisfaction. It follows that nurses need to be supported with a workspace that is conducive not only to their functional work requirements, but also their psychological needs and health.

Following a 2010 study that included six nursing units in three US hospitals, recommendations for nursing stations include:

- Locate a clearly marked entry that opens directly into a reception area.
- Position the reception area to provide first contact with family and to assist visitors. (This preserves nurses’ personal space and minimizes interruptions to their work).
- Use one central nursing station with two to four small decentralized work stations.
- Design the central nursing station in the shape of a diamond, an octagon, a circle, or a half circle to provide the best visual access to ongoing activity and situational awareness for nurses.
- Semi-enclose nursing station areas using translucent materials for privacy and confidentiality while allowing nurses to visually monitor patients and stay connected to staff members.
- Place the most critical patients closest to a nursing station to maximize view and accessibility.

- Locate linens in patient rooms and store medical and office supplies inside the central nursing station.
- Locate enclosed formal meeting space within the centralized nursing station area.
- Place a separate room for family members and a staff room at the end of hallways, away from the central station.

The process of getting healthy, or helping someone get healthy, is not easy mentally or physically, and creating a space that optimizes healing experiences requires intense focus and empathy. Healthcare environments are abundant in tension. People who are sick may experience psychological stress from the symptoms of their disease, the diagnosis, and treatment process, and the places where those diagnoses and treatments take place.

Friends and family members experience many of the same physical environments, as well as the uncertainty and unpleasantness of the diagnosis and treatment process (Marberry, 1995). People working in healthcare environments with patients face many professional challenges. Many healthcare tasks are very intellectually demanding. Often people’s lives depend on medical personnel completing these tasks exactly correctly, and they perform them in the same spaces that can evoke tension in patients.

Workers need comfort as much as patients. Caregivers also have the unusual vocational stress of regularly being concerned about becoming ill by treating patients. In addition, today sophisticated machines play an increasingly prominent role in the diagnosis and treatment process, and all of the technology depersonalizes patients and caregivers.

Designing healthcare environments is further complicated by the need to control the spread of disease. Textures that can harbor germs are out, for example, even if they would create the perfect psychological effect. Many of the stresses that patients, the people who support them emotionally, and healthcare professionals experience are inevitable when someone is ill. Tension added to the mix by the physical environment can be avoided, however, and healthcare environments can be designed so that they enhance the processes of healing and providing care (Ulrich et al. 2008).

Healthcare environments are becoming more home-like (and hotel-like) for just this reason. In the United States, healthcare providers often receive a flat fee for treating people with a particular condition, so they are really motivated to make sick people healthy again as quickly as possible. When a care provider is paid a flat fee for treating a condition, and that fee is based on keeping the patient in the hospital for, say, four days, if the patient is released sooner than that, say in three days, profit margins increase. These set payment levels have...
made healthcare businesspeople interested in learning more about environments that help to speed physical recovery. High staff turnover rates, employee shortages, and the costs of replacing employees have made the same business people take note of aspects of the physical work environment that make healthcare workplaces more pleasant and desirable places to be (Marberry, 1995).

Healthcare providers working both inside and outside hospitals have also recognized the importance of the design of the physical environments in which they work. Dentists, for example, are aware that many people get very tense just thinking about paying them a visit. Many dentists in the United States have tried to make their offices more relaxing for patients. Dentists who are part of the “soothing care” movement may redesign their offices to include aquariums and plants, as well as soothing images and colors. Some may even experiment with calming scents.

The impressions that people draw from physical environments are particularly important in healthcare settings, because it is often difficult to judge the quality of healthcare services. Many variables influence the final outcome of any sort of healthcare procedure. Even if a procedure is completed correctly, results may be other than those desired because of some unanticipated factor.

Healthcare facilities that appear thoughtfully designed, that minimize stress, and that provide psychological support for helping and caregiving send desirable messages about the quality of medical care provided. Research by Harris et al. (2002) has determined that hospital interior design, architecture, housekeeping, privacy, and ambient environment significantly relate to environmental satisfaction, and that environmental satisfaction is a significant predictor of overall hospital satisfaction.

Patients whose hospital rooms are less institutional and designed more like hotel rooms have more positive impressions about their hospital stay and the quality of their care than people who stay in more institutional rooms. More institutional rooms, for example, lack artwork and do not have comfortable chairs for visitors.

Healthcare waiting areas speak directly to the people who visit them. Areas with a less institutional feel ease those waiting into a more positive mood and reduce stress, all while generating people’s conclusions about the competency and humanity of the caregivers. Less institutional waiting rooms may include lamps, plants, decorative items, and multiple paintings (landscapes, as described below) that one might display in a home (Marberry, 1995). If people find themselves in a waiting room that differs too much in design from other waiting rooms they have experienced, they may become concerned. People, in general, feel more comfortable with places and things that follow stereotypical norms.

Patients experience healthcare facilities in different ways than the medical professionals who work in them, and also differently from the designers who develop them. For instance, patients may travel through hallways in wheelchairs or on gurneys. They may lie in stiff casts that prevent them from moving or that orient them to unnatural aspects of the space, such as the ceiling or only one wall. Sometimes when patients perform unusual tasks, such as lying perfectly still during an MRI, patients experience extreme stress.

All of these events take place in a physical environment, and in all cases, the design of that physical environment can profoundly influence the patients’ psychological experience and the health-related repercussions of their care.

Sensory stimuli significantly influence patients and caregivers. Just as it does in workplaces, schools, and homes, exposure to nature in healthcare settings reduces stress and restocks mental energy. Postsurgical patients who can look out over nature from their hospital rooms recover from surgery more quickly than postsurgical patients without such views; even if those slower healing patients had windows to the outdoors through which they saw brick walls, roofs, or other similar man-made objects. Patients with views of nature need smaller doses of pain medicine. In healthcare environments, windows should occupy from 20 percent to 30 percent of the exterior wall (Marberry, 1995). Ideally, all patient rooms, treatment and testing areas, and waiting rooms should have views of nature. When this cannot be accomplished, nature images in art or virtual reality-type nature experiences can lessen perceptions of pain and reduce stress while increasing positive emotions.

Patients prefer the same sorts of views of nature that people in other spaces do. Optimally, they look out over a meadow with relatively short grass, one or several collections of small plane-like trees, and a rim of woods. A peaceful, gentle water element may also be present in this optimal view. Views of nature should be placed where patients can see them, which might be on the ceiling if mirrors can be positioned accordingly. In addition, plants in healthcare facilities help patients relax.

The staff at healthcare facilities also benefit from views of nature. So do people who just happen to be inside the building. Blood donors had lower blood pressure when they were watching a nature video than when they were watching regular television programming or urban scenes on video.

The psychological ramifications of art have been more extensively analyzed by environmental psychologists in the context of healthcare environments than any other type of place. Researchers have learned that representational art showcasing open pastoral scenes with scattered trees and meadows that are rimmed with a forest, tended gardens, and placid water are the three preferred images to use in healthcare environments (Ulrich & Gilpin, 2003). These sorts of pictures distract patients and their companions from the situation that originally brought them to the healthcare facility. Chemotherapy patients who can see art while being treated are 20 percent less anxious than patients who don’t (and those exposed to live music are 32 percent are anxious).

Abstract or ambiguous paintings or sculptures are the very worst choices for a healthcare setting; it is better to use no artwork in a space than ambiguous, surreal, or abstract art; even if a piece is widely popular among the general public. The general public is not in a doctor’s waiting room or a hospital.

People who are concerned about their own or someone else’s health are there, and they want to be reassured. Also, while under extreme stress, people don’t want to see images that have any possible negative associations or interpretations. Similarly, shiny surfaces on floors, walls, windows, etc., can generate odd and scary reflections. Close-ups of animals, even extraordinarily cute bunnies and kittens, should not be used in healthcare environments.

Nothing is as reassuring and comforting to people as images of the places that provided security during the earlier cons of human existence, before current defenses against lions and tigers and bears were developed. These include meadows, gardens, and water scenes described earlier.

Pediatric patients also prefer nature art to abstract art or images from cartoons (child art is popular with children aged 5 to 7). Many children are scared by images of clowns. As with adult patients, children also benefit from art that includes pets or other harmless animals or pleasant and caring faces (if they are viewed from a little distance). Again, close-ups of animal faces should be avoided, even if the animal does not appear dangerous to healthy adults.

Art needs to be placed where patients will typically look in order to influence their experience. For example, if patients are lying on their backs during a procedure, art should be placed on the ceiling. If they lie for long periods in one position, the art must be easy to see from that position. If patients will be in a healthcare facility for some time, art should be placed so patients can see it from their bed. This ensures that they have easy access to scenes with personal meaning, which gives patients an opportunity to control at least part of their hospital experience. (Marberry, 1995)
Fish tanks reduce patient stress. Even patients waiting for dental surgery experience less stress when they can look into an aquarium. Aquariums fascinate people in the same ways that views out the window do. People can see enough to understand what is happening in the tank but can’t predict exactly what will occur next. In this way, they capture people’s attention and divert them from the current situation.

Sunlight keeps patient and caregiver body (or circadian) rhythms synchronized with those of their neighbors. People whose circadian rhythms are inconsistent with the time zone that they are living in feel stressed and tired, become disoriented, and do not sleep well. They lose their mental sharpness and it can be difficult for them to focus.

Patients who underwent surgery and are placed in sunny rooms require less pain medication than patients assigned less sunny rooms, which reduces the cost of treating them. Patients in sunny rooms also feel less stressed during their in-hospital recovery period. They are released sooner from the hospital than comparable patients who are not in sunny rooms.

When people with seasonal affective disorder, depression because of bipolar disorder, general depression, and senile dementia are exposed to morning light, dramatic improvements in their conditions result. Although morning sunlight produces the strongest effects, daylight at other times of the day also significantly reduces depression. Siting buildings and patient rooms within buildings to maximize the exposure of depressed and psychiatric patients to morning light through untinted windows is desirable. Staff members with more access to light are also more satisfied and comfortable.

Modestly intense pink, the color of Pepto-Bismol, has been shown to quickly calm individuals, so it can effectively be used in mental health facilities (Marberry, 1995). Skin tones are best checked in day-lit spaces painted in muted, grayish palettes and never in more yellowish spaces; which may make skin tones appear jaundiced. As the complement of red, a muted green is a good choice for spaces where lots of blood may be seen. Color combinations should also be relaxing, without the sharp sorts of contrasts that can be too exciting.

Monochromatic environments are understimulating, so they can be particularly poor choices for healthcare environments where people may already be bored. Monochrome environments are also bad choices for places where people will regain consciousness after surgery. “Waking up” in a space with a darker floor, a lighter ceiling, and walls painted an intermediate color helps patients properly orient themselves on Earth. We are used to a darker ground, lighter sky, and vegetation of intermediate darkness.

Since seeing warmer colors makes people feel warmer, healthcare facilities should use them in spaces where patients are apt to feel cold. A bright color behind a receptionist attracts the attention of people entering waiting areas, which reduces confusion and helps an office to function more effectively.

Visually complex environments are more energizing, so they should be avoided in healthcare facilities. Collections of things (papers, equipment, etc.) should be kept organized behind cabinet doors. Lighting levels are relevant to hospital design. Since people speak more quietly when lighting levels are lower, keeping lights as low as possible, without compromising staff performance, can effectively cut noise levels. Using red lights to guide patients to their bathrooms at night does not disrupt their circadian rhythms as other lights would.

The World Health Organization has recommended that background noise in hospital rooms should be capped at 35 decibels, with the loudest noises at night being below 40 decibels. Noise levels in American hospitals are generally 45 – 68 decibels, with individual noises occasionally as loud as 85 – 90 decibels. When noise sensors are placed near a patient’s head, they regularly register 70 – 75 decibels. One study found a noise level of 113 decibels (an important share of which was from staff conversations) as one set of patient caregivers was shifting responsibilities to the next set of caregivers.

For comparison, the average alarm clock ring is 80 decibels, a nearby motorcycle generates 90 decibels of noise, and a jackhammer is 110 decibels. In hospitals, noise from conversations has a more significant influence on stress than other sorts of unwanted sound, just as it does in workplaces. That’s because people focus on it and try to understand what is being said. Saying noise from conversations is most stressful does not infer that if it is eliminated, machine noises experienced by patients and caregivers do not need to be minimized. Hospitals need to quash noise from both machines and conversations.

Noise increases the stress levels of patients and nurses, impeding healing among patients and increasing emotional exhaustion and job dissatisfaction among nurses. When patients feel stressed, they require more pain medication. High noise levels can also increase staff errors, for example, while they are preparing medications. Patients also associate higher noise levels with lower quality care.

Music in medical waiting rooms reduces stress levels. Patients who hear music they enjoy during their hospital stay also seem to experience less pain than patients who do not hear music. Natural sounds, such as ocean waves, reduce patient stress. Pairing natural sounds with natural images, or pairing classical music with the same images, can reduce perceived pain to lower levels than when the images are viewed alone.

Pleasant smells in waiting rooms also reduce stress in healthcare facilities. Privacy is important in healthcare facilities, just as it is in other sorts of places. Governments often develop regulatory systems that protect patient privacy. In the United States, this system is known as the Health Insurance Portability and Accountability Act, or HIPAA. Patient privacy is important even if it is not government mandated; for example, when patients feel that they have privacy, they communicate more freely with healthcare professionals.

Healthcare workers and patients both desperately need private retreats. Both caregivers and patients are in highly stressful situations, and privacy gives them the opportunity to reflect on recent events and integrate them with previous memories. Reflecting and integrating help people cope with complex situations. Providing patients with privacy means allowing them to isolate themselves from society sometimes.

Private patient rooms are one way to prevent the spread of disease from one patient to another, while also providing needed seclusion for patients and their family members (Chaudhury, Mahmood, and Valente, 2005). Just as patients are more frank and forthcoming in discussing their health with medical professionals when they are in private, as opposed to shared, rooms, emergency room patients separated from other patients by curtains often do not communicate relevant information to people caring for them because they feel that their privacy is compromised. Joseph and Ulrich (2007) suggest private discussion rooms to ensure effective conversations. Nurses also experience less stress when patients are in private rooms. Reducing the movement of noise within healthcare facilities through the use of wall, floor, and ceiling treatments increases privacy.

Patients experience health benefits when they socialize with family and friends. Patient rooms should have movable chairs that allow people to interact in that space as desired. Family and friends spend more time with patients when they are in single rooms than they do when they are in double rooms. Visits can be encouraged by providing desirable in-room and out-of-room spaces for families, friends, and patients to gather. Carpeting in patient rooms has been linked to longer visits than similar gatherings in spaces without carpeting.

