

# A REVIEW OF RESEARCH

DESIGNING THE BUILT ENVIRONMENT FOR  
RECOVERY FROM HOMELESSNESS

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# EXECUTIVE SUMMARY

This review of research was undertaken to identify, aggregate and summarize known insights about how to design the interiors of facilities for persons that have experienced mild or major trauma, including but not limited to homelessness. It focuses on the local, intimate level of human-built environment interaction that often is neglected in available guidelines and literature.

Topics included fall into two major categories: (1) the effects of the physical interior environment on persons that have experienced trauma (e.g., psychological and psychosocial impacts and interactions), and (2) aspects of the interior physical environment found in housing and/or sheltering environments for the homeless (e.g., space planning and layouts, materiality (furnishings, fixtures, and equipment), lighting, color, wayfinding, design details and accessories (art, plants, signage), and psychological aspects of space perception. In addition, the needs of particular subpopulations of homeless individuals (men, women, children and youth, families, mentally ill, addiction/alcoholism or substance abuse, veterans) were considered.

Designing interiors for homeless facilities presents several challenges. The clientele to be served is widely diverse, and their needs and issues are correspondingly various.

Complications such as trauma, mental illness, previous institutional experiences, and substance use and abuse make it difficult to predict how a particular individual will respond to the physical environment of any given facility. The needs and desires of the clientele are at times at odds with those of the staff, volunteers and administrators who work in and maintain the facilities. Funding and other resources often are extremely limited.

Little research has been done to date on the impact of the built environment on the homeless who use the facilities. However, research, both quantitative and qualitative, in related areas and on the homeless population can provide guidance to designers as they seek to address the challenges mentioned above. There is considerable overlap of issues and findings within the body of research to make it possible to distill with confidence some basic design themes or guiding principles.

The review of research presents findings from the literature examined and, where applicable, points out practical implications or applications for designers. These are summarized at the end of the report.

Observations about areas for possible further research are presented following the literature review.

An annotated bibliography of works consulted for this review is appended to the report.

# INTRODUCTION

## Purpose of this review

Much has been written about the plight of the homeless, their physical and psychological needs and trauma, and the social services developed to address those needs, including various forms of housing or shelter. Regarding the latter, a substantial body of content exists that addresses macro issues of this design sector, including urban planning and siting issues and overall architectural approaches, including types of structures and external appearance. Little attention has been given to the interior environment in any but the most general terms.

This review of research was undertaken to identify, aggregate and summarize known insights about how to design the interiors of facilities for persons that have experienced mild or major trauma, including but not limited to homelessness. It focuses on the local, intimate level of human-built environment interaction that often is neglected in available guidelines and literature.

Although this report draws mainly on primary research, it aims to distill the practical implications of that research in order to inform architects and interior designers that are designing facilities for homeless persons, especially

those that are unfamiliar with this project sector and this user type, as well as organizations that advocate for the homeless and are building or renovating facilities. It is hoped that it will also serve as an aid to design researchers that wish to build their research studies from the foundation of previous findings and to design educators and design students that are creating hypothetical project responses and/or academic research in this project sector.

## Scope of this review & topics researched

As stated above, this review focuses on topics relevant to the design of the interiors of facilities for persons that have experienced mild or major trauma, with an emphasis on facilities that serve the homeless. Aside from providing a context for the issues and challenges involved in constructing facilities for the homeless, it does not seek to address macro housing issues, such as urban planning or siting of facilities, architectural design (except as relates to interior architecture), or issues or behaviors related to the exterior of facilities, such as landscaping, gardens, courtyards, streets or public spaces.

Topics included fall into two major categories: (1) the effects of the physical interior environment on persons that have experienced trauma (e.g., psychological and psychosocial impacts and interactions), and (2) aspects of the interior physical environment found in housing and/or sheltering environments for the homeless (e.g., space planning and layouts, materiality (furnishings, fixtures, and equipment), lighting, color, wayfinding, design details and accessories (art, plants, signage), and psychological aspects of space perception. In addition, the needs of particular subpopulations of homeless individuals (men, women, children and youth, families, mentally ill, addiction/alcoholism or substance abuse, veterans) were considered.

Since few studies directly address the interior design of facilities for the homeless, research on physical environments or services provided that are somewhat analogous to facilities for the homeless in certain respects (e.g., healthcare, retail services, prisons, senior care facilities) were also consulted.

## Criteria for considering research studies for this review

For the most part, the review examines the findings from peer-reviewed primary research, both quantitative and qualitative, or literature reviews of such research on the topics listed above. Particular consideration was given to studies that provided findings that had practical or

readily applicable implications for designers. A few more theoretical and some general articles, both academic and popular, were included that help to lay the groundwork or provide context for the topics under review.

Case studies and post-occupancy evaluations were excluded as a rule; however, because of the paucity of interior design research on these topics as regards facilities for the homeless, a few case studies that provide substantial interior design details have been referenced as an aid to designers.

Books were included only if they provided additional information not covered in the articles, as they often contain material not formally peer-reviewed, but chapters of editions comprised of individually peer-reviewed studies were consulted.

## Search methods for identification of research studies for this review

An extensive online search was conducted using Google and Google Scholar, employing search terms derived from the topics under review. In addition, the bibliographies from highly relevant sources and a search of the database EBSCOHost Connections employing the tag “homeless shelters” were also used. More than 1,000 citations were investigated to glean the nearly 140 items included in the final selected annotated bibliography appended to this report.

## Limitations

Although every effort was made to make a thorough and comprehensive investigation of the existing, accessible literature pertinent to the purpose and goals of this study, the following review is by no means exhaustive. A number of other studies make mention of the impact of the physical environment on individuals who have experienced trauma and/or homelessness, but in passing and to no great extent, as it is not the focus of their research, and many refer to the same primary or seminal studies without adding to their findings. In addition, only a handful of the numerous psychological and psychosocial studies on trauma and homelessness of interest to social services providers have been included; only those that were deemed most germane to the present study. Practitioners may regret the absence of case studies and post-occupancy evaluations or coverage of architectural design, but for reasons stated above those fell outside the scope of this study.

# HOMELESS AND HOMELESSNESS

## Overview

Homelessness, for the purposes of this report, refers to the state of persons who lack shelter suitable for human habitation or are temporarily residing in an emergency shelter or transitional housing program. Individuals may be homeless by “choice” (in that they prefer not to reside in the living conditions or shelter options available them) or due to circumstances beyond their control, including poverty, unemployment or low-paying jobs; lack of available affordable housing; fear of physical, psychological or sexual abuse; mental health issues, including post-traumatic stress disorder (PTSD); and alcoholism, drug addiction, or other substance abuse. Homelessness cuts across every segment of American society: men, women, children, families, the employed and the unemployed, retirees, veterans, and others of all ages, backgrounds, race and ethnicity.

According to the most recent national estimate of homelessness in the United States, from January 2014, 578,424 people were experiencing homelessness (National Alliance to End Homelessness, 2015). Despite the fact that the number of homeless individuals has recently decreased nationwide, homelessness remains a major social challenge in many states and larger cities across the country. In its most recent annual survey,

the U.S. Conference of Mayors Task Force on Hunger and Homelessness (2015) reports the total number of homeless persons increased across 22 cities surveyed by an average of 1.6 percent between September 1, 2014 and August 31, 2015, with 58 percent of the survey cities reporting an increase, and 42 percent reporting a decrease.

Federal funding to address homelessness is at its highest level in history (\$4.5 billion in fiscal year 2015); efforts to provide shelter have substantially increased in recent years (there are currently more than 3,700, according to HomelessShelterDirectory.org); and as many as one third of all homeless persons are unsheltered (e.g., living on the street or in a car or abandoned building) at any given time (National Alliance to End Homelessness, 2015). Yet, demand for temporary shelter continues to outstrip availability:

- From 2007 to 2014, the number of emergency shelter beds [nationwide] . . . increased by 18 percent . . . . In this same time period, the number of transitional housing beds decreased by 17 percent. . . . Nationally, the system capacity could assist 73 percent of the total homeless population on a

single night in January 2014; however, geographic and population mismatches may prevent every bed from being filled. (National Alliance to End Homelessness, 2015, pg. 55).

- Across the cities over the past year, an average of 25 percent of the demand for emergency shelter is estimated to have gone unmet. Because no beds were available, emergency shelters in 76 percent of the survey cities had to turn away homeless families with children. Shelters in 61 percent of the cities had to turn away unaccompanied individuals. (U.S. Conference of Mayors Task Force on Hunger and Homelessness, 2015, pg. 2).

As these figures attest, there is an immediate need to increase the availability of shelters and transitional housing for the homeless. In addition, as Davis (2004) and others have pointed out, the conditions and physical environments of many existing facilities are ill-suited to meet the needs of the populations they seek to serve. Architects and designers can make a valuable contribution to improving the quality of life for the homeless by applying their talents, knowledge and experience toward designing, building and/or renovating these much-needed facilities. Based on his review of recent projects to innovate shelter design, Wasmer (2005) observes, "Designers have the ability to generate a new identity for homeless because they can design a variety of shelters that promote and project individuality, self-sufficiency and dignity."

