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Mental Health and the Built Environment

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Key Points

- The built environment can promote or hinder mental health.
- Place attachment refers to the psychological and social connections people feel with certain places—their homes, the settings in which they grew up, and others.
- The conditions of modern life place great demands on—and often exhaust—our ability to pay attention. Green settings have the capacity to alleviate mental fatigue and help restore a person’s capacity to pay attention.
- Crowded, noisy, and dangerous places have a variety of negative impacts on people and their psychological states, fostering, for example, stress, anxiety, depression, and violent behavior.
- Some places draw people together and thus support the development of social ties and enhance the development of social capital.
- Places that encourage physical activity can both prevent and treat depression.

Introduction

When Loretta found a three-bedroom apartment next to the highway interchange, she jumped at the chance to rent it. Moving there meant that her two children could go to school together and that her commute would be considerably reduced. But a year after the move, she has noticed worrisome changes in Trisha, who is twelve years old, and Ben, who is ten. Whereas last year both children were optimistic about life and excited about school, this year they are significantly less so. They have more trouble with their schoolwork, report that they have difficulty paying attention in class, and express worries about being able to do well in school. Loretta is an observant mother. Scholars who examine the impact of chronic noise—such as noise from a busy highway interchange—report that exposure to ambient noise

is associated with negative classroom behaviors and decreases in the mental health of elementary school children.

The quality and characteristics of the settings we inhabit—the places in which we live, work, and play—influence our mental health. This chapter examines the extent to which built environments promote **mental health** and well-being, increase the development of social ties, facilitate recovery from mental fatigue, affect anxiety and depression, and contribute to aggression and violence.

The environments we inhabit call on us to possess a wide variety of skills and abilities. By the same token, each of us requires certain essentials of life from our surroundings. The extent to which a setting supports mental health is dependent on the match between the person and that environment. The more successful the match, the greater the likelihood that the individual will experience higher levels of mental health and well-being; the greater the mismatch, the more likely it is that the individual will experience psychological distress.

Promoting Mental Health and Well-Being

Some places have a salutary effect on mental health and well-being (Table 7.1). For instance, as discussed in Chapter 15, places that provide views of, or direct exposure to, trees and other forms of vegetation are associated with an increased sense of well-being (Day 2008; Kaplan 2001), higher levels of self reported peace and quiet (Day 2008; Yuen and Hien 2005), and greater satisfaction with home and neighborhood (Kaplan 2001; Kearney 2006; Lee et al. 2008). Similarly, proximity to open greenspaces in urban areas is associated with reduced levels of stress (Grahn and Stigsdotter 2003).

A considerable amount of evidence suggests that exposure to greenspace on school grounds promotes healthy psychological development. Natural play-scapes at schools have been found to benefit children's creative play and their emotional and cognitive development (Evans et al. 2001; Mårtensson et al. 2009). Studies conducted on college campuses have linked greater ecodiversity (Ogunseitán 2005) and greater use of greenspaces by students (McFarland, Waliczek, and Zajicek 2008) with higher levels of quality of life.

There are also hints that the quality of a person's home (in terms, for example, of maintenance, amenities, and structural quality) is positively related to mental health (Evans, Wells, and Moch 2003). This finding represents both a challenge and an opportunity in that it suggests communities might promote the mental health and functioning of their citizens by ensuring that housing meets minimal standards for design and maintenance (Chapter 11).

It is common for people to become attached to places that have played important roles in their lives. People often develop emotional bonds to places that

Table 7.1*Settings that are favorable and unfavorable to mental health.*

Settings	Mental health implications
	<u>Favorable</u>
<ul style="list-style-type: none"> • “Legible” places • Attractive, well-maintained, safe places • Contact with greenspace • Places with privacy • Places with appropriate contact with other people 	<ul style="list-style-type: none"> • Well-being • Life satisfaction • Quality of life • Social support • Ability to concentrate • Creative play in children • Less mental fatigue
	<u>Unfavorable</u>
<ul style="list-style-type: none"> • Crowded places • Noisy places • Dangerous places 	<ul style="list-style-type: none"> • Social withdrawal • Reduced social ties among neighbors • Smaller social networks • Diminished social and motor skills in children • Distress • Anxiety • Irritability

are the sites of positive experiences and memories. Individuals may develop their strongest attachment to places they find particularly attractive, that they choose to frequent, or that support positive social interactions and the development of social ties.