It is important for people to feel that they have control over their own lives, and often patients lose nearly all control over what happens to them. When people lack control, they become stressed, can become depressed, and their immune systems may become compromised.

Control increases the self-esteem and feelings of security among hospitalized patients. Patients tend to feel as if they have more control.
when they can modify their environments, such as by turning fans and
televisions on and off and opening and closing curtains.

People who have control feel that their rooms are more homelike
than patients without control over sensory aspects (temperature, light
levels, etc.) of their environments. When patients are in private rooms,
they feel that they have more freedom to change their room, and their
visitors feel freer to socialize as they choose, for as long as they choose.

People prefer environments that they can control, which is important in
situations when patients can choose the hospitals that they use.

People who have control of their environments have the freedom to
personalize them, and that personalization has positive psychological
ramifications. It makes people feel more comfortable in a space by
providing them with some sort of temporary ownership of it. Even
people who only stay in a hospital briefly, such as to give birth, typically prefer to personalize their surroundings.

Designing hospital spaces for adolescent patients is particularly
challenging, because adolescents are in the process of establishing control
over their own lives. They want to be distinguished from children, so they
dislike the cartoon-like motifs often used in pediatric wards. They also
want to be able to entertain friends in their hospital rooms, as they can in
their parents’ homes, and they want to be able to make easy contact with
friends in person or via cell phones. Children and adolescents feel that
hospital staff recognize that they “are not babies” when they are allowed
to control the lights and heat in their rooms.

Nurses also can feel as if they don’t have much control; some feel that
their medical knowledge and professional expertise are not appropriately recognized. Providing them with opportunities to control
ambient and functional details of their work environments, such the
heights of their work surfaces, is therefore desirable.

Nurses should be included in the programming and design process,
ot only because their input is valuable, but also because providing information that is utilized gives them the feeling that they have more
control over their professional lives. Nurses also need restorative experiences to reduce stress, and opportunities to interact formally and
informally with physicians can diffuse stress levels.

Healthcare facilities must also be culturally appropriate for the patients
who will use them. A hospital in the Middle East may need to provide
different doors for men and women to enter the building, for example.
Exam rooms and patient rooms in the Middle East need to be larger to
accommodate the larger groups that accompany patients to the facility and
corridor treatment. Corridors in new Middle Eastern hospitals
should be wider than in the United States so large family groups can
move through the facility together.

A hospital at the University of New Mexico worked to recognize the
three predominant cultures among its patients: European Americans,
Native Americans, and Hispanics. Corners have negative spiritual
associations for Native Americans, so the hospital chapel is round. It
also includes a fireplace where incense, important to Native American
patients, can be burned. Since stone represents healing power to Native
Americans, it was incorporated throughout the center. Since more
members of Hispanic families attend physical exams and consultations
with patients than is the case with European Americans, the hospital at
the University of New Mexico has exam and consultation rooms that
are large enough to accommodate these groups.

**Color coding for direction**

People regularly get lost in healthcare facilities; they don’t visit them
often, and when they do, they are often distracted by whatever has
brought them to the facility in the first place. In hospitals, weak people
may be trying to make time-critical trips through a floor plan that has
been complicated by additions over the years. People who cannot find
their way through a building not only waste their own time and the
time of people who must wait for them to arrive, but they also become
stressed, and stress erodes health and well-being.

Healthcare environments are stressful for everyone in them. Patients
are sick and worried, patient supporters are worried, and healthcare
professionals are often doing difficult tasks that determine whether
people live or die. A thoughtfully designed physical environment can
enhance the lives of all of these individuals.

Color-coding sections of buildings or paths through buildings can
prevent people from getting lost. Color can be a landmark, just as a
sculpture, a distinctive painting, or a change in architectural features
be. Colors used to help people navigate through a space should
be readily recognizable with standard names: *teal* is a more confusing
term than *green-blue*, which is more confusing than either *green* or
*blue* alone.

Signs should be legible to people of all ages who are moving through
the space in various ways, such as in wheelchairs or standing on two
feet. The words on those signs should match the phrases in patients’
heads, not in those of the healthcare professionals treating them, who are
familiar with a lot of technical jargon that the general population is not.

Both signs *and* you-are-here maps, where the top of the map is
oriented in the direction of forward motion, are useful ways for
people to figure out where they are in a space and move toward their
destination. Men and women use different sorts of tools to navigate
through a space. Women orient using landmarks that can be seen (or
heard or smelled, in some cases) and men prefer to navigate using
cardinal directions and named routes, so opportunities to give and
follow directions using both sets of tools should be provided.

**Place identity**

For many years, Harold Proshansky and his colleagues at the Graduate
School and University Center of the City University of New York
explored the concept of place identity. Place identity has been
traditionally defined as a sub-structure of the self-identity of the person
consisting of broadly conceived cognitions about the physical world in
which the individual lives (Proshansky, 1987).

These perceptions define the daily experiences of every human being.
Through people’s attitudes, feelings, ideas, memories, personal values, and
preferences toward the range and type of physical settings, they can then
understand the environment they live in and their overall experience.

As people interact with various places and spaces, they are able
to evaluate which properties in different environments fulfill their
various needs. When a place contains components that satisfy people
biologically, socially, psychologically, and/or culturally, it creates their
environmental past. Through ‘good’ or ‘bad’ experiences with a place,
people can then reflect and define their personal values, attitudes,
feelings, and beliefs about the physical world.

Other theorists have been instrumental in the creation of the idea of
place identity. Three humanistic geographers, Tuan (1980), Relph
(1976), and Buttimer (1980), share a couple of basic assumptions. As
people live and create memories within a place, they build attachment.
It is through people’s personal connections to places, that they gain
a sense of belonging and purpose, which then gives significance and
meaning to their lives.

Five central functions of place-identity have been depicted:
recognition, meaning, expressive-requirement, mediating change, and
anxiety and defense function (Proshansky, 1987). Essentially, place identity becomes a cognitive “database” against which every physical setting is experienced. The activities of a person often overlap with physical settings, which then create a background for the rest of life’s interactions and events.

Cultural impact

Cultural systems tell people how far to stand from other people and how to personalize the spaces they control to non-verbally communicate desired messages. Culture provides the dictionary people need to correctly interpret non-verbal communication and the swirl of activity around them. Communicating through the symbolism of facial expressions, gestures, objects (chosen and rejected), and place design, people can make statements that would be difficult, awkward, or impossible to present through words.

Culture defines values. As Rapoport (2007) has discussed, peoples values find expression in their lifestyle and expectations regarding the physical locations in which they live that lifestyle. A culture that believes that men and women should be separated in the course of their daily lives would expect that there would be separate areas for men and women to interact in their homes. A culture such as Russia’s, which values people having the opportunity to socialize while dining around a large table, requires that there be a space in the home for such a large table. Cultures that value sharing food among family members must have a space in the home where all that food can be safely and pleasantly prepared and consumed.

A national culture is the code of behaviors and values followed by people from one particular country. Although regional differences in cultures exist in larger countries, this course will not focus on them. Generally, people living within one nation are similar enough to each other, and different enough from people living in other countries, for this place-based discussion of culture. Since country borders sometimes do not correspond to ethnic boundaries, there can be an inconsistency between the geographic area occupied by a particular group and the nation that gives them their name.

Professions, religions, hobbyists, and businesses, among others, also have cultures called organizational cultures. These social systems spring into existence within and across particular national cultures, but there are consistent types of groups found in all national cultures.

The sensory worlds of some cultures are more diverse than others. People in the Americas and most other Western countries are very attuned to their visual worlds, while other cultures consciously collect more and different types of information from the spaces that surround them. Particularly during social interactions, for example, Arabs are much more attuned to scent and touch than Americans. In northern Europe and the United States, much of the richness of smell in our environment has been removed. In the United States and northern Europe, smelling body scents is not viewed positively and a great deal of effort is focused on eliminating them.

There is also a movement in the United States to forbid the wearing of scents or the use of scented cleaning products in public spaces because some citizens are sensitive to them. People often use scents to broadcast details of their personal identity, so forbidding their public use could literally be depersonalizing.

Some businesses have begun to recognize the emotional links that Americans, as all humans, inevitably form to smells. These companies are attempting to brand places with scents. Westin Hotels and Singapore Airlines are at the forefront of this movement.

The Japanese create multisensory, place-based experiences; their spaces are thus much richer in a wider range of sensory details than those in the West. Nuances of experience, such as changes in humidity, temperature, and shadow fall, are often carefully considered during the design of Japanese spaces. In Japan, spaces can be distinguished by what the experience of actually moving through them is like, and places are designed so that their perception is not complete unless people integrate information they have collected in different parts of the space and use their imaginations. The experience of moving across different surfaces is psychologically important to the Japanese.

Tactile experiences are largely lacking in American interiors. The French are also very concerned with a range of sensory experiences. As a culture, they have developed a refined palette for food and art, for example. People from West African cultures are much more attuned to audio and proprioceptual (body placement) information than people of European ancestry. Some researchers believe that the tradition of communicating through dance in these regions leads to these differences.

Even when people from different national cultures are actually using the same sensory channel, they may not be gathering the same information with it. Consider sound. In Asian cultures, such as in China and Japan, people learn not to notice more personal sounds that other people make in the course of their daily lives, but they do learn to focus on neighborhood sounds that help them manage their daily lives. Since they often live in tight quarters with insubstantial barriers between them and their neighbors, Asians learn behavioral and perceptual rules that help one family separate itself acoustically from its neighbors. North Americans would process both the noises from neighbors and from the neighborhood.

When exposed to the same image, people from an Eastern culture, such as Japanese, will perceive more of the entire scene. People from Western cultures, such as Americans, will focus on the foreground objects and remember them in great detail, but will have a much less detailed memory of the background elements of the images than people from an Eastern culture. Asian interior and garden design tends to be complex, and therefore require intense analysis. Ways of looking at scenes may be reinforced by what is being looked at, and vice versa.

The Western focus on the foreground objects and the Eastern attention to the entire image is consistent with Asian attention to the spaces between objects (Hall, 1982). The space between objects is generally ignored in the West because it is “empty.” Westerners see little reason to focus on empty spaces and many reasons to focus on occupied spaces. In the East, people focus on spaces between objects as intently as the objects themselves and thoughtfully consider the features of those spaces, such as their shape.

The sounds and smells that people find pleasant, as well as relaxing, are determined by experiences that we have within cultural contexts. Smells of meat cooking often have very different associations from culture to culture. One person’s favorite delicacy and link to fond memories is not necessarily considered a delicacy or linked to any fond memories of another; it may just be vile.

 Cultures that feel they live in harmony with nature, such as many Native American societies, relish extensive views of nature, but are judicious about the use of nonrenewable resources in their environment. This view of people’s relationship with their natural environment is becoming more prevalent as concern about the health of the planet spreads.

From a clinical perspective, it is important to keep in mind that life experiences make people prone to different sorts of perceptual tricks. People who are used to living in places where the interior walls meet at right angles in the corners perceive the world differently from
people who grow up in spaces where they do not. People who have grown up in places where there are right angles in the corners think lines with outward-facing arrows at their ends are longer than lines with inward-facing arrows, which are actually the same length. People who live in places where the walls do not meet at right angles in the corners (for example, in a round structure) do not make the same mistake. Modern engineering can make faux finishes very convincing, and the apparent roughness of a surface that is actually smooth leads to unusual sensations while walking, and this inconsistency between what we expect and what we encounter can be unsettling.

ENVIRONMENTAL STRESSORS

Environmental stressors such as noise, crowding, and pollution can be acute or chronic. Chronic environmental, stressors are more consequential for humans. For instance, a reliable link has been established between chronic stressors and impaired immunological responses, while acute stressors appear to have few consequences (Sagerstrom & Miller, 2004). Environmental stressors are often chronic because individuals have limited ability to escape or extinguish them. As an example, citizens living near an airport may not be able to afford the option of moving away.

People face a large array of environmental stressors in their daily lives, especially if they live in large cities. The next section looks some of the more common and widely studied environmental stressors:

Noise

Noise is defined as unwanted sound and is typically characterized by intensity (decibel), frequency (pitch), periodicity (continuous or intermittent), and duration (acute or chronic). Sound is necessary but not sufficient to produce noise. The psychological component of unwanted sound and its physical components, such as intensity, certainly play a central role in perceiving noise. Other important psychological characteristics of sound include its predictability and the degree of personal control over the source of the sound (Evans & Cohen, 1987). Intense, unpredictable, and uncontrollable noise can create negative feelings such as irritation and annoyance. Furthermore, the extent to which noise causes annoyance depends on health concerns and the level of interference with important activities like sleeping children (Berglund, Lindvall, & Schewela, 2000).

Biological and psychological mechanisms come together to determine many emotional responses to sound (Bruner, 1990). People living in all cultures find that slow, soft, complex music makes them feel sad, for example. This response makes sense because when people are sad, their voices are muffled by their relaxed vocal chords, making sounds that sad people produce softened.

The opposite reaction occurs when people are angry or happy. Vocal cords tense in these situations and sounds are amplified. In general, the rhythm of a beat and the tone of whatever object is creating that beat combine to produce a psychological effect. Responses to the basic parameters of sound, such as a beat or tone, are not culturally dependent, but responses to particular pieces of music are influenced by national culture. When people hear a specific piece of music in a memorable situation, or experience a type of music in a consistent way, they develop a generalized emotional response to it.

Predictable rhythms are relaxing, while unpredictable rhythms are invigorating. Simple harmonies are also relaxing, while complex or novel harmonies are invigorating. When people can anticipate what is coming next, they are filled toward peacefulness; when they are kept vigilant, wondering what will happen next, their energy level increases.

In general, a slow, smooth beat relaxes people and a fast, clipped beat energizes them. Faster music, which increases alertness and arousal, is great when people are doing something that requires quick thought, such as rushing through downtown traffic. Fast, loud, simple music lifts people’s moods; but fast, loud, complex music seems angry.

With sound, the relevant comparison of what constitutes slow versus fast is determined by the human heart rate (Leeds, 2001). The human heart beats 50-70 times per minute when we are at rest and relaxed. A moderately relaxing sound pulse mirrors that pace, while a deeply relaxing beat is 30-50 beats per minute. Rhythms faster than 50-70 beats per minute invigorate people. People’s heart rates synchronize with the beat of the sounds that surround them, beating at the same pace as the music they can hear or the waves from the ocean they are sitting beside.