Many in the architecture and design community have undertaken shelter and other facilities projects for the homeless, both for hire and pro bono. More would do so but have expressed that it can be difficult to locate information that would help them design homelessness physical facilities. This report is intended to be a first step toward providing that information as culled from existing research.

## Issues related to design

Designing facilities for the homeless presents a special challenge because of the diversity of the population and of their experiences and needs. Moreover, funding and other resources needed to address those and the competing, if not conflicting, design requirements of the staff and volunteers who manage and work in the facilities are usually scarce. This section sets forth major design-related issues that will be examined in more detail in the body of the report.

**Safety and Privacy.** Of particular importance to the design of interiors for these facilities is accounting for the high incidence of trauma in this population. The U.S. Department of Health and Human Services Substance Abuse and Mental Health Administration (SAMHSA) has developed the following definition of trauma derived from a number sources:

- Individual trauma results from an event, series of events, or set of circumstances that is experienced by an individual as physically or emotionally harmful or life threatening and that has lasting adverse effects on the individual's functioning and mental, physical, social, emotional, or spiritual well-being. (SAMHSA, 2014, pg. 6)

Being homeless, with its accompanying dangers and stresses, is itself traumatic. Add to that, many homeless individuals are without a home because of previous traumatic events in their lives. They may be victims of domestic violence, physical, psychological and/or sexual abuse. They may have suffered a life-altering crisis, been institutionalized, or have some form of emotional or mental debility. In the case of homeless veterans, they may be experiencing PTSD or other combat-related trauma. They may abuse alcohol or drugs as a way to cope with their trauma. Often, trauma begins in childhood or youth, and its effects are exacerbated by other traumatic events and their consequences over a period of many years.

Traumatized individuals, understandably, are fearful of others and institutions. Safety, privacy and self-preservation are of utmost importance. Designers need to create spaces that are welcoming, demonstrate a safe environment, and provide some degree of privacy, while at the same time not interfering with staff's need to monitor residents' behavior. Gender privacy is a crucial

issue in facilities that provide services to both sexes and families.

**Control.** Of particular importance to the design of interiors for these facilities is accounting for the high incidence of trauma in this population. The U.S. Department of Health and Human Services Substance Abuse and Mental Health Administration (SAMHSA) has developed the following definition of trauma derived Because their own resources are scant, the homeless depend on others for their survival, be they government services, nonprofit services, religious and other charitable organizations, or strangers. That dependency can undermine their sense of dignity and deepen their feelings of helplessness and resentment. Providing means of personal control in the physical environment (e.g., the ability to rearrange furniture) has great symbolic and psychological significance, as well as practical benefit. Such choices, however, must take into account the need to balance personal independence with the comfort and safety of other residents.

**Durability and Maintenance.** Like other institutional settings, design of facilities for the homeless must take into account many practical considerations, such as maintenance and durability of materials. Facilities usually must be thoroughly cleaned each day, so ease of maintenance is essential for busy staff. Furniture and beds must be durable to withstand heavy use and cleaning, as well as occasional outbursts and altercations that may

occur among residents, particularly those with mental health or substance abuse issues. At the same time, the environment must be comfortable so that residents can relax and sleep in order to recover from the stresses they encounter every day.

**Storage.** Although they have no permanent home, the homeless have belongings. Often they carry with them all their personal possessions, including important documents and records, photographs and other memorabilia, cash or food stamps or vouchers, and, in some cases, drugs and drug paraphernalia. Residents need a place where they can store and securely lock up their belongings overnight and, depending on the facility, during the day when they are outside the shelter. Given that space is at a premium and budgets for furniture is minimal, designers must find creative solutions for secure storage.

**Multi-use.** Homeless facilities often serve multiple purposes: a place to get a meal; a place to shower and wash clothes; a place to sleep; a place to get counseling, employment assistance and other social services; and a place to find refuge from life on the street. Spaces need to be designed and furnished for reception and intake; offices and rooms for staff; food preparation and dining; dormitories; showers, sinks and toilets; and possibly a TV or recreation area and/or library, computer and Internet stations, laundry facilities, medical attention, and a play area for children. Designers, consequently, need some

familiarity with a variety of design specialties, including residential, office, hospitality, and even institutional and healthcare.

## Special populations

Both as a group and within subgroups, the homeless are highly diverse:

- The largest subpopulation experiencing homelessness [in 2014] was individuals, comprising almost 63 percent (362,163 people) of all homeless people. About 37 percent were people in families (216,261 people in 67,513 households). Individuals who were chronically homeless represented almost 15 percent (84,291 people) of the homeless population, while people in chronically homeless families made up approximately 3 percent (15,143 people) of the homeless population. About 9 percent (49,933 people) of the homeless population was made up of veterans. Unaccompanied youth and children accounted for 7.8 percent (45,205 people) of the total homeless population. (National Alliance to End Homelessness, pg. 7).
- The survey cities reported that on average, 29 percent of homeless adults were severely mentally ill, 22 percent were physically disabled, 18 percent were employed, 17 percent were victims of domestic violence, 12 percent were veterans, and 4 percent were HIV Positive. (U.S. Conference of Mayors Task Force on Hunger and Homelessness, pg. 2).

Women comprise about 10 percent of the homeless population. An estimated 6 percent of the homeless is age 62 or over (Office of Community Planning and Development, HUD, 2014, Part 2, pg. 1-8).

There is a great deal of overlap among these categories. For example, women make up about 8 percent of homeless veterans (Women's Bureau, 2014, pg. 8). Many homeless veterans are disabled or suffer from some form of mental disability. Most homeless families are comprised of single women with two or three children (Bassuk & Rubin, 1987); many of these women have fled domestic violence or sexual abuse. Homeless children and youth often have been the victims of physical or sexual abuse, as well. Chronically homeless individuals and victims of abuse are more likely to abuse alcohol, drugs and other substances.

Each of these subgroups has specific needs with implications for design. These are addressed in more detail in the body of the report.

# DESIGNING FOR HOMELESSNESS RESEARCH FINDINGS

## Overview

Given the limited availability of funding to address the needs of the homeless, it is perhaps not surprising that very little research has been done on the interior physical environment of homeless facilities. Of the 135 publications examined for this report, only two (Pable, 2012; Pable and Fishburne, 2014) report on research conducted on the interior design of homeless facilities. One (Potthoff, Chinucos, & Rosenberg, 1997) examined the interior design preferences of women in alcohol and drug treatment centers. Seven others (Berens, 2014; Bridgman, 2003; Ciao and Grossberg, 2009; Davis, 2004; Farmer, 2009; Pable, 2005; and Wasmer, 2005) present case studies. However, other detail can be drawn from qualitative studies (interviews and surveys) conducted with homeless shelter residents in which the physical environment is referred to, even though it was not the primary focus of the research.

Furthermore, many of the issues related to the impact of the physical environment of homeless facilities on homeless persons and service delivery – such as crowding, wayfinding, stress, privacy, and control – are similar to those in other environments for which we do have quantitative as well as qualitative research. This evidence-based information can help inform design

strategies and solutions for shelters, transitional housing, and other homeless facilities.

Practitioners must also take into consideration the transitory nature of this population and the psychological and emotional state of homeless individuals. As Pable and Fishburne observe,

- Psychological constructs related to homeless shelter environments may be much different than constructs held by residents regarding a typical home, as residents of transitional-style shelters may stay there for only three months to a year. Emergency shelter stays may be further limited to a day or several months. Shelter constructs are also unique because shelter residents are often in mental and sometimes physical crisis when they get there, and thus may have significant questions about their identity, purpose, and worth. (2014, pp. 2-3).

Understanding how the physical environment affects an individual's sense of identity, worth, dignity, and empowerment is essential to designing supportive and healing environments for trauma-experienced residents or clients.

By examining both the research on the built environment and the psycho-social research, we arrive at a more comprehensive and complete picture of the issues involved in designing facilities for the homeless and effective strategies and solutions for addressing them.

Because issues and needs vary with each particular facility and the population(s) it serves, the following topics have been arranged alphabetically to avoid any implied or inferred order of priority or importance.

## Aesthetics

Aesthetics often are an afterthought or of secondary concern in the design of facilities for the homeless as a matter of practicality. Funding is limited, and out of necessity or policy administrators and facility managers may opt for an institutional approach to the interior (Davis, 2004). During the programming phase for the design of a homeless shelter dormitory station, for example, staff commented to Kratzer (2014) that the stations were not to be “too nice,” or else residents may not want to leave (pg. 530).

Yet, as numerous studies have shown, aesthetics have a profound effect on the mood and well being of occupants. Vischer (2007) notes, “Architectonic details, which include colors and decoration, signage, artwork and design details, convey meaning and can have symbolic significance that affects people emotionally” (pg. 179). Ciao and Grossberg discuss the challenges

of “employing the politics of shape, scale, material and color to transform a dismal, leftover space [a clinic for the homeless run out of a church basement] into a comfortable and inviting environment for users and staff alike.”