There is no simple formula that designers and planners can use to create positive emotional bonds between a person and a place—what psychologists call **place attachment**. Still, designers and planners can increase the likelihood that such ties develop by creating places that are attractive, that support social interactions, and that invite people to linger. Being sure that such spaces are a part of every neighborhood, campus, and business district will have important consequences. People who feel an emotional bond with a neighborhood, park, or other setting demonstrate greater commitment to the community surrounding that place, report higher levels of well-being, and are less likely to move away than are individuals who feel less of a bond (Altman and Low 1992).

Enhancing Social Capital

Social ties among individuals, neighbors, and members of groups are a source of considerable strength and advantage. Social ties are a primary source of social

support and sense of community. They help people create neighborhoods that are more capable of forming local organizations and mobilizing for political purposes (Kuo et al. 1998). Social ties are the foundation on which social capital develops. Social capital provides benefits for individuals and groups (Chapter 8).

Social ties are especially important for older individuals. Elderly individuals with strong social connections have lower levels of mortality, reduced suicide rates, less fear of crime, and better physical health. In addition, elderly people with stronger social ties have significantly higher levels of psychological well-being (Kweon, Sullivan, and Wiley 1998).

The built environment can have profound impacts on the formation and maintenance of social ties. Some settings impede social interaction and thus the development of social ties. Dilapidated, crowded, and dangerous settings are associated with social withdrawal and have been shown to discourage individuals from establishing social relations (Evans 2006). For children, living in close proximity to traffic noise is associated with less outdoor play, smaller social networks, and diminished social and motor skills. For adults, the impact of living near heavy traffic is also considerable. Households on streets with higher traffic volume interact less with their neighbors than those on less congested streets do (Appleyard and Lintell 1970).

The built environment can also *promote* social interaction by providing recurring opportunities for individuals to have informal social contact with one another. A shared space that is not noisy or crowded (for example, a central dining room or lounge area in elderly housing or a green common space in a neighborhood) has been shown to promote informal face-to-face contacts. Individuals who have frequent face-to-face contact are likely to form and maintain social ties. After neighbors experience repeated day-to-day visual contact, some become acquaintances and engage in social activities. These acquaintanceships sometimes develop into friendships. In this way, by providing individuals the opportunity to have repeated face-to-face contact with one another, the built environment can play an important role in the development of social ties among neighbors (Kuo et al. 1998; Kweon, Sullivan, and Wiley 1998).

Designers can promote social interaction within buildings or within neighborhoods by providing gathering spaces on neutral territory, visual prospects (so that one can see what is happening in a space before deciding to enter), movable seating, and food or other features that generate activity. Architectural features such as front porches that promote visibility from a building's exterior have been linked to higher levels of perceived social support and lower levels of psychological distress (Brown et al. 2009).

Designers and planners can create more supportive, cohesive places by the way they design buildings and neighborhoods. This also suggests that

communities can expect a higher standard than that provided by the sprawling suburban development typical of the late twentieth century. Walkable, human-scaled, and safe neighborhoods with shared public and semipublic spaces such as parks, squares, and tree-lined neighborhood streets can promote, or at least provide opportunities for, health-promoting social interaction.

Mental Fatigue

The conditions of modern life—the built environments, stimuli, and tasks of everyday living—place nearly relentless demands on our ability to pay attention and process information. Traffic, Twitter, telecommunications, problems at work, complex decisions, and delicate social interactions all require that we pay attention. This demand on our attention takes a significant toll, resulting in mental fatigue. The consequences of mental fatigue are profound, including becoming inattentive, withdrawn, irritable, distractible, impulsive, and accident prone. This is not a welcome state, but one that is familiar to people who lead busy lives.

Some configurations of the built environment have the capacity to alleviate mental fatigue and to restore a person's capacity to pay attention. Places that gently hold our attention (with a view of greenspace with trees and grass or a body of water, for example) allow individuals to recover from mental fatigue (Kaplan 1995). Natural settings and stimuli such as green landscapes seem to engage our attention effortlessly, allowing us to be in such settings without focusing attention, thus restoring our capacity to pay attention (Plate 5).

There is growing empirical evidence of the attention-restoring effects of natural settings (Chapter 15). Evidence of cognitively rejuvenating effects has been found for a variety of natural settings, including wilderness areas, prairies, community parks, views of nature through windows, and even rooms with interior plants (Matsuoka and Sullivan 2011). Moreover, these studies have demonstrated links between contact with nature and more effective attentional functioning in a variety of populations—AIDS caregivers, cancer patients, college students, prairie restoration volunteers, participants in a wilderness program, and employees of large organizations.