Ultimately people’s respiration coordinates with their heartbeat. People can’t relax while they can hear an unpredictable noise because their breathing and heart rate cannot mimic it. Even annoying noises are more bearable if they are predictable. When sounds are predictable, people can develop a coping strategy. People cannot concentrate if a sound is unpredictable, as they are usually diverting mental processing power to anticipate what will happen next.

The tone of a sound influences people’s emotional response to it just as clearly as the rhythm of what they are hearing. Lower-pitched sounds put people in a more somber mood, while higher-pitched sounds elevate people’s mood and makes them feel playful. High-pitched sounds, such as those made by a piccolo or a violin, energize people. The kinds of sounds made by harps and acoustic guitars are midrange sounds, and they are relaxing; lower pitches are very relaxing as well.

Music played in a major key is relaxing and tends to make people feel happier, while music played in a minor key is more invigorating but tends to make people feel less happy. Acoustic music and gentle, harmonious sounds are relaxing. Slow music without words can reduce stress.

When music has a rising inflection, it is linked in people’s minds to deference, while a falling inflection is linked to dominance. A soundscape with consistent music types and tempos is boring. To maintain alertness, music must vary, which keeps brains alert and focused on the world.

Music with words always raises people’s curiosity. They focus on the music to uncover what will be said next, and that keeps them more alert and energized than music of the same tempo and tone without words. Music with words is more distracting when people are trying to concentrate than music without words.

Less complex music, without words (or at least without words listeners can understand), is the best background for a mental task that requires concentration. It diverts a minimal amount of mental processing power from the cognitive work underway.

Chronic noise produces physiological stress (Evans, 2001; Ising & Krupa, 2007). Children attending schools near an airport had higher levels of noradrenaline and other stress hormones and highest resting blood pressure over time compared to children living in quiet areas (Evans, Bullinger, & Hygge, 1998).

Additional evidence for physiological stress and noise comes from worksites. People working in noisier locations, particularly for many years, have higher blood pressure (Tomei et al., 2010). Chronic noise negatively impacts people also at a psychological and behavioral level. It affects performance and it may alter the ability to allocate attention, interfering in the detection of infrequent signals (Evans & Hygge, 2007) and damaging memory (Cohen, Evans, Stokols, & Krantz, 1986).

Noise also affects motivation. Individuals exposed to noise in a laboratory were less persistent on a motivational task performed after
Poor housing quality:

Crowding is a psychological state that occurs when the need for space exceeds the available supply (Stokols, 1972). The same density level may be experienced as more or less crowded because of individual differences (i.e., culture, personality, gender, age) or situational factors (e.g., temporal duration, activity, private versus public space). Laboratory studies show that crowding elevates physiological stress: the longer people experience crowding, the greater the elevations (Evans, 2006). Crowding elevates skin conductance, blood pressure, and stress hormones (Evans, 2001).

Population density

Population density is commonly referred to as the amount of people living in a unit of a certain area. Where this becomes an issue of environmental stressors, lies within such elements as poor housing quality and traffic congestion.

- **Poor housing quality**: A study among low and middle income school children in rural areas in the eastern United States showed that children living in poor housing conditions (i.e., substandard quality of the house, high density of noise in the house) displayed higher levels of stress hormones, independent of household socio-economic status (SES), age, or gender (Evans & Marcynyszyn, 2004). Other studies showed a correlation of poor housing quality with mental health problems, such as symptoms of anxiety (Hiscock, Macintyre, Kears, & Ellaway, 2003) and depression (Shenassa, Daskalakis, Liebhaber, Braubach, & Brown, 2007). Improvements in housing conditions are also associated with increases in happiness and life satisfaction among residents who moved to better quality housing or had their housing renovated (Evans, Wells, Chan, & Saltzman, 2000; Halpern, 1995).

- **Traffic congestion**: Research on traffic-related stress is becoming more relevant from both a psychological and a social standpoint, because in most countries, commuting times are increasing. In the US, for example, the average worker may spend anywhere from 30 minutes to an hour and a half simply commuting to work; one way. High levels of traffic congestion may lead to elevated physiological stress and negative affect. A study among automobile commuters showed that levels of traffic congestion were linked to physiological stress, negative affect, and impaired task motivation (Novaco, Kliwer, & Broquet, 1991). This study also found that after a more demanding commute, drivers had more negative social interactions with their family members at home.

**ENVIRONMENTAL PSYCHOLOGY IN COGNITIVE BEHAVIOR THERAPY**

Cognitive behavior therapy (CBT) is a type of psychotherapeutic treatment that helps patients understand the thoughts and feelings that influence behaviors. CBT is commonly used to treat a wide range of disorders including phobias, addiction, depression, and anxiety. One element that plays a huge role in serving clients in this field is the understanding of their motives.

**Motives and the environment**

Reiss (2004) identified 16 basic motives that propel human beings through their lives, and all of these motives relate to physical places, some more closely than others. They should guide space design. Any particular space does not need to respond to every motive on Reiss’s long list, but at any time, people must be able to move into one that does. For example, a particular home kitchen may not be tranquil, but a readily accessible space in the same house must be.

The 16 motives that Reiss has identified in people’s lives are as follows:

- **Power**: Places provide information, either directly or indirectly, and through this information, one person can influence another. European cathedrals are built to instill an awe of God, and so were Aztec temples. Those responses are not coincidental. Judges sit at tall desks on raised platforms so others need to look up at them; and when people look up at something, they feel respect for it. Power in place can be subtle. Higher ranking employees feel free to enter the personal territories of subordinates without permission, but lower ranking employees do not reverse the tables, if they want to keep their jobs. Power can also be brutally displayed. The checkpoints spawned by global unrest are not subtle.

- **Curiosity**: A space can help people grow and develop as a person, by providing opportunities for learning and self-enhancement. Lawrence and Nohria (2002) agree that all human beings have an inborn drive to change themselves in ways that they feel are desirable, and spaces can help people achieve those objectives. A soundproofed space makes learning a musical instrument easier on bystanders, allowing longer practice sessions. A quiet space where a person can concentrate makes it possible to learn a foreign language, for example.

- **Independence**: Spaces can help individuals control their own destiny. If spaces permit people to control other people’s access to
them or accomplish other personally desired objectives, places can enhance independence. For example, the option to make a space private by closing a door is often highly valued by people. When people can regulate their privacy in a space, being there usually has positive psychological ramifications. When they can customize a space so that it projects an idiosyncratic image they value, that place also expresses independence.

- **Status:** The design of a space itself, the objects placed in it, and how it is used communicate the relative status of its owner. Humans are pack animals and like to know who the leader of their pack is (Visher, 2005). Rank can be communicated verbally, as through a job title, or nonverbally. The placement of a group in a structure can indicate the status of the group and its leader. For example, a human resources department housed in a windowless basement suite has little status. Status is not necessarily determined by one’s ability to order other people around. People can rank higher (or lower) based on all sorts of criteria. These criteria can relate to people’s areas of expertise and accomplishment. Home or workplace design can communicate status by communicating skill. Creating a highly desirable space can garner status among tastemakers or anarchists, for example, depending on how people decide to decorate.

- **Social contact:** Even the most introverted humans need regular contact with other people. When people have privacy, they can control when and how they interact with others. Uncontrollable social interaction is very bad for people; it makes them tense and panicky. People have particular place-based rules about how they want social contact with others to happen.

- **Vengeance:** People can and do use space for evil, just as they can use it for good. Symbols of other groups can be desecrated, for example, as people seek vengeance. Even the display of championship trophies can be seen as vengeance; the winners exalting over those who have not won.

- **Honor:** Honor often relates to tradition. A place readily communicates how much people value tradition. Almost all spaces show some reverence for tradition; the relative amount varies from space to space, however. Even the most avant-garde living place will include spaces to display meaningful objects, although the concept of appropriate objects can vary. A space is more traditional if larger numbers of people without design training can anticipate the elements used in it. A space that is designed very traditionally for the society in which it exists indicates stronger adherence to the prevailing value system than a less traditional space. In the United States, traditional decorating styles include colonial and cowboy/western.

- **Idealism:** The causes people espouse are manifested within spaces. People may eschew the use of non-regenerative resources, display a sculpture of blindfolded Justice, or hang Buddhist meditation flags to communicate ideals to others, for example. An apparent absence of idealistic elements does not mean that they are actually absent; just that they are not obvious to the viewer. Only the owner of an object can be certain what he means to communicate through it.

- **Physical Exercise:** Homes provide the opportunity for people to exercise directly, if they include a gym or exercise equipment. The weekly “opportunity” to mow the lawn and the more intermittent possibility of home improvement projects also help people to satisfy the desire to exercise their muscles. The way that urban planners lay out an area can encourage physical exercise.

- **Romance:** A boudoir, or any mutually acceptable physical space, provides the opportunity for romance.

- **Family:** Homes help people raise their children and relate to loved ones in the manner they desire. People can create luxurious or Spartan places for people to isolate themselves in, or they can create spaces where everyone can hang out together, and they can create areas for studying; all of which communicate important information to the family. People’s approach to tradition comes into play here as well. It determines what they value and how they want their families to live.

- **Order:** People want to organize their lives; even places that are apparently disordered usually have an underlying ordering system. People differ in the way they organize their lives, and sometimes one person’s ordering system is not readily apparent to other people. Cabinets and closets encourage people to systematize their belongings.

- **Eating:** What are kitchens and dining rooms for? Even people who don’t like to cook eat, and take-out food is becoming increasingly acceptable for regular “family” meals.

- **Acceptance:** People communicate their desire for approval in spaces by following the social conventions of groups that they want to accept them. Adhering to trends in interior design signals a desire for acceptance by people who set and respect trends.

- **Tranquility:** Place design can help people reduce stress and tension. In the best case, spaces provide restorative opportunities. People can decorate our homes with meaningful objects, and being surrounded by those objects helps people to relax.

- **Saving:** Homes and other real estate investments can be seen as a way to store away money for the future. When people customize a space so that it represents them, they are showing the world that we own it. Places are also vast storehouses of the stuff that people value.

### Emotional & cognitive responses to sensory information

Most people are familiar with the five senses: seeing; hearing; tasting; touching; and smelling. Most people do all five continuously every waking moment of our lives. They even listen, touch, and smell while they sleep. Each sound, taste, smell, touch, and image sends sensory information to the brain, where people process it and respond accordingly. At any moment, people have all sorts of sensory experiences, most involving more than one sense.

People selectively analyze the sensory information that bombards them each day; they consciously respond to only a sliver of the material that they could. The information that comes through people’s dominant sense has the most influence emotionally, but all experiences matter.

What people learn from the space they are in influences them, both at an emotional and a more rational level, and sparks them into one action or another. The way that people receive information through their senses affects them emotionally is important, because much of people’s behavior is emotionally based and something they do not actively think about, at least consciously. People cannot override their reflexive responses. These responses take place so fast that they are done before people even know they have had them. Rational responses are much easier to assess and modify.

It is hard to overstate the importance of emotion. People’s emotional state influences how they live their lives and do (or not do) things that they believe are important. Emotions strongly control life experiences and places have an emotional influence. Places do not control emotions, but they do influence them (Russell & Snodgrass, 1987).

The different sensory experiences that people have at any one time completely intertwine and combine to create one common mood or impression. Seeing fields of greens and blues in the daylight, smelling wildflowers, feeling the texture of grasses underfoot and the temperature of the warm spring air, and hearing birds sing together create the experience of a relaxing walk in a spring meadow, and people respond emotionally to that walk.

If a place provides psychologically contradictory sensory experiences, feelings in that space will be determined by the relative balance of the conflicting elements, with more attention given to sensations received through a person’s dominant sense.
Although this section refers to physical spaces, a place encompasses a lot more than that. People tend to mirror the behavior of other people they see, which perpetuates place-based behaviors. For instance, when people see others, speaking quietly in a church, they behave in the same way.

Places also have behavior rules and rituals associated with them (Aarts & Dijksterhuis, 2003; Barker, 1968). Place design can encourage or discourage some of these behaviors. Corridors can be designed with recesses into which people who meet each other unexpectedly can duck and chat if this sort of behavior is desirable, or without such spaces if impromptu meetings are undesirable. Spaces are filled with people, each of whom has his or her own objectives and who can do a range of things that they personally find desirable.

In cubicles at work, people can display images that lift their spirits and wear a perfume that enhances their mood (if pictures and perfumes are allowed), but if their boss sets unreasonable objectives, the things they see and smell can only improve their day, not make it perfect.

People score higher on tests when they are in the same mood they were in when they learned the material being tested (because they smell the same scent, for example) or when they take them in the same room in which they learned the material. Unconsciously, people use clues in the physical environment, things they were looking at, etc., when they are being taught something to help them remember the material being tested or to at least put them in the same mood (which helps people to remember) (Eich, 1995; Wise & Hazzard, 2000).

This attraction to spaces that offer refuge and prospect makes good sense evolutionarily. It explains why people like to live in sheltered spots on the edges of parks, golf courses, and lakes. Having a connection with a brighter and more expansive surrounding area also explains why people like to be able to open the windows. Although both men and women enjoy a setting with prospect and refuge, women prefer a layout with a little more refuge than prospect and men prefer more prospect than refuge.

People also like patterns on wallpapers and cubicile walls not to be too complicated (Rodemann, 1999).

Not everyone’s sense organs works in the same way. Some people are color blind and others have distorted senses of smell, touch, or hearing. Since everyone’s sensory net is a little different, everyone’s input from a place is a little different.

Each person in a space processes the available information they perceive differently. How people interpret what they sense is determined by what their life has taught them is important, interesting, useful, and desirable.

The smell of pine may be delightful for one person now, just as it was when she smelled it at her family’s summer cottage in the Maine woods. Someone else might feel that same pine scent is awful because the scary basement of his elementary school used to smell of pine cleaning products.

Sensory histories should guide how people design spaces, and whenever people create a space for a single person or a small group (no bigger than four people), their sensory histories should be recognized.

Multiple colors, scents, sounds, and textures can be used for any purpose. Designers should also keep the placebo effect in mind. At times, people have a certain response to a space, because that is the reaction that they want to have or believe they are supposed to have. The placebo effect is real and powerful. Offices painted the most energizing colors (according to color research) may be construed as relaxing by their users. In turn, they will be relaxing if the owners truly believe that they are.

There is no real way to counter a design-related placebo effect. Each person’s senses makes a particular sort of contribution to their experience of a place (Morrin & Chebat, 2005). Some sensory inputs have a stronger influence on how people analyze information that is being presented at the same time they have that sensory experience (our cognitive response), and other sensory inputs have a greater effect on individual’s emotional response to a place or object. This emotional effect is unrelated to dominant senses.