In evaluating the effects of physical surroundings on service encounters, Bitner (1990) showed that an agency that was perceived as pleasant, beautiful, well kept, above average, neat, calming, efficient, etc., was considered more professional, believable and offering a higher level of customer service in handling a customer complaint than one which was perceived as disorganized, unpleasant, etc. Similarly, Orth and Wirtz (2014) concluded from their study of interior service environments that visual complexity reduces a service environment’s attractiveness. Visual complexity was determined by factors such as the irregularity, detail, dissimilarity, and quantity of objects; the asymmetry and irregularity of their arrangement; and the variations in color and contrast.

It is well documented that color affects mood and task performance (see Dilani (2009), pp. 61-62). Studies have shown that warm colors (red, orange, yellow) can cause arousal, while cool colors (blue, green, purple) have a calming effect. Raybeck (1991), for instance, advises to avoid the use of arousing colors in confined spaces to help reduce feelings of crowdedness. Color impacts the perception of the physical environment in many other ways, as well. Zavotka and Teaford (1997) found that use

of more familiar colors (i.e., those they had in their own homes) in assisted living facilities for older adults helped them to feel more “at home” by relating the new space to past experiences. Light-colored rooms help to make a space seem less crowded than do dark-colored rooms (Baum, 1967). Homeless residents responding to a needs survey said that more colorful rooms made them feel safer (Kratzer). In their study of residential alcohol drug treatment centers for women, Potthoff, et al. learned that residents objected to stark white walls, which they considered sterile and unfeminine, and preferred more feminine colors instead, such as soft white, peach or light rose (pg. 254), which made them feel more comfortable and respected.

Art, like color, performs multiple functions in how the physical environment affects occupants. Besides adding visual interest, art can convey meaning and symbolic significance. It can double as a natural view. Art can create a visual distraction that helps to alleviate stress (Bishop, 2011), as well as improve mood, comfort and customer satisfaction (Karnik, Printz, & Finkel, 2014). Potthoff, et al. found providing residents in alcohol and drug treatment centers with a corkboard on which they could attach pictures and photographs made them feel more at home, thus increasing their likelihood of remaining in the program and receptiveness to treatment.

Plants, too, are both decorative and salutary. They can perform an important biophilic function by connecting

occupants to the natural world, which has been found to reduce stress and pain and to improve mood (van den Berg, 2005). Lewis’s review of research (1994) indicated that settings that include vegetation reduce stress, promote peace, tranquility, enhanced self-esteem, and a sense of mastery of the environment. Lohr, Pearson-Mims, & Goodwin (1996) reported that when plants were added to a windowless computer lab on a college campus, participants were less stressed (measured by blood pressure) and more productive. Dijkstra, Pieterse, & Pruyn (2008) similarly concluded that the presence of indoor plants in a hospital room reduced stress by enhancing the perceived attractiveness of the room. A literature review of research revealed mixed findings on the psychological benefits of indoor plants, including emotional states, pain perception, creativity, task-performance, and indices of autonomic arousal; however, repeated findings indicate plants can be beneficial to pain management (Bringslimark, Hatig, & Patil, 2009).

## Children and Youth

Homeless children and youth fall into two categories, individuals and those who are members of a homeless family. While similar in some respects, each group also has specific needs and psycho-social issues that must be taken into consideration.

Pearce (1995) and Oliveira and Burke (2009) each conducted research on solitary homeless children and adolescents, with similar results and conclusions. Their work shows homeless youth have a high degree of

trauma. They are, as Pearce states, “casualties of larger social problems, including substance abuse, poverty, physical and emotional neglect, and physical or sexual abuse” (pg. 1). Because of their fear of adults, they are reluctant to access social services and prefer to live on the street or in abandoned buildings than go to a shelter. Life on the street often leads to petty crime, alcohol and drug use and trafficking, and selling sexual favors. Some of these individuals may eventually wind up in juvenile detention facilities, group homes, youth hostels, state hospitals, or treatment facilities for adolescent substance abusers. They tend to cycle in and out of life on the street and life in an institution of some sort. Although they are forced by circumstance to develop survival skills, many have difficulty coping with their situation, deepening their trauma. Neiman (1988), who conducted a review on research on resiliency in homeless children, concludes, “Clearly children cannot be abused and neglected for long periods of time and remain resilient” (pg. 24).

Children living in homeless shelters or transitional housing with one or both parents and often other siblings have a different set of issues. Bassuk and Rubin (1987) analyzed data on preschool and school age children that revealed a majority were suffering developmental delays, severe anxiety and depression, and learning difficulties. Approximately half of the sheltered homeless children required psychiatric referral and evaluation. Parlakian (2010) explores some of the ways that schools and social services can address the developmental needs of children in homeless families.

A qualitative study of children living in homeless shelters found that the children had different attitudes toward life in the shelter depending on their previous experience of home (Penuei & Davey, 1999). Some found the shelter unsatisfactory compared to their idea of home; some considered it an in-between stop until the family could get a home; and some considered it their home. The authors conclude, “Spaces for homeless children, and perhaps for the rest of us, are relational; that is, they are understood in terms of other spaces and the comforts, privacy, and meaning those spaces hold for children. . . . depending on the conditions of the shelter, the experience of families before becoming homeless, and children’s conceptions of ideal home spaces” (pg. 233).

## Crowding

Because the number of facilities and beds available in any one location is limited, and shelters typically employ dormitory style or open-plan layouts, high levels of social density are a common occurrence in facilities for the homeless. This can create a sense of perceived crowding, which has been found to have deleterious effects if prolonged.

Research on crowding and proxemics (i.e., personal closeness) distinguishes between social density, which is determined by the number of individuals in a given space, and crowding, which is an emotional and psychological reaction to social density (see, for example, Schmidt &

Keating, 1979; Karlin, 1980; Bordas-Astudillo, Moch, & Hermand, 2003). Schmidt and Keating employ a somewhat broad definition, contending that crowding results when a level of social stimulation occurs that is greater than that desired by the individual. Based on a review of research to date, Karlin deduces that crowding is perceived when one's goal is blocked. This may be caused by lack of privacy, extremely close proxemic interaction, or resource scarcity (i.e., insufficient space / congestion). If a solution is not forthcoming as a result of similarities in the composition of the crowd, learned behavior or cultural factors, says Karlin, individuals will either try to escape from the situation or try to change it. If both are inconvenient or impossible, negative effects will occur (pg. 242).

Among other effects, crowding is a stressor (Aiello, 1975; Baum & Valins, 1979; Evans, 1979; Inman & Sinn, 1987; Winchip, Inman, & Curtis Dunn, 1988). Baum and Valins (1974, 1979), in their studies of students in campus residence halls, found that perceived crowding led to avoidance behaviors and diminished ability to cope in social settings, and that these effects persisted even outside the residence hall environment. However, Zanter (1980), who also studied students in residence halls, found physical and social environment affected physical and mental health more than density, and that, contrary to expectations, isolation can be just as damaging as crowding.

According to Evans, Lercher, and Kofler (2002), there is good support for the claim that higher levels of interior

residential density (people per room) are associated with elevated levels of psychological distress among adults. Their study showed it had a similar affect on children.

McCain, Cox, Paulus, and Karlovac (1991) studied social density and crowding among prisoners. They posit, "All other factors being equal, the degree of social disorganization is positively related to the degree of observed negative effects associated with housing conditions" (pg. 3) – most likely (1) when a group of strangers is brought together, (2) when the number of individuals is too large to constitute a single cohesive group, and (3) when there is a high incidence of strange individuals introduced into a group or constant change of individuals within group formation-- all of which are common occurrences in facilities for the homeless.

Because a sense crowding or being crowded relates to perception and state of mind, it can be triggered by a number of factors. In another study of campus dormitories, Kaya (2001) found perception of room size and crowding were influenced by social factors, including relations with other residents and with roommates, and personal characteristics, such as sex, family size, and personal background including the number of people sharing a bedroom at one's home, and whether the individual stays alone or shares a bedroom with others. Aiello and Thompson (1980) discovered that perceived crowding is also culturally determined by one's expectations about size of spaces and social density. Studies in children have shown perceived crowding and responses to it also differ by gender – girls more readily perceive crowding than do boys (Murray, 1974; Lowry, 1993). Zanter similarly found

female students coped better living alone than did male students.

Perceived crowding can result when an individual feels they have little or no control over their social interactions (Baum & Valins, 1974), such as having to share sleeping quarters, encountering a number of strangers, or waiting in line for a service. Providing some degree of choice or perceived control can help to alleviate the sense of crowding (Schmidt & Keating; Hui & Bateson, 1991).

In addition, a number of studies have investigated the effects of the physical environment on perceived crowding. They indicate strategies and solutions designers can employ to help mitigate, mediate or alleviate the sense of crowding:

- Baum (1976) found light-colored rooms were perceived as less crowded than were dark-colored rooms. Visual complexity (paintings) can serve as a distraction from perceived crowding.
- Anantha (1991) found more open spaces alleviate the sense of crowding but are not always feasible due to building constraints. Two other strategies, increasing partitioning and decreasing illumination, also were effective in reducing perceptions of crowding and the resulting sense of stress and discomfort.
- Evans, Lepore, & Schroeder (1996) conclude persons living in homes with greater depth appear to be

buffered from some of the harmful psychological health effects of crowding. In addition, room brightness, subunit size, degree of private enclosure, as well as structural depth, may influence human responses to crowding. Sound attenuation, visual access and exposure, window views, and proximity to open spaces are some potential interior design elements warranting further exploration.