Stress and Depression

There is considerable evidence that particular features of the built environment can promote or reduce feelings of annoyance, distress, anxiety, and in some cases, depression. Noisy and crowded places can create conditions that exceed the capacity of even robust individuals. Noise is sound that is unwanted by the

listener because it interferes with important activities, is unpleasant or bothersome, or is thought to be harmful. Research examining exposure to traffic and airport noise reveals that the greater the level of noise, the greater the psychological distress (Evans 2001). Noise at home and at work is reliably linked to irritability and a negative emotional state.

Crowded places, as measured by the number of people per room, have also been associated with distress (Evans, Wells, and Moch 2003). Studies examining individuals who are incarcerated and experimental studies on short-term crowding demonstrate that more crowded rooms predict greater physiological stress as well as more negative affect (Evans, Lepore, and Allen 2000). There is good evidence that children also suffer adverse psychological health from residential crowding (Evans 2001). Noise and crowding most often affect individuals with little social standing, economic clout, or political power, and therefore planners and designers have a special obligation to create settings that protect people from these conditions.

For children and low-income individuals, living in high-rise, multifamily housing is linked to subclinical symptoms of anxiety and depression (Evans, Wells, and Moch 2003). These symptoms may grow from the level of noise and crowding that is often experienced in low-income, high-rise housing.

For many people, low levels of daylight can lead to seasonal depression, often called *seasonal affective disorder* (Beauchemin and Hays 1996). The symptoms of seasonal depression include sadness, anxiety, irritability, loss of interest in usual activities, withdrawal from social activities, and inability to concentrate (Cleveland Clinic 2010). For many individuals who experience seasonal depression, living or working in buildings with large windows that allow exposure to daylight may reduce the intensity and duration of their symptoms. For the millions of people who work on a daily basis without exposure to sunlight because they work in windowless areas of large buildings, finding ways to gain exposure to daylight during work hours is an important concern.

Poor neighborhood design is also related to distress and depression. Living in a dilapidated neighborhood, for instance, can take a toll on individual's capacity to function effectively. Living in a neighborhood characterized by a poor-quality built environment has been shown to be associated with greater individual likelihood of depression during the previous six months and with lifetime depression (Galea et al. 2005). Gifford and Lacombe (2006) found that children living in dilapidated housing were rated by both their teachers and parents as having higher levels of psychological distress than their peers in less dilapidated but otherwise comparable conditions had.

Places that support or encourage physical activity can help to prevent and treat depression. More than a dozen studies have reported that higher levels

of physical activity are associated with reduced risk of depression (Saxena et al. 2005). In addition, physical inactivity is a risk factor for depression (Farmer et al. 1988). Significant associations have been reported between higher levels of neighborhood walkability and lower levels of depressive symptoms in men, after adjusting for individual-level factors of income, physical activity, education, smoking status, living alone, age, ethnicity, and chronic disease (Berke et al. 2007). In sum, the design of buildings and neighborhoods can have systematic impacts on psychological distress and depression. Designers and planners can promote psychological health by creating places that are not noisy or crowded; that promote access to daylight; that encourage social interaction; and that invite people to walk, run, play, ride bicycles, and engage in other forms of physical activity.

Aggression and Violence

The power of the physical environment to influence human aggression is well established. Noise, crowding, and high temperatures are linked to aggression and violence. Noise reliably suppresses altruistic behavior and can accentuate aggression among adults already primed by violent stimuli or provocations (Evans 2006).

Crowding is linked to aggressive behavior. The number of people per room, rather than the number of people per acre, is the critical factor affecting the perception of crowding. What matters in the experience of crowding is high **social density** rather than high **spatial density**. High social density (increasing the number of people per room) subjects individuals to unwanted interactions with others. These unwanted interactions can become a source of frustration that sometimes leads to aggressive behavior. For instance, when social density in prisons increases, so does the frequency of aggression.

High social densities also affect children. When preschoolers are crowded, the incidence of cooperation decreases and aggressive behaviors increase. The same pattern holds for elementary school children and for adolescents (Evans 2006). These findings beg the question: how crowded is too crowded? Although there is no specific recommended number of people per room that can be generalized across situations, the key factors appear to be people's level of choice regarding social interactions with others and their capacity to coordinate activities (for example, when to study, watch television, or entertain). It is difficult to reduce the impacts of crowding in public transportation or other public settings where choice and coordination are extremely limited.