People’s dominant sense is the quickest way to shape their general mood; the emotional response here relates to how people proceed with whatever they are doing when they have that sensory experience. Most of the research that has been done to differentiate among the various types of influences of different sensory experiences has taken place in stores, because retailers have a particular interest in making sure that consumers are in the right frame of mind to purchase the products that they offer. Scents and tastes have strong emotional effects on people. Smells can help with cognitive and evaluative tasks, but scents people encounter while shopping, for example, primarily affect them emotionally. Specific scents can have a variety of influences on people, but smells also trigger associated memories, and memories have an emotional component.

So people can have enhanced information-processing capabilities after inhaling a particular scent and simultaneously be in a terrible mood because a smell reminds someone of a cousin they never really liked.

Smells that people encounter during some sort of negative experience are quickly, and indelibly, stored in their memory banks as scents to avoid in the future. Tastes influence people psychologically through their links to smell. Sound has a biological influence on people. Individual’s heartbeat and respiration synchronize with the rhythms around them, and those physiological responses have a direct influence on attitudes and behaviors. When people’s hearts beat faster, for whatever reason, they feel energized, for example. People have cultural associations to particular familiar musical forms and also find personal meaning in songs or genres of music. Music influences both the emotions and the behaviors of customers that hear it in stores, for example, and has its largest effect when people purchase items that they don’t think about a lot, or items they do not have much of an emotional attachment to; household cleaning products fall into this category.

What people feel with their skin affects how they perform particular tasks. The temperatures of temperature are basically mechanical, and texture influences people to a greater or less degree, depending on the way that they encounter a space. If people do not have the opportunity to really enter a place, its textures will not affect them at all, unless they impact people’s visual response to a place.

What people actually touch influences them at an instinctual level. Their emotional and cognitive responses are affected by things that they feel. Visual information primarily influences how people analyze things around them. What people see affects how they interpret the information that is presented to them about product features, but also their energy levels while they do so, as well as other additional responses.

Reactions to visual information are strongly linked to the culture of the viewer. The Western world places a great deal of emphasis on visual experiences, but in other parts of the world, more equal attention is given to other types of sensory experience.

The effects of people’s sensory experiences are additive, which means that people need to total up the various influences of each of our individual sensations to determine their final psychological state. It is impossible to link an individual experience with a particular numeric score, but people can think in terms of sensations that affect them psychologically in one way or another, or that have no influence at all. Individuals’ ultimate mental state depends on the relative balance of the influences tugging them in different directions. When people get conflicting information from various senses, the inputs that come through the dominant sense carry more weight emotionally.

Environments with sensory experiences that are consistent (nautical sorts of smells in a place decorated with nautical sorts of styles) are viewed more positively by those who experience them, and, for example, people purchase more in those sorts of places (they are particularly likely to influence impulse purchases). The purpose for which people intend to use a space should determine the mix of sensory experiences available in it.
The sense of smell

Smell is, in some ways, the most basic sense (Vroon, 1997). It is also the most idiosyncratic. It is difficult for scientists to establish clear patterns in how people respond to smells, because individuals differ in their scent memories. Scent memories are memory links between scents and particular types of experiences.

However, some associations between smells and mental processes have become more clear. Human beings process smells and emotions in the same part of their brains. That is why smells have such a powerful influence on people’s moods. Just a few molecules of air scented with emotionally laden scents can create strong emotional experiences through powerful flashbacks. One whiff of the lavender soap your grandmother used can transport a person to nostalgia heaven, if she enjoyed being around her grandmother.

No other sense influences people in such a basic way, so smell is a good place for people to begin their sensory explorations. As mentioned earlier, smells can be used to put people in a good (or bad) mood, change the way that they think about their lives, and alter the way their brains work to solve problems. Many of the influences of smell on experience are difficult to understand. For example, the smell of jasmine does not influence the speed at which people smelling it fall asleep, but it does affect the quality of their sleep and their mental performance the afternoon of the day after a night-time whiff.

Another interesting effect that is difficult to explain is that men smelling grapefruit think women they are looking at are approximately six years younger than they actually are (Basaraba, 2013)

Sense of smell varies by ethnic group as well as by gender. In general, women have a better sense of smell than men. Korean Americans have a particularly acute sense of smell, and the Japanese have a relatively poor sense of smell. (Doty, 1986)

Caucasians and African-Americans have intermediate senses of smell. Our sense of smell usually functions best between 30 and 50 years old (Doty, 1986 Gender, culture, and age are considerations when scent-scaping a place. Some research that has been done with smells focused on whether smells are pleasant or unpleasant, and other research has investigated more specific influences of individual scents, such as lemon or peppermint, on humans.

When people start to smell generally pleasant scents, such as baby powder or flowers, it tends to lift their moods. In this uplifted state, people become more interested in resolving disagreements through peaceful means than when they encounter unpleasant smells. When people smell good, others link them with good things, and when the same people smell bad, others, understandably associate them with bad things. Research has indicated that gamblers spend more money when a casino is pleasantly scented, compared to when it is not scented at all. When people are in a good mood, they are more mentally nimble and capable. (Basaraba, 2013).

When people smell a pleasant scent, life seems to proceed more agreeably. People are more confident, and their evaluations of the amount of pain that they feel decreases. When people smell a pleasant scent, they are apt to linger in a space, which can benefit retailers. Men are likely to remain in a section of a store with a spicy smell, which women may not necessarily do, but both sexes prolong visits to spaces with fruity smells.

A scented space will feel larger than an unscented space, and even if people do not consciously perceive a scent, a scented space seems cleaner, fresher, and brighter. When people smell pleasant things and are in a good mood, they are more likely to recall pleasant experiences that they have had, and the reverse is true when they are in a bad mood.

When people smell unpleasant scents, they generally take action to get rid of that bad smell. Getting rid of it usually has benefits beyond just making the air smell better. People may clean up whatever is creating the odor (whether it is a kitchen or a baby) and that gets rid of germs, or they will take other steps to eliminate the problem (they will find and fix that gas leak). Unpleasant smells motivate people to leave spaces.

Scientific research has determined that certain smells are particularly useful for specific purposes. This scientific research has been done in carefully conducted experiments with many sorts of people. Researchers have identified the following general “scent effects” and recommendations:

- **Doing mental tasks**: Lemon and jasmine improve performance on mental tasks in general. Lavender has been linked to improved performance on mathematical tasks. When people are working on a mentally complicated project, lemon can improve their performance. People smelling lemon are more likely to report that they are in better health than even people smelling other pleasant scents. Cleaning a doctor’s office with lemon-scented cleaning supplies can influence doctor-patient discussions.
- **Working at physical tasks**: Peppermint improves performance of physical tasks. Scentsing fitness areas with peppermint makes the same workouts seem easier than when the scent is not present. Peppermint makes a physical task seem less frustrating. When people smell peppermint while performing a physical task, they not only feel less tired and frustrated, but they also believe that they are performing better and with more vigor. Smelling peppermint also makes whatever a person is doing seem less rushed and like less of a hassle.
- **Completing tedious mental and physical tasks**: Smelling peppermint encourages people to complete tedious activities. People who have a mountain of widgets to count should break out the peppermint; they’ll do a better job with the count.
- **Improving mood**: Lemon and cinnamon-vanilla are particularly strongly associated with improved moods, although pleasant scents are in general linked to good moods.
- **Reducing tension**: Smelling lavender or cedar reduces tension.
- **Reducing anxiety**: Smelling oranges reduces anxiety levels. A study in a dentist’s office revealed that when the space was scented with orange the patients were calmer, and this effect was particularly strong for women. Vanilla also reduces anxiety in people. Floral scents in general (particularly jasmine and hyacinth lessen anxiety. The smell of burning frankincense also reduces anxiety and depression. Research by Hirsch (2003) at the Sense of Smell Institute in Chicago has also shown that anxiety is reduced by the smell of lime, marjoram, rose, lavender, bergamot, and cypress. A simple application: scenting the air in rooms where people will be interviewed increases the odds that job applicants will effectively present relevant information about themselves and their experiences.
- **Relaxing**: Many odors have been found to be relaxing. Scents of lavender, rose, almond, cedar/pine, bergamot, chamomile, marjoram, heliotrope, sandalwood, vanilla, muguet, ylang-ylang, and spiced apple have proven to calm people down. Spiced apple has been shown to reduce the blood pressure of healthy volunteers by three to five points. Lavender helps to sedate the central nervous system. Several firms now manufacture a lavender scent that can be spritzed onto bed sheets. If people have trouble falling asleep, this might be the solution. A bouquet of dried lavender will also help lull people to sleep. Hirsch (2003) has shown that nutmeg smells are relaxing. Some of these relaxing scents can commonly be found in gardens or outdoors, which can make a room with access to a garden breeze a particularly relaxing space at the end of a busy day.
- **Improving sleep**: People who smell jasmine while they sleep will sleep more soundly and wake up in a better state to take on the world’s challenges. Jasmine improves the quality, not the quantity of sleep. When people smell jasmine while they are sleeping, they wake up feeling less anxious and perform cognitive tasks better. The benefits of smelling jasmine while sleeping extend throughout
the day. People are more alert the afternoon after smelling jasmine during a night time sleep, as mentioned earlier.

- **Energizing:** Just as many scents have been found to be relaxing, a slew of smells have also been found to be energizing, including peppermint, lemon, jasmine, basil, cloves, neroli, patchouli, grapefruit, and rosemary. These smells are all considered pleasant. Almost all unpleasant smells are energizing, but most people would not make their house smell like a sulfur mine in order to get the kids off to school on time. The smell of brewing coffee really is invigorating as well.

### The use of color

When speaking about color, people generally use words that describe its hue. People categorize something they encounter as blue or maybe bluish-green or maybe even as a greener sort of bluish green, but hue is just one of the words that can describe color.

Color also can be described using the terms *saturation* and *brightness*. While hue is the wavelength of a light beam, saturation is how pure a color is, and brightness refers to how light or dark a color is. While brightness runs from very bright, with lots of white, through colors that are darker; saturation measures the apparent purity of a color and varies from most to least. More saturated shades are truest to the stereotyped image of that color. Less saturated versions appear muddier. Saturation and brightness can be difficult to distinguish. Fire engine red is a more saturated form of red, while maroon is a less saturated version, for example. Kelly green is a more saturated green, while military fatigue is a less saturated green. Navy blue is a darker blue, and baby blue is a lighter blue.

Scientific research has shown that saturation and brightness have a big influence on how people respond to a color emotionally (Valdez & Mehrabian, 1994). Colors that are brighter and more saturated are more pleasurable; as brightness and saturation increase, so does pleasure. Brighter, more saturated colors improve people’s moods. The pleasure people experience being around a color is influenced more by its brightness than by its saturation. People feel energized when they are in a space with more saturated colors.

Being around brighter colors does not necessarily energize people, unless the colors are very bright. Energy level increases with color saturation and decreases with increases in brightness, except for very bright colors, which are very energizing. Warm, saturated, not very bright colors are exciting to be around, while cool, not very saturated, brighter colors are not very exciting. For example, Kelly green revs peoples up and delicate baby blue calm people down.

Cool colors are often used in spaces where people want to be calm and warm colors where people need to have more energy; and the scientific evidence would support these color choices. Cool colors, as generally used in calming spaces, are brighter but not very saturated, and the scientific research indicates that places painted these colors are relaxing and pleasant. Warmer or darker colors, as generally used in energizing spaces, are more saturated and less bright, which leads to higher energy levels. However, these spaces are less pleasant.

### Patterns

Colors are not just used in adjoining blocks; they are also used intertwined into patterns. The patterns people see also influence them psychologically. Seeing a complicated or novel pattern is exciting, and the more patterns present (of any level of complexity or novelty) in a space, the more excited people become. Generally, people prefer simpler patterns around them, in wallpapers and upholstery, for example.

Smaller scale patterns are generally preferred to larger scale ones. Smaller patterns make small spaces seem larger. People find it soothing to look at certain patterns that are mathematically similar to ones that occur in nature. These patterns are called natural fractals, and they are present in a field of grass that is being gently rippled by the wind, clouds moving across the sky, or a winding stream. Natural fractal patterns are also found in views out over natural scenes, in the patterns made by flames, and in fish tank ripples. Coincidentally, these patterns are often found in the patterns that dappled light recently discussed; forming nicely on the ground.

- **Increasing alertness:** A whiff of peppermint makes people more alert, fast.
- **Improving creativity:** Any smell that puts people in a good mood is apt to increase their innovativeness, but a cinnamon-vanilla smell has specifically been linked to improved creativity.
- **Enhancing memory:** Rosemary improves memory, particularly long-term memory. Scent spaces where people consult tax accountants with rosemary. The smell will help people remember the reasons they saved some of those receipts.
- **Feeling healthier:** When people smell baby powder, they tend to have few complaints about their health.
The calm mental state induced by these sorts of patterns has been found to spur creative, high quality mental activity. The regularity in natural fractal patterns (although that regularity may not be immediately apparent to the untrained eye) makes it easy to spot upcoming trouble. Natural fractal patterns can be hard to identify, but designers indicate when these patterns have been used.

### Color and perception of room sizes/orientations

Colors not only move people toward or away from particular places, but they also change their perceptions of room shape. Practitioners have known for some time that walls that are painted warmer or darker colors seem closer than they actually are, while walls painted cooler or lighter colors (or neutral shades) seem farther away than they really are. Employing this knowledge can change perceptions of uncomfortably shaped rooms.

Scientific research has confirmed that colors’ space distorting effects are reliable and valid. Ceilings that are too low can be made to seem farther away if they are painted a light color, and any surface that is too close is mentally pushed back if it is painted a cool, light, unsaturated color. Alternatively, walls can seem moved in if they are painted more intense colors that are warm and saturated. Painting different walls of a room in different colors, two warmer and two cooler colors, for example, can dramatically change the physical sensation of being in a space.

Contrasts between colors used on objects and walls in a space also have a big influence on how large a space feels. When a piece of furniture’s color is in dramatic contrast to the background (generally wall) color, that contrast makes the furniture seem closer and bigger.

### Colors and appetite

Restaurateurs know that warm colors make people hungry. They utilize plenty of reds, yellows, and oranges in spaces where they want to encourage people to eat. These colors (when of appropriate saturation and brightness) make people feel energized, and that energy also produces hunger. Warm tones in a dining room will make diners more boisterous and also increase their caloric intake during meals. Too many highly saturated and moderately bright colors in a space can make people feel too energized to eat, or do anything else. No room can be decorated entirely in energizing colors. Blue plates and lights have been found to curb appetites.