- Laughead (1999) found no evidence that ambient illumination levels affected perceived crowding. Other factors – proximity to others, presence of tables (assuming they hold reading materials), and a view of the entire space – were found to have more effect.
- Kaya (2001) found that rooms on higher floors in a high-rise building were perceived as less crowded.

Analysis of self-reported mental wellbeing data by Evans, Lercher, & Kofler (2002) indicates that high density in row houses may also be harmful to children. High-density living will be better tolerated when children live in smaller dwellings, preferably detached units; when they have a room of their own or at least a designated play space where they can be alone; when their residence is designed in such a way as to minimize uncontrollable social interactions; and when floor plan layouts provide better separation of rooms from one another.

## Dignity & Independence

Both the events that lead to homelessness and the conditions in which the homeless live can undermine their sense of dignity, autonomy, independence, and self-determination. Often, these feelings are reinforced and exacerbated by their encounters with social service agencies and other providers of services to the homeless. After reviewing more than 500 interviews between homeless individuals and service providers, Hoffman and Coffey (2008) found that the homeless individuals frequently experienced objectification and infantilization, which resulted in their becoming angry and avoiding further encounters with such agencies. Miller and Keys (2001) likewise distilled eight types of events that sustained dignity, such as being cared for by staff and having resources available to meet basic needs, and eight types of events were found that undermine dignity, such as being yelled at or insulted by staff persons and having staff use rules in an excessive and arbitrary way.

Paradis, et al. (2011) reviewed practices in Canada's social service services aimed at promoting the dignity, autonomy and self-determination of women and families facing homelessness. The most effective were involving clients in designing and delivering policies and programs; promoting their strengths, skills, sense of self-reliance, and mutual support; and respecting and responding to diverse needs, experiences and identities.

No individual studies of the impact of the physical environment on dignity were found. However, since dignity and autonomy are closely related to perceived control, offering more control over the physical environment can help increase sense of self worth (Clarke, 2009; Pable, 2012). Clarke articulates the principle that design should enable and maintain the dignity of patients in healthcare environments (or other traumatic environments). He lists eight areas where he believes designers could help to enhance dignity through changes to the physical environment:

- Reduce or remove known adverse stimuli
- Reduce or remove environmental stressors
- Engage the individual actively in a dynamic, multi-sensory environment
- Provide ways for the individual to exhibit their self-reliance (ability to do things for himself or herself)
- Provide and promote connectedness to the natural world
- Separate the individual from others who may be in distress
- Reinforce the individual's sense of personal identity
- Promote the opportunity for choice

## Empowerment & Personal Control

Empowerment is directly related to dignity and sense of control. Empowerment means self-determination, which in turn means the exercise of control (Ware, et al., 1992). Zimmerman (1990) distinguishes between two types of empowerment, political and psychological: “an empowered person may have no real power in the political sense, but may have an understanding of what choices can be made in different situations. . . . Empowered individuals may not always make the best (or correct) choices, but they may know that they can choose whether to fight or retreat, to be dependent or independent, and to organize or wait. . . . Ultimately, psychological empowerment is a contextual construct that requires an ecological analysis of individual knowledge, decision-making processes, and person-environment fit” (pp. 174-175).

Individuals or groups feel politically empowered when they are actively engaged in a decision-making process that affects them (Feldman & Westphal, 1999) and when they perceive that everyone concerned has a voice in the process (Comerio, 1987). Feldman and Westphal observe: “Empowerment is developed through an ongoing, accumulative process: experience builds up through repetitive cycles of action and reflection, which help people cultivate individual and collective skills and resources that help them effect positive changes in their environments and lives” (pg. 34). Goering, Durbin, Trainor, and Paduchak (1990) state that consumer involvement in planning and governing the residence is essential to

the success of developing housing for the homeless. Paradis, et al. found that this type of empowerment helped enhance homeless women’s sense of dignity and self-determination. Interestingly, Liu, et al. (2009) found that being homeless did not affect men’s sense of their masculinity. Tang’s observations of the behavior of residents at two homeless shelters in Oahu revealed residents used different types of strategies with the staff to maintain their sense of dignity and empowerment, principally, anger and avoidance behavior or friendliness and ingratiation.

Ware, et al. encouraged mentally ill homeless persons to transition to an independent living situation by bolstering their sense of psychological empowerment. Tenants set house rules on a number of fundamental issues and were gradually expected to assume control over other decisions. They also were urged to do for themselves the tasks that formerly required help from residential staff.

No individual studies on the effects of the physical environment on empowerment were found. Pable (2012) in part investigated whether an altered shelter can be assistive toward eventual empowerment. Based on the subjects’ remarks about having more control over aspects of their environment that gave them more choice and privacy, she concluded, “This study’s results suggest that providing parents with a sense of control over their personal environments may serve to enhance their sense of personal empowerment” (pg. 32).

## Environmental Control

Homelessness, especially when precipitated by circumstances outside of one's control, like the loss of a job or an eviction, instills a sense of helplessness and loss of control. Overcoming that sense of helplessness and inefficacy is a crucial step toward breaking the cycle of homelessness (Swick, 2005). One way designers can aid residents of homeless shelters and transitional housing to regain their sense of efficacy is to provide options that allow them some control over the physical environment. Pable (2012) adapted a bedroom in a shelter for homeless families so as to increase the residents' environmental control (e.g., putting a lock on the door, providing controls for lighting and a fan, adding bed curtains and moveable furnishings). A post-occupancy evaluation showed the residents frequently used the controls and had a higher level of satisfaction with their living arrangement. Moreover, exercising control increased the subject's sense of empowerment as well as well-being. Similarly, apartments that make up the transitional housing that forms part of Bud Clark Commons in Portland, Ore., are designed to be easily adaptable so each resident can personalize certain aspects, like furniture arrangement and color, thus adding to their sense of empowerment and of having their own home (Berens, 2014).

Analogously, Veitch (1996) reports that awarding subjects the lighting of their choice to perform a delegated task gave them a greater sense of control. Lee and Brand (2005) found that giving employees more control over the physical workspace led to perceived

group cohesiveness and higher job satisfaction. Raybeck concludes that providing more personal control over objects and elements of space in confined environments will help reduce perceived crowding and its negative effects.

Ulrich (1991) posited that designing healthcare environments to foster a sense of control with respect to physical-social surroundings would reduce stress and promote wellness. By the same token, Vischer determined that placing demands on employees while not allowing them control over their physical work environment induced stress.

In regards to facilities staff and volunteers, Davis (1984) presents a model for assessing how physical environments (in this case, office environments) affect behavior in terms of physical structure, physical stimuli and symbolic artifacts in order to facilitate managers' ability to supervise their employees. The ability to control or remove certain physical stimuli (e.g., ringing telephones, a clock on the wall, piles of paperwork, the smell of coffee) helped to eliminate distractions that affected employees' concentration and productivity.

## Families

Up until recently, families (typically, but not exclusively, a single mother with two or three children, one or more of which is of school age) were among the fastest growing populations of homeless. This led to the creation of

facilities expressly designed to meet the needs of families or of separate areas for families in facilities originally designed only for adults. Homelessness is especially traumatic and stressful for families (Swick, 2005). Lindsey (1998) reports that life in the shelters sometimes helped to bring families closer together emotionally, but that policies and routines in the shelters often disrupted their roles as disciplinarians and providers / caretakers.

Pable (2012) conducted a case study using a design intervention (see the section on Environmental Control, above) to investigate whether providing greater control over the physical environment would improve living conditions and choice for homeless families, particularly the parent. She concluded, “The findings of the study point to the potential benefits of the altered bedroom that extend beyond the expected positive reaction to its recent renovation” (pg. 32).

Davis (2004) notes that some shelters have day rooms where parents who are waiting for assistance can be with their children. Sometimes they provide both a quiet room and a room for conversation, and possibly a separate play area. Shelters that serve families usually have sleeping quarters for families separate from single men and single women.

In their study of the design of public restroom facilities, Anthony and Dufresne (2007) provide several examples of well designed family restrooms: “Family restrooms can have multiple unisex toilet rooms within them, but may also have space allocated for other amenities

and often share a common hand-washing and diaper-changing area. In addition, upscale family facilities may include family lounges, private nursing rooms, and baby changing areas” (pg. 283).

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## Function, Furnishings & Materials

As mentioned in the Overview to this section, facilities for the homeless perform multiple functions, each of which may require different design approaches and solutions. Bud Clark Commons in Portland, Ore., for example, includes separate waiting and intake areas, job counseling and placement services, showers and lockers, a dining facility, rooms for social service counseling, and offices for staff, plus transitional housing apartments, with separate ingress and egress for the services areas and the living quarters (Berens, 2014). Little research exists on function and functionality in facilities for the homeless, however.