Places without nearby nature—that is, places that provide few opportunities to recover from mental fatigue—are more likely to be associated with higher

levels of incivilities, aggression, and violence (Kuo and Sullivan 2001). Similarly, the presence of more greenspace in a person's living environment is associated with enhanced feelings of safety, except in very dense urban areas (Maas et al. 2009).

Violent neighborhoods exact considerable tolls from their residents, including high levels of psychological distress (Curry, Latkin, and Davey-Rothwell 2008). Levels of psychological distress in children are significantly related to their reports of witnessing acts of violence. Children who live in violent neighborhoods show signs of post-traumatic stress disorder, including disrupted patterns of eating and sleeping, difficulties in controlling attention and relating to others, anxiety responses, and fear (Osofsky 1995). Among adults exposed to violence, sleep disturbances, nightmares, and anxiety are common. The extent to which the built environment fosters violence by promoting feelings of alienation and isolation or by sending signals to potentially violent individuals that their actions will not be observed is the extent to which the built environment shares in the responsibility for these outcomes.

The design of buildings and landscapes can help deter crime. The approaches advocated by the concept of crime prevention through environmental design (CPTED) create conditions that deter crimes by increasing surveillance, clearly defining public and private spaces, and limiting access into buildings and grounds (Cozens 2007; also see Chapter 5 in this volume).

One familiar form of aggression is **road rage**. Road rage is an act of aggression on the part of one driver directed toward another driver, passenger, or pedestrian. This aggression may be expressed verbally or through an obscene gesture or an action involving the vehicle itself (such as flashing lights, blasting the horn, tailgating, braking aggressively, or purposefully colliding with another vehicle). Road rage can spill out of the car and result in altercations involving fists, feet, clubs, and even knives and guns. Road rage refers to an acute event or act motivated by anger within the context of driving.

The causes of road rage are not well understood. Road rage is likely due to some combination of the anonymity provided by being in a vehicle, the stress of modern life, and the increasing length of typical automobile commutes. In some cases, aggressive driving may be exacerbated by the driver's use of alcohol or drugs.

Most suggestions for preventing road rage relate to changes in social policy and education (Asbridge, Smart, and Mann 2006). But the built environment can also play a role in reducing the incidence of aggressive behavior on the road. Perhaps the best strategy would be to build communities that make it possible for people to walk or ride their bikes to work, that substantially reduce automobile commute times, and that provide reliable, safe public transportation.

As evidence throughout this book makes clear, reducing our reliance on automobiles will have a range of positive impacts on health, including reductions in road rage.

Way-Finding

Being lost is almost always painful. Whether you become lost while listening to a lecture, using a computer program, or making your way to someplace you have to be, being disoriented and confused can be an agonizing experience. In contrast, knowing where you are, or at least feeling that you will find your way, can increase the quality of your experience.

Scholars have studied the characteristics of the built environment that help people find their way. They have noted that people are more likely to stay oriented—thus avoiding the anxiety and frustration of being lost—when a setting has distinct elements. Such elements can be objects such as buildings, districts such as the soccer field zone in a large park, or regions within a city. These elements serve as landmarks that cue people that they are in one zone or area rather than in another.

Many years ago, Kevin Lynch suggested these distinct qualities make a city “legible” (Lynch 1960). He argued that a legible city provides an important sense of emotional security as well as an invitation to explore. Places with distinct landmarks and districts, clear edges and pathways, and appropriate signage increase legibility, help people stay oriented, and promote less stressful interactions with the built environment.

Summary

The design of the built environment has important consequences for mental health. Crowded, noisy, dilapidated, and unsafe places and places that lack greenspaces are associated with a range of negative outcomes, from social withdrawal and reductions in cooperative behavior to increases in psychological distress and even depression. These conditions have also been linked to increases in mild aggression, violence, and severe violence.

The good news is that a number of features of the built environment promote mental health. Settings that provide opportunities for neighbors to get to know one another build social capital, increase neighborhood social ties, increase neighborhood satisfaction, and ultimately increase the safety of neighborhoods. Green settings at home, work, and school reduce mental fatigue and help people pay attention at higher levels than they would be likely to muster if they lacked open views of their surroundings or access to greenspaces.

With our growing understanding of the mental health implications of the built environment comes the opportunity to use this knowledge to create places in which individuals, families, and communities thrive. Such places would go a long way toward benefiting children like Trisha and Ben, profiled in the opening story in this chapter.

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