Lighting is also a factor. Under warmer lights, people tend to feel more relaxed. Under cooler lights, people feel more alert. Under warm white light, people take more risks, perform better on tests of short-term memory and problem-solving skills than when in cool white light or in artificial daylight. In addition, people prefer to resolve disputes with other people by collaborating with them and are less interested in avoiding these socially difficult situations, and are more likely to get into a better mood (particularly females).

Under cool white light, people do not recall novel material that they have stored in long-term memory as well as under warmer light, experience more stress than when they are in full-spectrum artificial light, and are more likely to get into a better mood (if they are male). Light and color work together to influence behavior. When people are in a place with warm colors and lots of light, they focus on the space they are in and are more active physically. When people are in a space with cooler colors and lower light levels, they focus on their own thoughts and reduce their level of physical activity, so they concentrate better on a mental task.

Lighting levels and the color of light work together to influence people’s mental state. When people are under warmer light at a relatively low level (150 lux), they feel more calm and awake than if they experience the same warm-colored light at 1,500 lux. People stay in a good mood longer when they are in a relatively dark (300 lux) and cool colored light or at a higher lighting level (1,500 lux) and warmer-colored light. Cool lights at lower intensity levels are more restful than the same lights at higher intensity levels.

Daylight’s light cycles help people to regulate their circadian rhythms, and that keeps them in a good mood and improves how comfortable they feel, both mentally and physically. In office environments, daylight has been shown to have these effects while also improving job performance, job satisfaction, and intention to remain employed at the same place. As discussed at the beginning of the course, people in hospital rooms with more daylight need less pain medicine after surgery than patients in rooms without as much daylight.

Interestingly, the full-spectrum fluorescent light bulbs currently sold do not provide the benefits that daylight does. When compared to standard fluorescent bulbs, full-spectrum bulbs do not enhance psychological or physical comfort.

### Restorative environments

People who spend hours every day solving mental problems, as most modern knowledge workers do, become cognitively exhausted; they deplete their stocks of mental energy. Cognitive exhaustion spreads insidiously from its root cause and degrades performance on all mental tasks, whether they involve processing information, solving a problem, or determining appropriate behavior in a particular circumstance. People become distracted, irritable, and impulsive when mentally exhausted.

Running down this stock of energy is different than being in a stressful situation. When a stressor is removed, the stressful situation is
environment is often defined as: An environment that promotes recovery from stress, mental fatigue or other psychologically or physiologically adverse conditions.

Research on restorative environments has primarily been guided by two theoretical explanations, each with its own interpretation of the construct of restoration. First, stress recovery theory (Ulrich, 1983; Ulrich et al., 1991) is concerned with restoration from the stress that occurs when an individual is confronted with a situation that is perceived as demanding or threatening to well-being. Secondly, attention restoration theory (Kaplan, 1995; Kaplan & Kaplan, 1989) focuses on the restoration from attentional fatigue that occurs after prolonged engagement in mentally fatiguing tasks.

Attention Restoration Theory (ART) provides analysis of the types of experiences that may lead to recovery from fatigue. Empirical research using ART has explored restorative experiences in various natural and built settings, assessing their restorativeness on a Perceived Restorativeness Scale with scale items for being away, extent, fascination, and compatibility. Each of these items will be discussed further. The findings of this large body of research collectively report higher perceived restorativeness of natural settings over other built settings (see summaries in Kaplan & Kaplan, 1989, Kaplan et al., 1998 and Hartig & Staats, 2003).

The research primarily explored how much more restorative a particular environment (e.g., nature) is over other (e.g., built) environments, and which of the four components are associated most with restorative experiences. In particular, the components, being away and compatibility were stronger predictors of restorative experiences than the others. While most studies in this research domain identify the benefits of viewing nature, primarily from indoors, the social and affective dimensions of the restorative experience in natural and urban outdoor settings have also been explored (Staats, et al., 2003; Staats & Hartig, 2004).

Social interaction in urban settings increased perceived restoration while social interaction in natural settings enhanced the feeling of safety; deeper restoration was achieved when alone in nature. Other research has explored the link between chosen leisure activities and restorative experiences, finding lifespan differences in what is perceived as truly restorative (Scopelliti & Giuliani, 2004).

The studies conducted in residential environments have mostly focused on the content of views from windows and outcomes, such as attention. Directed attention capacity was found to be higher among students with views to nature outside their dormitories (Tennessee & Cimprich, 1995), and higher levels of well-being were associated with natural views from windows of apartment dwellers in a low-rise apartment community (Kaplan, 2001).

The Kaplans have identified four features that characterize restorative places, with more restorative spaces having higher levels of each. The first feature is the feeling of being away. A restorative spot seems a long way mentally from an exhausting place. A glance away and out a window, at a painting, into a field with scattered trees, or into a fish tank can take us of a mentally exhausting situation. An engrossing novel does the same thing.

Secondly, restorative places are fascinating. That means that it is pleasurable and effortless for people to think about them. Thirdly, restorative spaces are easy for people to visit because they can anticipate what will happen in them and the things people experience in them are somehow interrelated.

Fundamentally, restorative places are interesting worlds people can explore without concern. They don’t need to be large. As many researchers have noted, English country gardens are restorative even when they are small, because these spaces include many different plants and elements on which people can focus their attention. Finally, restorative spaces allow people to easily do whatever they are trying to do. Signs people need to navigate restorative spaces use words and symbols they understand, for example.

Restorative spaces are fast-acting. They begin to affect people within three to five minutes, at the most. Additionally, restorative spaces can take countless forms. A restorative space is always a place in which people feel safe and where they are not doing the same sorts of things that drained their stock of mental energy to begin with. They generally include positive distractions and often provide views of something green and natural.

Green spaces are not the only ones that can be restorative. Museums can also be restorative, for example. It is important that any scenes viewed are pleasant. The most fundamental feature of a restorative place is that people have to feel as if they can move into those spaces and have a wonderful experience. An image of a dark forest or a dense thicket of trees does not hold as much promise of pleasantness as a sunlit, savanna-like meadow with scattered trees.

People can create restorative places by designing a pleasantly distracting and easily used space. It might be a quiet space with a fish tank and a comfortable chair, a collection of potted plants in a window greenhouse, or a view out over nearby nature. The types of outdoor scenes that people find most restorative are not purely natural, however (Kaplan, 1995). The most desirable sorts of restorative spaces to look at and walk through defined pathways through the viewed space and also some signs of human tending. People relish seeing large, gently rolling lawns, a small clump of trees in the middle of that lawn, and a rim of trees surrounding the meadow grasses. The view of those lawns can be through a window or a video. Video images can be particularly important in spaces that can’t have natural access, for example, heavily shielded X-ray areas in hospitals.

Everyone has a restoration cycle, and the cycles of people gathered together in a restorative spot can be coordinated or not, depending on when they all got to the restorative space, how depleted their energy stocks were when they arrived, and how long they take to “recharge.” Such differences between people in the same space influence what they are able to accomplish together socially and cognitively.

Stress has little to do with restoration, but since the two are often confused, a brief digression to discuss stress seems in order. People experience stress when something happening in the space around them diverts them from what they would prefer to be doing (Evans & Cohen, 1987).

This diversion from what people plan to do can send them into mental overload. People find themselves compelled to think about whatever they are trying to do and also compelled to try to understand the stressful situation. The stressful distracter can be an unpredictable series of noises, people talking nearby in a language they understand, or light levels that are too high or low. When something is unusual, even if not uncomfortable, people focus attention on it and that attention, if it causes them to not be able to fully focus on what we are trying to do, causes stress. A warm room is stressful, if people don’t expect it, for example. Having personal space violated also causes stress, whether it is just one person standing too close or a crowd. What is stressful not only varies with time but also from person to person. One person might find a particular temperature or amount of light (or shadow) stressful, while another might find that same sensory experience perfect.

Another recent theoretical approach to restoration starts from the observation that people gain purpose and meaning in life by feeling that they belong to the natural world. Based on this, it is suggested that feeling emotionally connected to nature is an important mechanism underlying beneficial effects of nature. In a series of experiments, Mayer, Frantz, Bruehlman-Sencal, and Dolliver (2009) established that the positive effects of exposure to nature on positive affect and the ability to reflect on an unresolved life-problem could partially be explained by increases in the first empirical evidence for the supposition that an experiential sense of belonging to the natural world plays a role in restorative environment experiences, besides more unconscious, automatic processes.
Micro-restorative experiences are considered to be those that result from brief sensory contact with nature, as through a window, in a book, on television, or in a painting (Kaplan, 2001). Accumulated over time, such micro-restorative experiences may significantly improve people’s sense of well-being and provide a buffer against the negative impacts of stressful events. A survey on nature-based coping strategies of elementary school teachers suggests that micro-restorative experiences are especially helpful when stress levels are low (Gulwadi, 2006). Teachers who frequently suffered from vocational stress (having to teach in overcrowded classrooms, poor working conditions) preferred to go out and be in nature (such as taking a walk in the woods), whereas those with low levels of vocational stress found sufficient merit in brief sensory interactions with nearby nature, such as listening to a bird song.

Consistent with these findings, increasing evidence suggests that exposure to nature may not only have restorative, but also instorative effects in individuals who are not stressed or fatigued (Hartig, 2007). Recent studies among healthy, unstressed individuals have shown that exposure to nature may improve people’s mood states and ability to reflect (Mayer et al., 2009), and increase subjective ‘vitality’ or energy levels (Ryan et al., 2010).

Restorative environments and evidence-based design in the nursing field

Attempts to design buildings that promote human well-being and behavior have been undertaken for many years (Dempsey, 1914). Three modern approaches to this are:

- **Social design**: designing buildings to best serve human needs and wants.
- **Biophilic design**: the integration of natural shapes, forms, and processes in architecture.
- **Evidence-based design**: designing buildings based on the best available evidence on the effectiveness of design measures.

Findings from restorative environments research are increasingly being used to guide the design and management of natural and built environments. Given its emphasis on recovery, restorative design measures appear to be most suited for contexts in which stress and attentional fatigue are relatively acute and where such places hamper healing or developmental processes. This is probably one of the reasons that restorative elements have become an essential part of so-called evidence-based design (EBD) of healthcare settings (Ulrich et al., 2008).

One challenge for applying restorative design measures involves the optimal amount of exposure to nature. As discussed above, the available evidence suggests that one does not need to be deeply immersed in a vast natural environment to experience restoration. On the other hand, there are indications that ‘more is better’, especially in urban areas with little green space (Nordh, Hartig, Hägerhäll, & Fry, 2009).

However, for some natural elements, such as water, there appears to be an upper limit to the amount that is effective for restoration (White et al., 2010). Another question relevant to nature-based interventions is which modality of nature needs to be implemented. Research shows that exposure not only to actual nature, but also to visual simulations (i.e. videos, paintings) and to olfactory (i.e. smells) or auditory components can have restorative effects (Eisenberger et al., 2010).

Nursing: Evidence-based design

According to this approach, all building design should consider the best available evidence on the effectiveness of each design decision. Proponents of this approach argue that designing by intuition, fashion, or solely on the basis of theory, precedent, or aesthetics is less likely to produce a positively habitable built setting than if designed solidly based on research.

Research by environmental psychologists has documented the positive impact of a range of design characteristics, such as reduced noise, enhanced lighting and ventilation, better ergonomic designs, supportive workplaces, the provision of personal control and improved layouts on well-being and functioning of building users (Gifford, 2007; Sommer, 1983; Ulrich, Quan, Zimring, Joseph, & Choudhary, 2004). Especially in healthcare architecture, these findings are increasingly used in an effort to improve patient and staff well-being, patient healing, stress reduction, and safety.

HOW TO INCORPORATE ENVIRONMENTAL PSYCHOLOGY IN VARIOUS PROFESSIONS AND APPROACHES

Humanistic therapy

The five basic principles of humanistic psychology are:

1. Human beings, as human, supersede the sum of their parts. They cannot be reduced to components.
2. Human beings have their existence in a uniquely human context, as well as in a cosmic ecology.
3. Human beings are aware and are aware of being aware – i.e., they are conscious. Human consciousness always includes an awareness of oneself in the context of other people.
4. Human beings have some choice and, with that, responsibility.
5. Human beings are intentional, aim at goals, are aware that they cause future events, and seek meaning, value, and creativity.

While humanistic psychology is a specific division within the American Psychological Association (APA), humanistic psychology is not so much a discipline within psychology as a perspective on the human condition that informs psychological research and practice.

Culture plays a large role in the humanistic perspective. Therefore, understanding the cultural factors as related to environmental psychology is important for professionals working with clients utilizing a humanistic approach.

When people design places without considering cultural issues of importance to the people who will use those places, spaces that are culturally unacceptable and unusable can result. For example, hospitals that have been designed by North Americans ignoring national cultures have often not considered the large number of visitors/companions that a patient may have, and the resulting crowds of people can make emergency transportation of patients through hallways impossible and procedure waiting rooms very difficult places to be or use. Hospitals that have been built on a high-tech model without concern for local healing practices also forego the potential effects (even if they are only placebo) that come from recognizing a range of types of medical treatments.

Culture specific forms of architecture continue to be used not only because they are consistent with the local national culture and its values, but also because they help people to maintain their identities as individuals and members of particular groups. In addition, familiarity with a particular sort of architectural form increases its attractiveness and desirability.
Differences in culture can lead to different responses to the same spaces. National cultures are mixing more throughout the world, and people are becoming more aware of how their national culture is distinct from others. Recognizing and responding to place-relevant national cultural differences in the design of homes, schools, hospitals, stores, and offices is thus becoming more important as well as more difficult.

**Comfort**

Spaces and environments are comforting when they allow people to control their experiences in them, reflect people’s concern for quality of life and roles they play, and indicate their orientation to the future and distinguishing relative status.

Control of their environment is crucial to people’s physical and mental well-being. When people feel in control, they feel much less stress, and make changes to their surroundings to keep them mentally and physically comfortable. People without control often give up and they don’t just abandon efforts to influence the environment. Someone who is always too hot or too cold at work will stop trying to solve a difficult problem before others, for example.

People can control their environments by regulating their personal space, developing territories that belong to them, and preventing others from intruding on their privacy.

**Communication**

People need to communicate with others, but on their own terms. Territories are a communication tool. Territories are spaces to which the owner controls access. They are places where individuals and groups feel that they can manage their own lives, socialize with others on their own terms, and symbolically communicate their images of themselves.