Tips for shelter design offered by homeless persons and shelter staff gathered by Pable (2005) in her qualitative research include: Offer an ironclad way of keeping one's place in line that does not necessarily require physically standing in it. For safety, strategically orient seating so users are facing out from sheltering walls. Think carefully about spatial volumes that may be over-whelming; provide "retreat" spaces. Balconies can be an aesthetic addition to a build-ing, but they may also invite suicide attempts. Separate restrooms for staff should be provided.

Interviews conducted by Pable and Fishburne with homeless shelter residents revealed how residents perceive their room's size or its furniture, the presence or absence of privacy, how they can or cannot store their possessions, and how they are permitted or hindered from displaying objects that support their identities can positively or negatively affect their state of mind.

Davis (2004) mentions the need for separate showering and sleeping arrangements for single men, single women, and families. Mottet and Ohle (2006) point out that many shelters are physically unsafe for transgender people and fail to provide adequate protections for their privacy. Their recommendations for improving shelters for transgender people include design elements for the lobby and intake areas, restroom and shower privacy, and sleeping arrangements.

Davis (2004), Pable and Fishburne (2012), Potthoff, et al.,

and Pothukuchi (2003) all mention the need for adequate storage space. Storage needs be lockable. In addition, there is a need for closet space big enough to hang shirts, trousers, skirts or dresses without wrinkling them.

Guthrie & O'Donnell (n.d.) state that noise control is a key element in providing trauma-informed care for female veterans. Choice of flooring, wallcoverings, window treatments, and furniture can affect noise levels, especially as dormitory and other areas often are intentionally designed without a top or cover for purposes of monitoring residents (Davis, 2004).

Materiality is an area to date lacking in research. Although some authors refer in passing to the importance of materials selection, no specific studies were found during this review. Davis (2004) has a short section on materials that focuses mainly on construction materials. He does note, "Solid-color cushions show dirt and stains more readily than do bright patterns" (pg. 103). In addition, he mentions that furniture made of solid wood or covered with floor linoleum has been expressly created for shelters, as have some beds that include storage. Pable (2005), however, mentions bedroom furniture should not be constructed of wood as bedbugs can burrow into the wood grain and become impossible to eradicate. Potthoff, et al. provide a list of suggestions, including furnishings and furniture, for the design of alcohol and drug treatment centers for women, which usually involve longer stays and more time spent in counseling and treatment.

Little attention has been given to sustainability in the design of most facilities. Bud Clark Commons incorporates daylighting and nature views, as well as environmentally friendly or sustainable furnishings and materials (Berens, 2014). Farmer (2009) reports on the Bridge, a modern homeless shelter in downtown Dallas, which incorporates a number of sustainability features, including a green-roof dining area, substantial daylighting, and a graywater system.

## Healing Environments

Homeless individuals have physical, mental and emotional health issues that can be affected positively or negatively by their physical surroundings. Facilities for the homeless can help address these issues by employing the strategies and solutions developed to foster healing environments in the healthcare arena.

Based on his previous work on the impact of the physical environment and stress (Ulrich, et al., 1991; Ulrich, 1999), Ulrich (2001) has set forth a Theory of Supportive Healthcare Design that posits design of healthcare environments can promote healing by eliminating environmental factors that are known to be stressful or have negative impacts on outcomes, such as loud noises, lack of windows, multiple patients in one room, hard flooring materials (e.g., vinyl or linoleum), and poor indoor air quality. In addition to eliminating or reducing negative factors, supportive design employs “the inclusion of characteristics and opportunities in the environment that research indicates can calm patients,

reduce stress, and strengthen coping resources and healthful processes by fostering control, including privacy; promoting social support; and providing access to nature and other positive distractions” (pg. 54). These include art, soothing music, and plants, gardens and nature views. Schweitzer, Gilpin, & Frampton (2004) in their review of the research on elements of environmental design that make an impact on health outcomes arrive at similar conclusions.

Evans and McCoy (1998) describe five dimensions of the designed environment, primarily architectural, that could affect human health by altering stress levels, which they label as stimulation, coherence, affordances, control, and restorative. They list a number of interior design factors for each dimension that can impact stress, but do not provide recommendations for interior design solutions or approaches.

Evans (2003) reviewed research on the physical environment and mental health and found the mental health of psychiatric patients has been linked to design elements that affect their ability to regulate social interaction. In addition, crowding and loud noises were found to elevate psychological distress, although they do not negatively impact mental health.

Heulat (2002) presents a holistic approach to designing healing environments that takes into consideration the physical, psychological and spiritual needs of occupants. Along similar lines, Felgen (2004) outlines the characteristics of what she calls “therapeutic care,” which

including being conscientious of the impact of the physical environment on those being cared for. Based on her review of research on healing environments, van den Berg draws a distinction between design interventions that promote healing (e.g., nature views, noise reduction) and those that make interior spaces healthy (e.g., indoor air quality, sinks and hand cleaner dispensers). Contrary to Ulrich (1991; 1999) as well as Lewis (1994), she finds weak or inconclusive evidence that daylighting, indoor plants, or gardens contribute to healing.

## Home & Sense of Place

Central to the design of facilities for the homeless is the concept of home (Finley & Barton, 2003). Homeless individuals and families not only lack permanent shelter, they also lack the psychological and emotional connection to place that is fundamental to our sense of identity and well-being – what has been called “placelessness.” Cross (2001) defines placelessness as “a lack of place-based identification and a lack of emotional attachments to particular places” (pg. 12). What distinguishes homeless individuals from individuals who are mobile by choice is that the latter have a mobile sense of “home” and can cultivate a sense of home wherever they are, whereas in placelessness people do not have an articulated or place-based sense of home. They are cut off from any ties to a community or sense of belonging.

Poirier (1998), and to some extent Pable (2005), proposes that Maslow’s Hierarchy of Preponent Needs can be a useful tool for increasing residents’ satisfaction by taking

into account their basic needs. These include such factors as physiological needs (lighting, sound, thermal environment, and mobility) as well as the need for safety, belongingness, self-esteem, and self-actualization.

In setting forth the characteristics of human ecology theory, Bubloz and Sontag (1999) argue that communities should address the full range of needs as a holistic ecosystem encompassing the natural, built and socially constructed environment, including biological-physical sustenance, economic maintenance, and psychosocial and nurturance functions. They posit that the family is the principle social unit and thus fundamental to our concept of home and community.

Dovey (1985) addresses a number of design considerations essential to establishing a sense of “home” within the built environment, such as properties of “home” (order, including spatial order; identity, including spatial identity; connectedness; and dialectics, including spatial dialectics), that can inform designing environments for the homeless.

Walsh, et al. found that women are less likely than men to use homeless shelters because shelters typically do not conform to their idea of home. The homeless women they interviewed “stressed that home is a place of refuge from the outside world, a sanctuary that functions as a foundation allowing for fulfilling potential” (pg. 308). The need for privacy, particularly a bedroom where they could be alone, was of primary importance. “Furthermore, the ability to cook, entertain, and pursue leisure activities

were identified by study participants as freedoms that help make a place feel like home” (pg. 308). The study provides a number of recommendations for the location and design of shelters to make them more suitable for women, based on a defined set of criteria for what constitutes a sense of “home.” Among others: “Physically, home is quiet, clean, and structured. Amenities such as a telephone, working appliances, a refrigerator, heat and hot water, a front door, and adequate living space were all identified by the participants as basic needs that are critical for a place to even begin to feel like home. In particular, it was important to the women to have a door to be able to close to contain themselves in their own space and to open to include those of their own choosing. They indicated that the space should provide facilities to do laundry and keep themselves clean” (pg. 307). Women especially prefer having fewer individuals per bedroom.

Elias and Inui (1993) in their study of chronically older homeless men note that social meaning of shelter among older homeless persons has attributes similar to that of home among domiciled older persons, suggesting these attributes may be associated primarily with the aging process.

In their work with homeless youth, Penui and Davey discovered that the degree to which young residents felt “at home” in a shelter was contingent on their previous experiences of home and their ideation of “home.” Zavotka and Teaford report a similar finding from their study of older adults in assisted living facilities. Using

a Social Space Attachment Model, they showed that personal attachment to new surroundings occurs when the interior space is similar in purpose and visual stimuli to a resident’s previous home environment. By the same token, Burlingham, et al. (2010) report that negative associations with home from their childhood or youth made alcoholic homeless women reluctant and fearful to enter shelters.

On the other hand, as Davis (2004) and Kratzer point out, staff and administrators do not want residents to regard a facility as their “home,” as that is counterproductive to breaking the cycle of homelessness and helping them transition to more permanent housing.

## Order and Arrangement

Life on the streets is chaotic. In contrast, as Walsh, et al. state, “Physically, home is quiet, clean, structured.” Pothukuchi reports that residents living in working women’s hostels ranked cleanliness and maintenance high among the factors they deemed important to a good quality of life.

Facilities need to be aesthetically pleasing – not institutionally sparse – but visual complexity should be kept to a minimum (Orth and Wirtz). Providing an orderly environment that appears clean, well organized, and well maintained instills confidence and trust, has a calming influence, and encourages individuals awaiting services to be patient (Bitner). Staff and volunteers should avoid clutter, piles of paperwork or other stacks of boxes or supplies that may prove distracting or irritating to residents or clients (Davis, 1984).

Maintaining order can be a challenge for staff and volunteers. Facilities are crowded, and usually there are long lines of individuals waiting for intake or counseling. Neale and Stevenson (2013) in their study of homeless drug users state that in addition to complaining about the need for cleaner, more orderly facilities in shelters and hostels, the participants highlighted the need for more behavioral structures and boundaries.

Pable (2005) mentions that one recommendation given by residents and staff she interviewed was to offer an ironclad way of keeping one's place in line that does not necessarily require physically standing in it. Davis (2004) suggests several different strategies for the design of reception areas to assist with crowd control and long waits.

Furniture arrangement has been shown to have an impact on behavior. Davis (1984) relates, "The arrangement of seating not only influences where people sit but affects the character of the interaction that can occur" (pg. 273). For example, sitting face-to-face across a desk or table may be perceived as confrontational, whereas sitting corner to corner invites conversation and interaction. Evans (2003) and Baldwin (1985) report that seating can be arranged to increase socialization, which can be a challenge for homeless individuals but is mentioned as an important benefit of being in a shelter and a means of developing social networks to support transitioning into more permanent housing (Grunberg & Eagle, 1990).

Another tip Pable (2005) received was to strategically

orient seating so users are facing out from sheltering walls. This will help to increase their sense of safety and reduce stress.

## Privacy

Along with personal control and safety, privacy is the characteristic most often cited in the literature as being of utmost importance to residents. Privacy relates to independence, autonomy, dignity and identity, but also to safety, stress reduction, and healing. Because they have limited space and high density, shelters offer little privacy. Designers need to be creative and resourceful to help ensure residents have at minimum some level of perceived privacy.

In designing dorm stations for a shelter, Kratzer relates that residents expressed during the programming phase their desire for a place in the shelter that was private and "theirs" – a place they could be responsible for. Walsh, et al. and Burlingham, et al. each report that the women they interviewed spoke of the need for privacy, particularly a bedroom where they could be alone, with a door they could lock. The subjects in Pable's (2012) design intervention study also expressed the need for greater privacy and control of their privacy. In addition to putting a lock on the door, Pable added bed curtains to provide more personal control over privacy for the parents in her study.

Kratzer states that the ability to create opportunities for privacy while allowing sightlines and visibility for safety

created the most obvious design dilemma for his project and his student designers. The final station solution was a plastic and steel system comprised of three components that can be detached and reconfigured in a variety of modular arrangements – a headboard, a side privacy panel, and a circular privacy end unit. Davis (2004) provides several different strategies for increasing privacy or perceived privacy while not interfering with staff's need to monitor residents.

Concerning the privacy needs of staff and service providers, Chia and Grossberg echo Kratzer, "Perhaps the most pressing issue faced by small-scale homeless service providers is the need to engage in very private interactions in very public spaces. In the case of the clinic, patient histories, physical exams and diagnoses all take place in one open room, where flimsy screens and a noisy environment serve as the only buffers offering any sense of privacy. On the other hand, the clinic's open model maintains visual connections among staff, doctors and patients at all times, creating a less intimidating environment for patients. Building openness and privacy simultaneously is one of the main design challenges of the project."

## Safety and Security

For homeless individuals and families, and especially for those who have experienced trauma, safety is their foremost concern when entering a shelter or service environment (Bloom & Farragher; Fallott & Harris; Schweber, 2015). This is especially true for women and

transgender individuals (Burlingham, et al.; Mottet & Ohle) and homeless veterans (Desai, Harpaz-Rotem, Najavits, & Rosenheck, 2008).

Safety involves both physical safety (protection from violence and physical and sexual abuse) and psychological safety (protection from emotional and verbal abuse and institutional or arbitrary authority). Christian and Abrams (2003) found that homeless individuals were more likely to use social services if they felt providers did not stigmatize them and were "on their side" rather than on the side of authority. Hoffman and Coffey relate that the homeless individuals they interviewed chose to drop out the social service system altogether rather than be subjected to what they perceived as verbal abuse by providers (2008). Bridgman (2003) observed that allowing women to come and go as they wished and to decide when they wanted services created a sense of a safer environment.

Fear for physical safety ranges from unwanted social interaction or touching, to theft of personal property, to hands-on violence or abuse. Along with setting behavioral boundaries, shelters need to provide physical boundaries. Privacy, protection and freedom from harassment necessitate the setting of boundaries to prevent intrusion (Anderson, Gannon, & Kalchik, 2013). Neale and Stevenson note that subjects in their study specified the need for "safe and defensible" spaces. Pable (2005) was advised, for reasons of safety, to strategically orient seating so users are facing out from sheltering walls. As discussed above, in several studies, subjects,

especially women, pointed out the importance of having a sleeping space with a door they could lock. Separate sleeping and showering areas should be provided for single men, single women, and families (Davis, 2004) and for transgender individuals (Mottet and Ohlem date).

To help ensure safety, staff needs to be able to monitor residents. Davis (2004) suggests using low partitions and a combination of wall lighting and indirect lighting in the design of sleeping areas to accommodate the needs of both staff and residents (pp. 91-97). Bud Clark Commons was designed so that there are no dark corners or ends of hallways and no partial walls, partitions or other structures for individuals to hide behind (Berens, 2014).

Stamps (2005) conducted several studies on visual permeability and perceived levels of safety. Among other findings, more open spaces correlated with greater sense of safety; other influences affecting perceived sense of safety may be distances, possible hiding places, and lighting; locating a gap in the middle of a wall made the room feel more open and safer, while small amounts of gap made the room seem more enclosed and unsafe; visual permeability influenced impressions of enclosure: more visibility meant more openness, regardless of whether one could move through a boundary.

In Falloot and Harris' self-assessment tool for creating cultures of trauma-informed care, the section on safety includes a number of physical environmental factors to consider, such as: Where are services delivered? What signs are there? Are they welcoming? Clear? Legible? Are

doors locked or open? Are there easily accessible exits? How would you describe the reception and waiting areas, interview rooms, etc.? Are they comfortable and inviting? Are restrooms easily accessible?

## Spatial Layout / Perceptions of Space

How space is laid out in the entire facility and within areas of the facility can have a significant impact on individuals' mood and behavior. So does the perception of space, which is affected by the design of the physical environment.

As already mentioned, if the space is perceived as open, with clear sightlines and no barriers, it will increase the sense of safety (Stamps, 2005) as well as that of "spatial availability," which mitigates perceived sense of crowding (Baum, 1976). In his review of the implications of spatial research on interior spaces, Evans (1979) finds that perceived comfort is related to spatial perception and can be affected individual characteristics, interpersonal situations, and social settings. He also mentions the link between spatial dimensions, perceived crowding and stress, as does Vischer (2007).

Based on his review of research, Raybeck states that the structure of the environment, including shape, size, and amount and location of both fixed and moveable objects, and paths of ingress and egress can markedly influence both the perception of the environment by its occupants and patterns of interaction between them. Curved walls, he found, should be avoided (1991).

Gotham and Brumley (2002) describe strategies by which residents in a public housing complex “use space” to provide a measure of security and protection. By sitting in the doorways of their apartments to survey courtyards where their children play they are able to create safe spaces, free of criminal activity and drug use. They avoid spaces identified as “hot,” where such activity takes place, and are able to do so because there are streets with unobstructed sight lines and boundaries that provide safe spaces for them to walk. Similar types of behavior occur among residents in shelters.

Anderson (1997) adopted the metaphor of a street in the form of a lengthy arcade with lanes set perpendicular to configure a facility for the homeless as a way of providing a sense of “image congruity” and “social imageability” that residents could relate to. Residents and staff have credited the success of the facility in part to the open design and large amount of common space in the design, which invites socialization.

Similarly, Anantha, who compared spatial perceptions in “low-crowded” and “high-crowded” interior environments (banks), concluded that more open spaces alleviate the sense of crowding; however, they are not always feasible due to building constraints. Two other strategies, increasing partitioning and decreasing illumination, also were effective in reducing perceptions of crowding and the resulting sense of stress and discomfort.

Davis (2004) offers several strategies for the layout of dormitories, such as creating corridors or lanes rather than using open space or have rows of beds facing each

other in a long hallway, to increase a sense of privacy and reduce perceived crowdedness.

To balance the need for privacy and concentration with the need to monitor individuals and encourage interaction, Thompson (2015) rearranged the spatial layout of an existing interior design studio on campus to a U shape, which made it possible to remove high privacy walls while maintaining a sense of boundaries and personal distance.

## Trauma

Individuals and families who are homeless are likely to have experienced some form of previous trauma; homelessness itself can be viewed as a traumatic experience; and being homeless increases the risk of further victimization and retraumatization (Hopper, Bassuk, & Olivet, 2010). These individuals are highly vulnerable and will avoid shelters, transitional housing or other types of services if they feel they are not safe and supportive (Desai, et al.; LaGory, Fitzpatrick, & Richey, 1990).