All national cultures value territories, but they can define them differently. While the French see public spaces as freely accessible to all, for example, Germans see spaces such as beaches as places that can become the “property” of particular groups who claim them for defined periods. German groups also claim larger spaces than groups from other countries. Groups can define even home territories differently. Americans, for example, think of the sidewalk and curb in front of their home as their territory, while Greeks do not, and each group’s concern with property maintenance stopped at the edge of their perceived territory.

Different cultures have different preferred mental states, and place design can lead to particular mood states. Territories should, as appropriate, reflect those desired states. Asians typically feel that the ideal mood is a sort of peaceful Zen bliss. They value being relaxed (Tsai, 2007). Americans, on the other hand, think that the ideal state is happy and excited or energized (Tsai, 2007).

Such differences in ideal mental state mean that these different groups are interested in creating different types of spaces in their homes, workplaces, schools, healthcare facilities, and public places. In some cultures, communication is more direct, and in others it is more indirect. Indirect cultures rely more on nonverbal communication and the context of the situation to convey information than straightforward verbal declarations.

People from Asian cultures, such as Korea and Japan, and from Eastern Europe and Latin America tend to be more indirect in the way that they communicate. People from more individualistic cultures, such as the United States, tend to rely less on context and nonverbal communication to convey information and to speak more directly. In more indirect cultures, communications tend to become particularly oblique in situations in which it would be unpleasant to lose face, such as professional and other formal situations. In indirect cultures, communication is clearer and less veiled in non-work situations.

In informal spaces within the work environment, cultural concerns about avoiding discussion of difficult workplace issues may be weaker. Incorporating casual spaces into office buildings in indirect cultures is thus potentially useful.

**Applying environmental psychology in clinical practice**

Interestingly, it has been suggested that there are grounds to hypothesize that an integrative nature-assisted approach might be applicable in psychological treatment of anxiety disorders (Hartig et al., 2003; Ulrich et al., 1991), substance abuse (Grahn, 2005; Burns, 1998; Russel & Mehrabian, 1976), neurological recovery (Ottosson & Grahn, 2008; Grahn, 2007b; Holmström 2007), and as an integrated element in anger management programs (Kuo & Sullivan, 2001a; 2001b; Hartig et al., 2003; Hartig et al., 1991; Whall et al., 1997).

For example, that research has shown responses in terms of general parasympathetic activation, and reduction in levels of physiological arousal (De Kort et al., 2006; Hartig et al., 2003; Ulrich et al., 1991; Hartig et al., 1991) seems to imply an appropriate intervention for anxiety disorders and general strategies of anxiety management.

The incorporation of nature-assisted strategies within integrated programs of prevention, management, and rehabilitation of stress and stress-related disorders does seem to be well-founded, both in terms of supportive empirical data and clinical experience. Such a claim is made on the basis of many sources outlined in the above literature review, which indicate appropriate response in terms of stress reduction and relaxation, not to mention the inferring of stress restorative properties in cases of pathological states of depletion.

Stress intervention is applicable across the whole range of the mental health-promoting continuum. For example, processes of cognitive and affective restoration are equally applicable in terms of “micro-restorative” stress-buffering opportunities (Kaplan, 2001) as they are an integrated element in treatment of chronic stress-related disorders such as burnout/stress-related depression (Ottosson & Grahn, 2008; Grahn, 2005). Ulrich’s Theory of Supportive Gardens (as applied to both medical and psychological treatment settings), is founded on the basic premise that exposure to garden environments improve health outcomes, mainly because of their effectiveness as stress-regulating/restorative and stress-buffering resources (Ulrich, 1999).

**Clinical practice from an engagement approach**

Consider the following examples of how professionals might work from an engagement perspective. A counseling psychologist working as a consultant in a school might begin by asking questions that tap the negotiation, participation, and evaluation processes. Regarding negotiation, the counseling psychologist might use the following (or similar) questions:

- Does the client (whether child, teacher, administrator, or all of them) have the resources available to function in his or her given roles?
- How could the environment be more flexible; how could the client be more flexible?
- Are there ways to maximize the client’s strengths in this environment?

More specifically, when confronted with a disruptive classroom, a practitioner might explore participation by assessing access to physical resources such as books, amount of individual contact provided to students (determined in part by the teacher-student ratio), and level of group cohesion.

To address a child’s disruptive behaviors in a family environment, a practitioner could examine negotiation by determining the process by which household rules are established, the amount of flexibility in that process, and the extent to which a child has an age-appropriate role in modifying rules.

It is worth noting how burnout syndrome as a pathological manifestation of prolonged stress has been defined in terms of emotional resource depletion and the draining of psychological capital (Maslach et al., 2001; McMicheal et al., 2001). Opportunities...
for both regulation and restoration of emotional resources in natural settings would therefore be of relevance to burnout rehabilitation. At the heart of burnout syndrome lie the components of emotional exhaustion, a loss of ability to participate in emotionally-engaged interaction (depersonalization or cynicism) and a negative view of own competence (Maslach et al., 2001). If, as the literature indicates, exposure to nature elicits elevations in emotional and mood state, it seems reasonable to hypothesize as to the therapeutic implications of natural settings in terms of burnout recovery. Clinical research also has shown that interventions that work to build optimism help to prevent depression (Seligman et al., 1999). Therefore, it would be valuable to determine whether this hypothesis has any empirical fundament to build upon.

Clients suffering from affective disorders have participated in several group and activity-based, nature-assisted therapeutic treatments, with substantial positive psychological outcome as measured in terms of qualitative results based on interview and self-report methodology (Priest, 2007; Townsend, 2006; Reynolds, 2002).

**Holistic therapy**

Holistic therapy is based on psychosynthesis, a technique that addresses the physical, mental, spiritual, and emotional person as a whole. As a form of healing, holistic psychotherapy strives to address the symptoms of psychological and emotional distress that results from anxiety, depression, and other emotional issues. However, this method of therapy diverges from traditional psychotherapy in the method used to combat and correct these issues. Holistic therapy focuses not on the behaviors and thoughts that present from specific issues. Rather, this form of therapy concentrates its attention on the relationship people have with their world and how it is expressed through their sense of feeling, thinking, and being. This therapeutic approach is a considerable match with the potential use of nature to reduce stress and negativity.

There is considerable evidence that restorative effects of nature scenes are manifested within only three to five minutes as a combination of psychological/emotional and physiological changes. Concerning the first, psychological/emotional, many views of vegetation or garden-like features elevate levels of positive feelings (pleasantness, calm), and reduce negatively toned emotions such as fear, anger, and sadness.

Certain nature scenes effectively sustain interest and attention, and accordingly can serve as pleasant distractions that may diminish stressful thoughts. Regarding physiological manifestations of stress recovery, laboratory and clinical investigations have found that viewing nature settings can produce significant restoration within less than five minutes as indicated by positive changes, for instance, in blood pressure, heart activity, muscle tension, and brain electrical activity (Ulrich, 1981; Ulrich et al., 1991).

Of course, stress intervention is an area that is equally applicable to occupational (Stigsdotter & Grahn, 2004; Leather et al., 1998; Kaplan et al., 19882) and educational (Gulwaldi, 2006; Wells & Evans, 2003) settings, as it is clinical and health psychology. It is suggested that the evidence implies nature as context and strategy as applicable at the levels of primary, secondary, and tertiary stress interventions.

Occupational psychology, for example, might benefit from intentional use of nature-assisted strategies as integrated elements of stress management programs/positive psychological Human Resource Management tool etc. Several researchers have previously noted the relative absence references to the potential role of the natural environment in stress management programs for the workplace (Kaplan & Kaplan, 1989; Tyll, 1988). Applications in educational psychology also might include stress management programs for both teachers (Gulwaldi, 2006) and children.

Stress preventative applications at the level of public health have also been described in the above review (Neilsen & Hansen, 2006). On the basis of the evidence, clinical trends, and theoretical development in this area, one can only conclude that it would be in the interest of practicing psychologists to take note of the potential inherent in these findings.

Research results provided by Taylor and colleagues on children suffering from Attention Deficit Disorder (ADD) lend support to use of natural environments in the treatment of attentional disorders in children (Taylor et al., 2001). The implications here for educational psychological practices are obviously worth exploring. The potential for drawing on nature-assisted strategies for purposes of recovery of depleted cognitive resources is, of course, applicable across a wide range of clinical settings, from recovery from conditions such as burnout syndrome and stress-related fatigue to the need for “micro-restorative” (Kaplan, 2001) opportunities in situations of cognitive taxation (i.e., in the form of stress management techniques in jobs requiring high levels of executive functioning capacity). Improvements in cognitive functioning may also be applicable in terms of the improvement of life quality for individuals suffering from Alzheimer’s disease.

**Nursing & the healthcare field**

Roger Ulrich (2002) researched the influences of gardens and plants in hospitals, along with other healthcare settings. He suggested considerable health-related benefits that patients experience simply by looking at gardens and plants. Additionally, research has found other benefits to hospitals stemming from the use of gardens, such as lowering the costs of delivering healthcare and improving staff satisfaction.

The belief that plants and gardens benefit patients in healthcare environments is more than 1,000 years old, and appears prominently in Asian and Western cultures (Ulrich and Parsons, 1992). During the Middle Ages in Europe, for example:

- Monasteries created elaborate gardens to bring pleasant, soothing distraction to the ill (Gierlach-Spriggs et al., 1998).
- European and American hospitals in the 1800’s commonly contained gardens and plants as prominent features (Nightingale, 1860).
- Gardens became less prevalent in hospitals during the early decades of the 1900’s; however, as major advances in medical science caused hospital administrators and architects to concentrate on creating healthcare buildings that would reduce infection risk and serve as functionally efficient settings for new medical technology.
The strong emphasis on infection reduction, together with the priority given to functional efficiency, shaped the design of hundreds of major hospitals internationally that are now considered starkly institutional, unacceptably stressful, and unsuited to the emotional needs of patients, their families, and even healthcare staff (Ulrich, 1991; Horsburgh, 1995). Despite the intense stress often caused by illness, pain, and traumatic hospital experiences, little attention was given to creating environments that would calm patients or otherwise address emotional needs (Ulrich, 2001).

However, a growing awareness has developed in recent years in the healthcare community of the need to create functionally efficient and hygienic environments that also have pleasant, stress-reducing characteristics.

Healthcare occupations such as nursing are stressful because they often involve overload from work demands, lack of control or authority over decisions, and stress from rotating shifts (Ulrich, 1991). Workloads and pressures have mounted further, as healthcare providers everywhere have been forced to control or cut costs (Ulrich, 2002). These conditions have, in many locations, lowered lower job satisfaction, increased absenteeism and turnover, contributed to shortages of qualified personnel, increased providers’ operating costs, and eroded the quality of care that patients receive (Ulrich, 2002).

Such staff-related problems suggest major importance for the previously mentioned finding that healthcare staff use gardens for positive escape from workplace pressures and to recuperate from stress. Additionally, it should be emphasized that evidence has begun to appear showing that hospital gardens increase staff satisfaction with the workplace, and may help hospital administrators to hire and retain qualified personnel (Whitehouse et al., 2001; Sadler, 2001; Cooper-Marcus & Barnes, 1995, 1999).

Social work/human services

For those working in the field of social work and human services, the essence of environmental psychology is vital to daily functions. The interaction between people and their environment is at the heart of the purpose of assessment and providing services and assistance. From the counselor working at a domestic violence shelter, to the child welfare worker coordinating safety and services to children and their families, to the school social worker, environment is an important piece of the puzzle.

The environmental theory and ideas set forth by Moos (1991) describe in overview the basic elements and dimensions experienced in such professional roles. Moos believed that positive social and performance outcomes often result when some emphasis is placed on three major dimensions of environment: relationship, growth, and maintenance.

“Findings affirm the value of examining the interplay of relationship, personal growth, and system maintenance factors in identifying the consequences of varying social climates” (p. 36). For example, within schools, Moos (1991) found an increase in student morale when student involvement and supportive relationships with teachers and peers were present in task-oriented classes with specific academic goals in well-organized, clearly structured, and innovative classrooms.

Some positive psychological factors that can be easily linked to negotiation and communication with clients include flexibility, adaptive behavior, acceptance, resilience, and problem-solving appraisal (Snyder & Lopez, 2002). These attributes are all highly prevalent within the field of social work and human services.

For example, increased flexibility or adaptive qualities in people’s environments would result in a wider range of adjustments and accommodation. This, in turn, would lead to increased levels of engagement, as there would be more opportunities to match strengths to environmental resources. Similarly, people’s ability to recognize problems in the environment and to formulate solutions would increase the likelihood that adjustments could be made, thus increasing their engagement.

A scenario in child welfare services from an environmental psychology perspective:

When a child has been removed from the care of a parent because of an unsafe living environment or because the child has been exposed to abuse or neglect, the child is placed in an unfamiliar setting. While the first option is to place with a relative or non-relative the child is familiar with, the environment is different. Now consider that this child is being placed in a foster home or residential group care facility. The impact of the environment on the behavior of the child is tremendous.

Further, what often happens in child welfare is that in an attempt to have children’s personal belongings accompany them to their new temporary living arrangement, if there are no suitcases or duffle bags available, child protective investigators often utilizes garbage bags. What does that visual tell the children? In the eyes of a child, this act says that their belongings are garbage.

Even if there is trauma occurring in the home, children feel most comfortable in their own home and love their parents. So now, not only are children being moved from a familiar, comfortable environment into a strange new environment, they have been impacted by the way in which their personal items are handled. Additionally, in their new setting, their environment is impacted by not only the built environment, but those around them, such as the new caregiver and other children. Even further, it is impacted by the “structure” of the new placement and the existing ‘rules’ of the new family, staff, or program. Clearly, the use of environmental psychology by the counselor, social worker, therapist, and case
manager would benefit children in this situation in an attempt to minimize any further trauma.

Another interesting finding of research is that children living in communities at high risk for violence may be experiencing negative environmental factors at home or in the community that are more powerful behavioral influences than is a prevention program implemented solely at school. Consequently, to enhance resilience in children, the most effective intervention efforts are likely spread across different environmental contexts, influence multiple systems (i.e., home, school, and community efforts), and focus on the personal and environmental resources as proposed in the engagement model. Indeed, such an endeavor would require collaboration between practitioners or researchers and interdisciplinary teams (i.e., teachers, social workers, community organizations, hospitals, parents) to increase resilience across the domains in which the child functions.

Quality of Life

One concept often discussed in environmental psychology applies to ALL of the following, as well as other occupations: nursing, mental health, and social work. The approach in working with clients might be slightly different, though the foundation of the topic and the importance of the knowledge in this area can be utilized as another tool in the tool belt for those who need to understand and navigate within the interaction between people and their environment.