Much of the literature on providing services to traumatized individuals focuses on the interaction between the provider and the client. Several models of trauma-informed care (TIC) have been proffered (e.g., Bloom & Farragher; Elliott, et al.; Fallott & Harris), but all are founded upon the same basic principles: ensure the individual feels safe; “do no harm” (i.e., avoid deepening the trauma or retraumatizing the client), and respect individual, gender and cultural differences.

No individual studies of the impact of the physical environment on traumatized individuals was found in this review, although many of the issues already discussed (control, gender preferences, privacy, security) apply to clients who are traumatized or have experienced trauma. Assessment tools for creating trauma-informed care and organizational cultures include measures of ensuring the physical safety of clients that refer to the built environment, such as lighting, privacy, locks for bathroom and places to store belongings, and a place for children to play (Center for Substance Abuse Treatment, 2014; Fallott & Harris; National Center on Family Homelessness; SAMSA; Women's Bureau, 2014). Guthrie and O'Donnell list privacy, noise control, choice of seating, easy exit, signage, accessibility, and decoration as important components of environmental safety in providing trauma-informed care for veterans.

## Wayfinding

Wayfinding is an important element in the design of facilities for the homeless for several reasons. Facilities are by nature temporary, thus residents or clients often are not familiar with their layout and the location of needed facilities or services. Clients are often fearful and disoriented, and therefore less aware of their physical surroundings. Many shelters and hostels only provide services at night, so interiors are often dimly lit. (Davis, 2004).

Wayfinding is a topic that has generated a considerable body of environmental research. Much of the research focuses on the architectural design of the built space

(e.g., floor layout and orientation, placement of stairwells and elevators) and the use of architectural elements (e.g., columns, intersections, doorways) as landmarks. However, some studies do address elements in the interior environment that can aid in wayfinding and egress in the event of an emergency.

After reviewing the research on wayfinding and spatial orientation, Gärling, Böök, & Lindberg (1986) report the findings confirm that individuals who are new to a space have the most difficulty with orienting themselves and thus have the greatest need for signage. They note, however, that in highly complex environments signage alone may not be sufficient – a conclusion that has been reaffirmed in a number of other studies (Lawton, 1996; Murphy, 2012; O'Neill, 1991; Rook, Tzortzopoulos, Koskela, & Rook, 2009).

In addition to signage, the presence of easily identifiable and describable landmarks (Jung & Gibson, 2007; Lawton, 1996) has been found to improve wayfinding and speed of egress. Murphy and Rook, et al., advocate “embedding” multiple cues for orientation and egress in the interior environment, including the use of prominent landmarks, color, features of the buildings and environment that allow for an intuitive performance of activities without reliance on signs, and the strategic placement graphical information in such a way that it is in agreement with the architectural layout of the environment.

Color is frequently used as an orientation strategy. Obediat, Obediat, & Amor (2011) determined that color was effective as an orientation and wayfinding cue when

used to help distinguish landmarks and when used as a color-coding system, not just as decoration. Hidayetoglu, Yildirim, & Akalin (2012) studied whether warm colors or cool colors and high lighting levels or low lighting levels were more effective for wayfinding. Their results show subjects were more likely to remember locations associated with warm colors, but that low levels of lighting could negatively mitigate the ability of subjects to wayfind based on color remembrance.

Spatial layout of floors also has been found to affect wayfinding. Hölscher, et al. (2006) offered subjects several different wayfinding strategies (central point, horizontal point, and vertical point) to exit a multi-level building. Overall, subjects favored the floor strategy, orienting themselves vertically. Werner and Schindler (2004) examined how the geometry of spatial layouts affected subjects ability to wayfind and concluded

that orientation of different parts of a building can be an important factor in wayfinding performance and therefore in the usability and the positive experience of a space. They found that misalignment of expected patterns of geometrical orientation led to a deterioration of wayfinding speed and accuracy. Similarly, in observing the behavior of patrons in a public library, Maudel (2013) discovered no definite pattern in the routes they took each time they used the library, but did find that paths which more directly connected one node of the library to another node (i.e., via a straight line) were used more often.

Lawton and Kallai (2002) showed that people of different genders and different cultures have different orientations, preferences and levels of anxiety about wayfinding. Hidayetoglu, et al. also found that the females in their study preferred higher brightness levels than did the males.

# AREAS FOR FURTHER RESEARCH

As is evident from the foregoing review, little research has been conducted to date on the effects of the interior built environment on the homeless. Some qualitative data is available from studies of the homeless in which the physical environment was not the principle focus of the research. Other studies have examined the effects of the built environment on occupants, but their focus was not on the homeless.

An argument can be made that practitioners do not need a great deal more primary research in order to improve the interiors of existing facilities and those have yet to be built. Evidence from other fields or design specialties provides basic guidance on ways to address issues in the physical environment that affect behavior, mood, health and well-being, as well as gender and cultural differences and, more specifically, the special needs of individuals who are traumatized, have some form of mental illness or debility, or abuse alcohol, drugs or other substances. In addition, designers can consult case studies and post-occupancy evaluations to see what strategies, solutions and interventions their peers have integrated into their projects.

Given that resources are limited and the need to provide services to the homeless is great, funding for research on the effects of the interior environment on the homeless

is likely to be scarce. That said, this review reveals some areas where further research would be beneficial to practitioners and to facility managers and administrators. They are, in no particular order:

- **Materials:** In general, materiality is an area on which almost no peer-reviewed research has been done as it relates to the effects of materials on occupants, other than chemical composition and possible toxicity. Research is needed on durability, comfort, ease of maintenance, noise abatement, and sustainability. What types of materials would be best to use for flooring, wallcoverings, window treatments? The research that exists applies mainly to healthcare environments, which have their own set of special needs.
- **Plants and Nature Views:** It is assumed that the homeless have the same biophilic need to connect to nature as those with a permanent residence. Does their experience with life on the streets alter their perception and relationship to nature? Are plants comforting or distracting for them? Do plants help to improve indoor air quality and other wellness factors in shelters and other facilities? If so, what varieties and at what levels?

- **Use of Space:** Are there more effective and efficient ways to design the interiors of shelters and other facilities so as to maximize available space? Would more flexible or adaptable designs facilitate better delivery of services and free up funds to improve the aesthetics and visual environment?
- **Visual Complexity:** Research shows that some level of visual complexity is beneficial as a distraction from perceived crowding and reducer of stress and anxiety. Other research shows that too much visual complexity can increase stress and stimulate arousal, as well as create a negative impression of the space and the service providers who operate within it. Is there a happy medium, and, if so, what types of visual complexity are viewed as welcome and what types are viewed as irritating or distracting?
- **Shelterization and Dependence:** Facility administrators and managers worry that making facilities too attractive and comfortable for residents is counterproductive in that it may become a disincentive for residents to leave the facility and transition to more permanent housing. This assumption has not been objectively tested. Some existing research indicates that the physical environment has minimal impact on whether residents stay and/or return to a facility, whereas self-esteem, self-reliance and having a supportive social network appear to have a major impact.
- **Behavioral Control and Boundaries:** What are optimal design solutions to balance the need to create an environment that reinforces the need for orderly, respectful behavior and the need for residents to feel their independence and ability to choose are being safeguarded? What types of visual and/or physical boundaries are effective without being intrusive or perceived as authoritative?

# DESIGN GUIDELINES AND RECOMMENDATIONS

The following design guidelines, tips, and recommendations have been culled from the literature reviewed for this report.

Clarke sets forth some general guidelines for the design of healthcare environments which apply equally as well to facilities for the homeless:

- Reduce or remove known adverse stimuli
- Reduce or remove environmental stressors
- Engage the individual actively in a dynamic, multi-sensory environment
- Provide ways for the individual to exhibit their self-reliance (ability to do things for himself or herself)
- Provide and promote connectedness to the natural world
- Separate the individual from others who may be in distress
- Reinforce the individual's sense of personal identity
- Promote the opportunity for choice

**Art** can create a visual distraction that helps to alleviate stress, as well as improve mood, comfort and customer satisfaction. Attention should be paid so that the art does not convey meaning or symbolic significance that would generate or arouse negative feelings.

**Color** can have a profound effect on residents' mood. Avoid sterile, institutional-looking colors or deeply hued warm colors (red, orange, yellow) that may arouse negative emotions. Lighter-colored rooms are perceived as more open, less crowded ("spatially available"), and thus safer and more calming. Color can be an important wayfinding device if used systematically to convey information about the location of rooms or services.

**Furniture** needs to be durable and easy to clean. Patterned fabric is easier to keep clean than solids. Some solid wood and laminated products designed for shelter use are available. Unfinished wood should not be used for beds as bedbugs can burrow into the wood and be impossible to eradicate. Beds should not look institutional. Arrangement of furniture needs to be considered for how it affects residents' sense of safety, perceived crowdedness, and relationship to staff (e.g., communicative or authoritative). In waiting or common areas, orient seating so users are facing out from sheltering walls. Allowing residents to rearrange a chair or other small pieces of furniture enhances their sense of control and independence. Avoid furniture that provides accessible drawers where items can be hidden or secretly transferred to others.

**Intake and reception areas** should be open and welcoming, with visual cues and signage that indicate where lines form and where facilities and service areas are located.