Quality of life (QoL) can be defined as a psychological construct indicating the extent to which important needs and values of people are fulfilled. The QoL measure reveals how well certain conditions meet the needs and values of people, and which QoL aspects should be improved to promote QoL. This is useful for assessing the efficiency of policy making and developing interventions.

Objective measures are measures based on technological instruments or expert evaluations of environmental characteristics.

QoL aspects are elements that significantly contribute to individual well-being, such as family, social relations, and freedom.

The focus on the measurement of quality of life in health research can be traced back to a historical transition from a predominantly curative focus of medical care in the first half of the 20th century to an emphasis on the side effects of medical treatments and the impact of disease and illness on physical, social, and emotional well-being (Musschenga, 1997).

This transition is exemplified in the following well-known definition of health offered by the World Health Organization (WHO) (1946): “Health is a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity” (p. 100). However, although this definition of health is widely cited as providing the impetus for the measurement of quality of life in health research, the term quality of life was initially not frequently used for the purposes of health outcomes measurement. Rather, the WHO’s definition was first followed by studies on the relationships between health, wellbeing, life satisfaction, and happiness. Until 1985, these terms were more frequently encountered in citations indexed in PubMed (National Center for Biotechnology Information, 2005) than was the term quality of life.

In PubMed (National Center for Biotechnology Information, 2005), most of the studies pertaining to life satisfaction or well-being were indexed under the medical subject heading (MeSH) “personal satisfaction,” which was defined in 1970 as “the individual’s experience of a sense of fulfillment of a need or want and the quality or state of being satisfied” (National Library of Medicine, 2005). The term life satisfaction was first used in a PubMed citation report pertaining to an influential publication by Neugarten, Havigurst, and Tobin (1961) entitled “The Measurement of Life Satisfaction,” which was published in the Journal of Gerontology. The authors specifically reported on the development of two instruments for the measurement of life satisfaction.

In contrast to the emergence of life satisfaction as a measurable concept in health research, the publications that referred to quality of life did not initially focus on measurement, but on ethical issues in health care. For example, the first publication in PubMed (National Center for Biotechnology Information, 2005) that included the words quality of life in the title was an editorial by Long (1960) entitled “On the Quantity and Quality of Life,” and the next citation pertained to a publication by Elkinton (1966) on “Medicine and the Quality of Life” published in the Annals of Internal Medicine. Both authors wrote about ethical decisions with respect to life-prolonging medical treatments.

In 1975, the term quality of life was introduced in PubMed as a medical subject heading with the following description: “[Quality of life is] a generic concept reflecting concern with the modification and enhancement of life attributes, e.g., physical, political, moral and social environment; the overall condition of a human life” (National Library of Medicine, 2005). Since then, the term quality of life has increasingly been used to refer to the measurement of broadly defined health outcomes.

After 1985, the frequency of the term quality of life occurring in the title or abstract of citations in PubMed exceeded that of the terms life satisfaction, wellbeing, or happiness, and the term quality of life has been used in more than 1 percent of all citations that were indexed in PubMed in 2004 and 2005. Thus, the use of the term quality of life to refer to the measurement of health outcomes is a fairly recent phenomenon in health research, and the initial focus that arose from the WHO definition of health was on the measurement of life satisfaction and well-being, and not, explicitly on the measurement of quality of life. The initial focus on life satisfaction and well-being continues to be reflected in the definitions of quality of life and health-related quality of life that are frequently encountered in health research publications.

Ferrans (2005) provided an overview of 15 definitions, of which 11 definitions explicitly include the terms well-being or life satisfaction. Even though the term quality of life is now widely used, considerable ambiguity exists about its meaning. In congruence with the previously mentioned description of the medical subject heading for quality of life, the term is now generally used to refer to a wide range of broadly defined health outcomes, such as symptoms, functional status, and perceived health status, as well as global appraisals of life satisfaction, happiness, and well-being pertaining to life as a whole (Bowling, 2005; Fayers & Machin, 2007; Ferrans, 2005; Grant & Dean, 2003; Padilla et al., 2004; Padilla & Grant, 1985; Spilker, 1996).

The hypothetical all-embracing nature of quality of life, and the resulting absence of clearly defined conceptual boundaries, is exemplified in the following quotation on quality of life research by Fayers and Machin (2007): “In this book we shall use the now well-established term quality of life, and its common abbreviation QoL. By that, we include general questions such as ‘How good is your overall quality of life?’ or ‘How do you rate your overall health?’ that represent global assessments; dimensions such as pain or fatigue; symptoms such as headaches or skin irritation; function, such as social and role functioning; issue such as body image or existential beliefs; and so on” (p. 3).

This quotation illustrates that quality of life in health research is now meant to refer to almost any aspect of a person’s life that may be affected by illness and healthcare interventions. However, the quotation also demonstrates the conceptual ambiguity with respect to the distinction between health outcomes, such as symptoms, functional status, and perceived health status, and global notions of quality of life such as those pertaining to life satisfaction and well-being.
Some researchers have developed conceptual models in an attempt to describe the relationships between quality of life and health (Ferrans, 2005; Vallerand & Payne, 2003). These models generally imply that the presence of disease results in symptoms that affect various so-called dimensions of quality of life, such as physical, psychological, and social functioning, which in turn contribute to overall quality of life (Burckhardt, 1985; Padilla & Grant, 1985; Patrick & Chiang, 2000; Wilson & Cleary, 1995).

The majority of models also account for the presence of a variety of psychological processes, such as coping, adaptation and personality, as well as social, cultural and environmental factors. For example, Wilson and Cleary (1995) described a model wherein physiological and psychological symptoms affect functional status, which affects general health perceptions and quality of life. Concepts relating to characteristics of the individual (i.e., motivation and values) and characteristics of the environment (i.e., social support) were also included in their model.

Other researchers have sought to provide empirical support for similar models of the relationship between health and quality of life. Based on a meta-analysis of studies that used instruments measuring various health status indicators, Smith, Avis, & Assmann (1999) showed that variation in quality of life was explained by variables pertaining to various life domains, which were affected by differences in physiological health status (i.e., the presence of disease) and symptom severity. Examples of life domains in their meta-analysis include variables that reflected psychological, social, or physical functioning.

Quality of life was represented by measures of life satisfaction, well-being, and single-item quality of life indicators. As a result, the model of the determinants of quality of life is based on the proposition that the life domains mediate the degree to which quality of life is explained by differences in symptom severity and physiological health status. Although mental health status and physical function were both fairly strongly correlated with life satisfaction, regression of quality of life on mental health, physical function, and social function revealed that mental health status was by far the most important explanatory variable. It was then concluded that health status is conceptually distinct from quality of life.

Similarly, Beckie and Hayduk (2004) used structural equation modeling to provide empirical support for modeling various health outcomes as causal variables that affect quality of life. In doing so, they clearly differentiated global notions of quality of life from particular health outcomes. Health outcomes, such as pain, and physical, social and emotional functioning, were measured using the Short-Form 36-item instrument (SF-36) (Ware, Snow, Kosinski, & Gandek, 1993).

Based on a study of 306 people who underwent coronary artery bypass graft surgery, researchers found that the measured health outcomes explained 67 percent of the variance in quality of life, and that the effects of general health perceptions ($\beta = 0.47$) and mental health ($\beta = 0.46$) were most substantial. The study concluded that “quality of life can be considered as a global personal assessment of a single dimension, which may be causally responsive to a variety of other distinct dimensions including dimensions such as health” (Beckie & Hayduk, 2004, p. 281).

The conceptual models by Smith et al. (1999) and Beckie and Hayduk (2004) are based on the premise that health and quality of life constitute distinct concepts, and that quality of life can be viewed as a one-dimensional concept that is, to some degree, influenced by health. This distinction between health and quality of life was emphatically argued by Michalos (2004) who stated that “there are good reasons for carefully distinguishing ideas of health and quality of life, and for not interpreting SF-36 and SIP [Sickness Illness Profile (Bergner, Bobbitt, Carter, & Gilson, 1981)] scores as measures of the quality of life” (p. 28).

The idea was further substantiated by findings in studies by Michalos and colleagues (Michalos, Hubley, Zumbo, & Hemingway, 2001; Michalos, Thommasen, Read, Anderson, & Zumbo, 2005; Michalos, Zumbo, & Hubley, 2000) who explicitly sought to examine the degree to which health status, and other variables, contributed to quality of life. They used single-item indicators, such as “How satisfied are you with your overall quality of life?” (Michalos et al., 2001, p. 247) for the measurement of quality of life.

The results indicated that quality of life was significantly correlated with five of the eight health outcomes measured by the SF-36 in a sample of 687 adults living in a rural district of British Columbia, Canada. In another study, regression analyses revealed that health status explained between 34 percent and 37 percent of the variance in the quality of life of older people living in British Columbia (Michalos et al., 2001). Mental health status explained most of the variance followed by general health status and physical functioning.

The conceptual models and empirical findings just discussed pertain to the relationship between health status and quality of life are based on a common sense understanding that many aspects of life may influence a person’s quality of life. In accordance with these models, the term global QOL means a person’s appraisal of life as a whole, as distinguished from the appraisal of particular life domains.

Campbell, Converse, and Rodgers (1976) provided inspirational research and defined life domains as “the areas of experience which have significance for all or most people and which may be assumed to contribute in some degree to the general quality of life experience” (p. 12). They suggested that life domains, such as the physical, psychological, and social domains of life, can be evaluated in terms of the degree of satisfaction with various conditions in life (they used the word ‘attributes’ to refer to these conditions) that have the potential to contribute to global QOL.

Consequently, the so-called life domains are often evaluated based on responses to questions about people’s satisfaction with specific conditions in their lives. In addition to questions about people’s satisfaction with conditions in life, many instruments for the measurement of quality of life also include questions about the perceived status of those conditions (Ferrans, 2005).

Although it is reasonable to suggest that individuals’ satisfaction with conditions in life is influenced by their perceived status of those conditions, their satisfaction with life domains may also be influenced by other factors such as different “personal characteristics” and various “standards of comparison” (Campbell et al., 1976). Different standards of comparison may, for example, be associated with differences in the personal values, expectations, aspirations, and needs of individuals (Ferrans, 2005). The degree of satisfaction cannot be synonymous to the perceived status of conditions in life. These two kinds of measures must therefore be represented as distinct variables in conceptual models of the relationships among global QoL, satisfaction with life domains, and health status.

The notion of conditions in life that may contribute to global QoL is represented in several other theories about quality of life. For example, in his theoretical scheme of “the four qualities of life,” Veenhoven (2000) used the terms livability of the environment to refer to conditions for living well that are external to the person (i.e., social and environmental resources) and life-ability of the person to refer to conditions that are internal to the person (i.e., physical and mental health status). He argued that both external and internal conditions contribute to what he referred to as “the subjective appreciation of life,” which he defined as “the quality of life in the eye of the beholder” (p. 7).

Nordenfelt (1993) similarly distinguished between external and inner welfare to refer to contributing conditions for quality of life. In his philosophical analysis of the relationships among quality of life, health, and happiness, “external welfare” referred to those “phenomena which surround us and continuously affect us” (p. 35), and “inner welfare” referred to “that combination of inner properties which lead to or positively affect our well-being” (p. 37).
Poortinga et al. (2004) developed a multidimensional instrument for assessing individual QoL consisting of 22 QoL aspects. These aspects were selected on the basis of an extensive literature review on needs, values and human well-being in relation to sustainable development (Steg & Gifford, 2005), and are believed to represent (very) important domains in people’s lives.

The proposed Quality of Life aspects include:

- **Health**: Being in good health. Having access to adequate healthcare.
- **Partner and family**: Having an intimate relationship. Having a stable family life and good family relationships.
- **Social justice**: Having equal opportunities and the same possibilities and rights as others. Being treated in a just manner.
- **Freedom**: Freedom and control over the course of one’s life, being able to decide for oneself what one will do, when, and how.
- **Safety**: Being safe at home and in the streets. Being able to avoid accidents and being protected against criminality.
- **Education**: Having the opportunity to get a good education and to develop one’s general knowledge.
- **Identity/self-respect**: Having sufficient self-respect and being able to develop one’s own identity.
- **Privacy**: Having the opportunity to be oneself, to do one’s own things, and to have a place of one’s own.
- **Environmental quality**: Having access to clean air, water and soil. Having and maintaining good environmental quality.

**Social relations**: Having good relationships with friends, colleagues, and neighbors. Being able to maintain contacts and to make new ones.

**Work**: Having or being able to find a job, and being able to fulfill it as pleasantly as possible.

**Security**: Feeling attended to and cared for by others.

**Nature/biodiversity**: Being able to enjoy natural landscapes, parks, and forests. Assurance of the continued existence of plants and animals and maintained biodiversity.

**Leisure time**: Having enough time after work and household work, and the ability to spend this time satisfactorily.

**Money/income**: Having enough money to buy and to do things that are necessary and pleasing.

**Comfort**: Having a comfortable and easy daily life.

**Aesthetic beauty**: Being able to enjoy the beauty of nature and culture.

**Change/variation**: Having a varied life. Experiencing as many things as possible.

**Challenge/excitement**: Having challenges and experiencing pleasant and exciting things.

**Status/recognition**: Being appreciated and respected by others.

**Spirituality/religion**: Being able to live a life with the emphasis on spirituality and/or with one’s own religious persuasion.

**Material beauty**: Having nice possessions in and around the house.

**summary & conclusion**

Environmental psychology is a brand of psychology that focuses on the interaction between humans and their surroundings. The theories and ideas provide an opportunity for those working in various fields and occupations of psychology, healthcare, and social work to integrate new tools and techniques into their daily practice. Knowledge of the various aspects of environmental psychology and its implementation can only benefit the clients served by such professionals.

The term *built environment* refers to the human-made surroundings that provide the setting for human activity, ranging from buildings and parks or green space, to neighborhoods and cities that can often include their supporting infrastructure, such as water supply or energy networks.

Research has indicated that the way neighborhoods are created can affect both the physical activity and mental health of the communities’ residents (Proshansky, 1987). Studies have shown that built environments that were designed specifically to improve physical activity are linked to higher rates of physical activity, which in turn, positively affects health.

The concept of the *natural environment* can be defined by the following components:

- **Complete ecological units that function as natural systems** without massive human intervention, including all vegetation, microorganisms, soil, rocks, atmosphere, and natural phenomena that occur within their boundaries.
- **Universal natural resources and physical phenomena** that lack clear-cut boundaries, such as air, water, and climate, as well as energy, radiation, electric charge, and magnetism, not originating from human activity.

Research has shown that exposure to elements of natural environment results in positive physical and mental health outcomes for both adults and children. It serves as a mechanism for rejuvenating personal energy, helps people to focus, reduces stress, and aids in recovery from illness.

Multiple theories and approaches have been developed in order to explain and assess the influence of landscapes on human health. Contemporary theories, such as Ulrich’s “Stress Recovery Theory” (Ulrich, 1983, 1999), predict that natural scenes tend to reduce stress, whereas settings in the built environment tend to hinder recovery from stress.

According to the Roger Ulrich (1983), environments that provide opportunities for restoration from stress contain certain visual stimulus characteristics that directly elicit generalized states of positive affect, reduce demands for vigilance, and help return autonomic arousal levels to normal (Ulrich, 1983; Ulrich et al., 1991).

Based on a series of studies on the effect of nature on human psychology, environmental psychologists, Stephen and Rachel Kaplan, developed a theory of stress restoration with a decided emphasis on cognitive functioning and the concept of stress as mental fatigue. They proposed that natural settings provide optimal environments for recuperation in situations where people’s resources of higher cognitive functioning/executive functioning have become depleted (Kaplan & Kaplan, 1989; Kaplan 1995).

People’s senses play a large role in their daily lives. Smells, colors, textures, and other sensory inputs can take on a special meaning for individuals. However, different scents or visuals may take on different meaning for different people.

Healthcare and hospitals in particular have been the front-runner in actually utilizing place science and environmental psychology. Numerous research studies led to the development of what is known as ‘evidence-based design’ and its subsequent integration into the practices of the nursing field.

Evidence-based design is commonly known as the process of basing decisions about the built environment on credible research to achieve the best possible outcomes. In the world of healthcare, there are typically five areas of focus linked to the physical environment:

- Reduce patient stress.
- Reduce staff stress.
- Improve safety.
- Improve quality.
- Increase operational efficiency.

Healthcare facilities that seem to be thoughtfully designed, that minimize stress, and that provide psychological support for healing and caregiving send desirable messages about the quality of medical care provided. Research by Harris et al. (2002) has determined that hospital interior design, architecture, housekeeping, privacy, and ambient environment significantly relate to environmental satisfaction, and that environmental satisfaction is a significant predictor of overall hospital satisfaction.
Patients whose hospital rooms feel less institutional and are designed more like hotel rooms, have more positive impressions about their hospital stay and the quality of their care than people who stay in more institutional rooms. More institutional rooms, for example, lack artwork and do not have comfortable chairs for visitors.

It is important for people to feel that they have control over their own lives, and often, patients lose nearly all control over what happens to them. When people lack control, they become stressed, they can become depressed, and their immune systems can be compromised. Control increases the self-esteem and feelings of security among hospitalized patients. Patients tend to feel as if they have more control when they can modify their environments, such as by turning fans and televisions on and off and opening and closing curtains.

Culture also plays a strong role in the elements of environmental psychology. Cultural systems tell people how far to stand from others and how they should personalize the spaces they control to non-verbally communicate desired messages. Culture provides the dictionary people need to correctly interpret non-verbal communication and the swirl of activity around them.

Communicating through the symbolism of facial expressions, gestures, objects (chosen and rejected) and place design, people can make messages. Culture provides the dictionary people need to correctly interpret non-verbal communication and the swirl of activity around them.

Environmental stressors such as noise, crowding, and pollution can be acute or chronic. Chronic environmental, stressors are more consequential for humans. For instance, a reliable link has been established between chronic stressors and impaired immunological responses, while acute stressors appear to have few consequences (Sagerstrom & Miller, 2004). Environmental stressors are often chronic because individuals have limited ability to escape or extinguish them.

Noise is defined as unwanted sound and is typically characterized by intensity (decibel), frequency (pitch), periodicity (continuous or intermittent), and duration (acute or chronic). Sound is necessary but not sufficient to produce noise. The psychological component of unwanted sound and its physical components, such as intensity, certainly play a central role in perceiving noise.

Crowding is a psychological state that occurs when the need for space exceeds the available supply (Stokols, 1972). The same density level may be experienced as more or less crowded because of individual differences (i.e. culture, personality, gender, age) or situational factors (e.g. temporal duration, activity, private versus public space; Stokols, 1972). Because available space is reduced, crowding makes it difficult to regulate social interaction, limits behavioral options, and leads to invasions of personal space. Laboratory studies show that crowding elevates physiological stress: the longer people experience crowding, the greater the elevations (Evans, 2006). For example, crowding elevates skin conductance, blood pressure, and stress hormones (Evans, 2001). When people feel crowded, they also experience psychological stress: they show negative affect, tension, anxiety, and nonverbal signs of nervousness such as fidgeting or playing with objects repetitively (Evans & Cohen, 1987).

Population density is commonly referred to as the amount of people living in a unit of a certain area. Where this becomes an issue of environmental stressors, lies within such elements as poor housing quality and traffic congestion.

The five human senses play a significant role in environmental psychology as well. Further, they are important factors in serving and treating patients/clients to meet their needs and to help improve their lives. Each sound, taste, smell, touch, and image sends sensory information to the brain, where people process it and respond accordingly. At any moment, people experience all sorts of sensory experiences, most involving more than one of the senses.

Increasing empirical evidence suggests that contact with nature can provide restoration from stress and mental fatigue. Studies have shown the positive impact of restorative environments. A restorative environment is often defined as: An environment that promotes recovery from stress, mental fatigue or other psychologically or physiologically adverse conditions.

Research on restorative environments has primarily been guided by two theoretical explanations, each with its own interpretation of the construct of restoration. First, stress recovery theory (Ulrich, 1983; Ulrich et al., 1991) is concerned with restoration from the stress that occurs when individuals face situations they perceive as demanding or threatening to their well-being. Secondly, attention restoration theory (Kaplan, 1995; Kaplan & Kaplan, 1989) focuses on the restoration from attentional fatigue that occurs after prolonged engagement in mentally fatiguing tasks.

Micro-restorative experiences are those that result from brief sensory contact with nature, as through a window, in a book, on television, or in a painting (Kaplan, 2001). Accumulated over time, such micro-restorative experiences may significantly improve people’s sense of well-being and provide a buffer against the negative impacts of stressful events.

Interestingly, it has been suggested that there are grounds to hypothesize that an integrative nature-assisted approach might be applicable in psychological treatment of anxiety disorders (Hartig et al., 2003; Ulrich et al., 1991), substance abuse (Grahn, 2005; Burns, 1998; Russel & Mehrabian, 1976), neurological recovery (Ottoisson & Grahn, 2008; Grahn, 2007b; Holmström 2007), and as an integrated element in anger management programs (Kuo & Sullivan, 2001a; 2001b; Hartig et al., 2003; Hartig et al., 1991; Whall et al., 1997). The incorporation of nature-assisted strategies within integrated programs of prevention, management and rehabilitation of stress and stress-related disorders does seem to be well-founded, both in terms of supportive empirical data and clinical experience. Such a claim is made on the basis of many sources outlined in the above literature review, which indicate appropriate response in terms of stress reduction and relaxation, not to mention the inferring of stress restorative properties in cases of pathological states of depletion.

In recent years, the healthcare community has developed a growing awareness of the need to create functionally efficient and hygienic environments that also have pleasant, stress reducing characteristics. Healthcare occupations such as nursing are stressful because they often involve overload from work demands, lack of control or authority over decisions, and stress from rotating shifts (Ulrich, 1991). Workloads and pressures have mounted further, as healthcare providers everywhere have been forced to control or cut costs (Ulrich, 2002). These conditions have, in many locations, lowered lower job satisfaction, increased absenteeism and turnover, contributed to shortages of qualified personnel, increased providers’ operating costs, and eroded the quality of care that patients receive (Ulrich, 2002).

For those working in the field of social work and human services, the essence of environmental psychology is vital to daily functions. The interaction between people and their environment is at the heart of the purpose of assessment and providing services and assistance. From the counselor working at a domestic violence shelter, to the child welfare worker coordinating safety and services to children and their families, to the school social worker, environment is an important piece of the puzzle.

The environmental theory and ideas set forth by Moos (1991) describe in overview the basic elements and dimensions experienced in such professional roles. Moos believed that positive social and performance outcomes often result when some emphasis is placed on three major dimensions of environment: relationship, growth, and maintenance.

One concept often discussed in environmental psychology applies to ALL of the following as well as other occupations: nursing, mental health, and social work. The approach in working with clients might be slightly different, though the foundation of the topic and the importance of the knowledge in this area can be utilized as another
tool in the tool belt for those who need to understand and navigate within the interaction between people and their environment.

This course defines quality of life (QoL) as a psychological construct indicating the extent to which important needs and values of people are fulfilled. The QoL measure reveals how well certain conditions meet the needs and values of people, and which QoL aspects should be improved to promote QoL. This is useful for assessing the efficiency of policy making and developing interventions.

There is a possibility that reflective states in natural settings might enhance sense of coherence (SOC) and generally enhance positive appraisals of life situation. Additionally, benefits of natural environments might be due to increased person-environment fit or balance between individual resources and environmental demands.

It is also possible that positive emotions and mood states elicited in contact with natural environments might undo the negative effects of stress, increase resilience, and contribute in terms of conferring stress-buffering properties. The use of natural settings for stress reduction, relaxation, emotional, and self-regulation might be perceived in terms of coping strategy or coping resource.

Although it may be challenging to integrate information concerning contextual variables with curricula and programs that are already lengthy and full, it is clear that a thorough understanding and acknowledgment of the environment is critical to working with clients. It is suggested that programs and individual professionals incorporate aspects of the environmental focus in their practice and approach with clients or patients; particularly those that address issues of practice, research, and psychodiagnostic assessment.

Training and on-going education can play a significant role in various professionals’ understanding of the whole person and assist in the development of skills related to environmental assessment and the identification of healthy settings.

References

INTEGRATING ENVIRONMENTAL PSYCHOLOGY TO BENEFIT YOUR CLIENTS

Final Examination Questions

Select the best answer for each question and then proceed to www.EliteCME.com to complete your final examination.

1. It is suggested that society and has contributed to people avoiding outdoor environmental stimuli and regular contact with nature.
   a. A struggling economy.
   b. Obesity.
   c. Advanced technology.
   d. Lack of education.

2. ______ theory proposes that natural settings provide optimal environments for recuperation in situations where resources of higher cognitive functioning/ executive functioning have become depleted.
   a. Natural recovery.
   b. Environmental restoration.
   c. Stress restoration.
   d. Stress avoidance.

3. Results of a study using Attention Restoration Theory (ART) indicated that exposure to green outdoor settings showed the strongest relationship to decreased symptomology and positive outcomes on cognitive functioning for children with ______ disorder.
   a. Bi-polar.
   b. Anxiety.
   c. Attention deficit.
   d. Obsessive-compulsive.

4. Certain locations or events lend themselves to certain ______ set forth by the environment and other individuals experiencing that same environment.
   a. Dangers.
   b. Rules or rituals.
   c. Barriers.
   d. Fees or fines.

5. ______ help determine what information from the physical world makes its way into the psychological world, and what influence it has once it arrives.
   a. Environmental rules.
   b. Government officials.
   c. Environmental factors.
   d. Dominant senses.

6. Blood donors had ______ when they were watching a nature video than when they were watching regular television programming or urban scenes on video.
   a. Higher anxiety.
   b. Lower blood pressure.
   c. Less pain.
   d. Discomfort.

7. ______ keeps patient and caregiver body (or circadian) rhythms synchronized with those of their neighbors. People whose circadian rhythms are inconsistent with the time zone that they are living in feel stressed and tired, become disoriented, and do not sleep well.
   b. Art.
   c. Scents.
   d. Sunlight.

8. In hospitals, noise from ______ has a more significant influence on stress than other sorts of unwanted sound, just as it does in workplaces.
   a. Copier machines.
   b. Conversations.
   c. Radios.
   d. Footsteps.

9. ______ sections of buildings or paths through buildings can prevent people from getting lost.
   a. Color-coding.
   b. Carpeting.
   c. Waxing.
   d. Remodeling.

10. ______ has been traditionally defined as a sub-structure of the self-identity of the person consisting of broadly conceived cognitions about the physical world in which the individual lives.
   a. Place science.
   b. Place identity.
   c. Space design.
   d. Environmental identity.

11. Noise is defined as unwanted sound and is typically characterized by intensity (decibel), frequency (pitch), periodicity (continuous or intermittent) and ______ (acute or chronic).
   a. Severity.
   b. Duration.
   c. Diagnosis.
   d. Strength.

12. With sound, faster and slower beats impact our level of energy. The relevant comparison of what constitutes slow versus fast is determined by the ______.
   a. Human heart rate.
   b. Average tempo of songs.
   c. Eardrum.
   d. Dick Clark bandstand scale.

- Walberg (Eds.), Educational environments: Evaluation, antecedents, and consequences (pp. 29-53). New York: Pergamon.
13. Music played in a _________ is relaxing and tends to make people feel happier.
   a. Minor key.
   b. Key of G.
   c. Major key.
   d. Key of D.

14. __________ therapy is a type of psychotherapeutic treatment that helps patients understand the thoughts and feelings that influence behaviors.
   a. Group.
   b. Cognitive behavior.
   c. Sensory.
   d. Emotional.

15. An environment that promotes recovery from stress, mental fatigue or other psychologically or physiologically adverse conditions is known as a _______ environment.
   a. Regenerative.
   b. Restorative.
   c. Restful.
   d. Distracting.

16. ___________ are considered to be those that result from brief sensory contact with nature, as through a window, in a book, on television, or in a painting.
   a. Sensory reliefs.
   b. Environmental factors.
   c. Micro-restorative experiences.
   d. Sensory boosters.

17. Research has shown responses in terms of general parasympathetic activation and reduction in levels of physiological arousal, which seems to imply environmental psychology may be an appropriate intervention for ________.
   a. Paralysis.
   b. Eating disorders.
   c. Physical therapy.
   d. Anxiety disorders.

18. To address a child’s disruptive behaviors in a family environment, a practitioner could examine the process by which ________ are established, the amount of flexibility in that process, and the extent to which a child has input in the development process.
   a. Household rules.
   b. Relationships.
   c. Chores.
   d. Furniture arrangements.

19. ___________ therapies are often based on principles of social and practical skills development and compatible goal-based tasks.
   b. Behavioral.
   c. Adventure.
   d. Psychoanalytic.

20. Positive social and performance outcomes often result when some emphasis is placed on three major dimensions of environment: relationship, growth, and ________.
   a. Frequency.
   b. History.
   c. Maintenance.
   d. Impact.