**Lighting and daylighting** affect perception of crowding, which relates to stress and discomfort. Rooms with more natural light appear less crowded. Lower levels of illumination also can mitigate perceived crowding (such as in a dormitory), but also impede wayfinding. Wall lighting and indirect lighting in dormitories is preferable to ambient lighting. Giving residents control over task lighting, such as a reading lamp, enhances their sense of independence and autonomy.

**Locks** on room doors or sleeping compartments, and bathrooms in shared housing situations, if possible, and storage units increase a sense of safety and control.

**Noise abatement strategies**, such as using carpeting on the floor and wallcoverings, should be employed to reduce stress and provide a quiet, relaxed atmosphere where residents can rest or sleep. As in healthcare settings, maintenance issues usually require some trade-off between ease of maintenance and noise reduction.

**Plants** can be both decorative and salutary. Research shows that settings that include vegetation reduce stress, promote peace, tranquility, enhanced self-esteem, and a sense of mastery of the environment.

**Showers, sinks and toilet facilities** should be easy to maintain. Separate areas should be available for

single men, single women and families, and transgender individuals.

**Signage** helps reduce stress and disorientation and facilitates wayfinding.

**Spatial layouts** should be simple, linear and easy to navigate. Breaking up space in dormitories to form smaller units, instead of one large open plan or parallel corridors, enhances the sense of privacy and safety.

**Storage spaces** with locks are essential. Sleeping areas preferably should have lockable storage compartments for belongings as well as a closet tall enough to hang a shirt, trousers, a dress or skirt.

**Visual buffers**, such as partitions, screens or curtains, can help create a sense of privacy. However, avoid visual barriers, such as panels, dead ends in hallways, unlit areas, etc., where someone could hide. Strive for visual permeability. Sight lines should be unobstructed as much as possible to reduce perceived crowded and stress. A mid-sized gap in a wall can make a room feel less crowded and safer.

**Visual interest** can serve as a distraction from perceived crowding and stress, but too much visual complexity can increase stress and anxiety.

**Waiting and play areas** help to alleviate stress, especially for homeless parents who need to conduct business and keep an eye on their children. If space allows, include both a quiet room and a room for conversation.

# DESIGNING FOR HOMELESSNESS: A SELECT ANNOTATED BIBLIOGRAPHY

## Homelessness - General

Acosta, O., & Toro, P. A. (2000). Let's ask the homeless people themselves: A needs assessment based on a probability sample of adults. *American Journal of Community Psychology*, 28(3), 343-366.

*"A probability sample of 301 homeless adults from Buffalo, NY, was followed over 6 months to document the utilization of a variety of community services, examine services desired, and identify factors associated with service utilization, preference, and satisfaction. The following needs were all rated as at least equally important as the need for affordable housing: safety, education, transportation, medical/dental treatment, and job training/placement (most of these needs were also rated as difficult to obtain). Needs for formal mental health and substance abuse services were rated as relatively unimportant and easy to obtain, and for those who actually used them, respondents were often dissatisfied with them." In conclusion, the authors observe, "Examining the discrepancy between importance and difficulty ratings suggests a mismatch between what homeless persons*

*perceive as critical areas of need and what service agencies may be providing." The study does not address the condition of shelters or affordable housing.*

Anderson, R. (1997). Street as metaphor in housing for the homeless. *Journal of Social Distress and the Homeless*, 6(1), 1-12.

*This paper presents preliminary findings from research-in-progress on the development of StreetCity, nonprofit shared housing for the chronically homeless in Toronto. By far the greatest part of StreetCity is given over to public and semipublic space. An arcade, or wide interior corridor, the "Main Street," as it is known, runs the entire length of the middle building. Smaller corridors run at right angles from the main corridor. The street offers those who have been homeless "image congruity" and "social imageability"; it is a setting that conveys vivid and socially relevant meanings to its users. "The open design of the building and large amount of common space have been credited by both*

*residents and staff as part of the success of the project.” Some residents have said what they don’t want is the “isolation of ordinary apartment living,” while those who wish to move to more permanent housing prefer self-contained housing.*

Bubolz, M. M., & Sontag, M. S. (1993). Human ecology theory. In Doherty, W.J. (Ed.), *Sourcebook of family theories and methods: A contextual approach* (pp. 419-450). New York: Springer US.

*“Human ecology theory is unique in its focus on humans as both biological organisms and social beings in interaction with their environment.” The authors focus on the family as the principle social unit, but the theory has applicability to any group situation and the need to address the full range of needs as a holistic ecosystem encompassing the natural, built and socially constructed environment, including biological-physical sustenance, economic maintenance, and psychosocial and nurturance functions.*

Cross, J. E. (2001). What is sense of place? In *Archives of the Twelfth Headwaters Conference*. Gunnison, CO: Western State Colorado University. Found at [http://western.edu/sites/default/files/documents/cross\\_headwatersXII.pdf](http://western.edu/sites/default/files/documents/cross_headwatersXII.pdf)

*The author discusses two different aspects of the concept sense of place. The first aspect, relationship to place, consists of the ways that people relate to places, or the types of bonds we have with places. The second aspect, community attachment, consists of the depth and types of attachments to one particular place.*

Dovey, K. (1985). Home and homelessness. In *Home environments* (pp. 33-64). New York, NY: Springer US.

*The author uses the term “homelessness” to describe the lack or erosion of a sense of “home” (vs. a house), not the phenomena of individuals without a place to live. Nonetheless, the article addresses a number of design considerations essential to establishing a sense of “home” within the built environment, such as properties of “home” (order, including spatial order; identity, including spatial identity; connectedness; and dialectics, including spatial dialectics), that can inform designing environments for the homeless.*

EbscoHost Connection. Citations with the tag: HOMELESS shelters. <http://connection.ebscohost.com/tag/HOMELESS%20shelters&offset=0>

*An extensive list of articles on all aspects of homelessness housed by EbscoHost.*

Finley, S., & Barton, S. C. (2003). The power of space: constructing a dialog of resistance, transformation, and homelessness. *Qualitative Studies in Education*, 16(4), 483–487.

*The article summarizes the contributions to a special issue of the journal on homelessness. The purpose of this special issue is threefold: (1) to challenge standard conceptions of homelessness in order to open up new ways of understanding how and why homelessness proliferates in Western society; (2) to demonstrate the power of place in the lives of unhoused individuals in their (and our) efforts to imagine new social relations and ways of being in a world understood and described primarily by the kinds of material and social capital not afforded to those in homeless*

situations; and (3) to share stories of lives in distressed housing in multiple forms as a way to increase the possibility of bringing the lives of homeless individuals into the core of our conversations in educational research.

Grunberg, J., & Eagle, P.F. (1990). Shelterization: How the homeless adapt to shelter living. *Psychiatric Services*, 41(5), 521-525.

*Despite dangerousness and depersonalization in the shelter, residents do not flee the building. Instead, they stay and develop coping strategies that provide them with a feeling of mastery unparalleled outside the shelter. A strategy that may ameliorate the process of "shelterization" includes the establishment of positive social networks and the promotion of affiliations between the homeless and social service and mental health providers.*

Hulchanski, J.D., Campsie, P., Chau, S.B.Y., Hwang, S.W., & Paradis, E., eds. (2009). *Finding Home: Policy Options for Addressing Homelessness in Canada*. Toronto: University of Toronto. Found at [www.homelesshub.ca/FindingHome](http://www.homelesshub.ca/FindingHome)

*Examines a variety of housing and policy options for the homeless, including chapters on transitional housing and shelters. The authors review research on the suitability of each housing type for particular populations but not specifics of design.*

La Gory, M., Fitzpatrick, K., & Ritchey, F. (1990). Homeless persons: Differences between those living on the street and in shelters. *Sociology and Social Research*, 74(3), 163-167.

*The authors interviewed 150 homeless persons, some who live in shelters and some who live on the street. They found that, while individuals may move in and out of each environment at different times, shelter users are more likely to be women, better educated, socially affiliated, and have experienced greater vulnerability in the past. Street users were more dissatisfied with their living arrangements and craved more autonomy than found in the shelters.*

National Alliance to End Homelessness. (2015). *The State of Homelessness in America 2015: An examination of trends in homelessness, homelessness assistance, and at-risk populations at the national and state levels*. Washington, D.C.: National Alliance to End Homelessness.

*This report is intended to serve as a desktop reference for policymakers, journalists, and community and state leaders. Chapter 1 details national and state trends in the overall homeless population and subpopulations, including individuals, families, and veterans. Chapter 2 presents trends in populations at-risk of homelessness, including households experiencing severe housing cost burden and people living doubled up with family and friends. Chapter 3 analyzes the types and scope of assistance available to people experiencing homelessness and utilization of those resources.*

Office of Community Planning and Development, HUD. (2014). *The 2014 annual homeless assessment report (AHAR) to Congress. Parts 1 & 2*. Washington, D.C.: U.S. Department of Housing and Urban Development.

*This report provides population estimates of homeless at the national, state and continuum of care (CoC) level and reports on progress at the federal level to address the issue of homelessness and the needs of the homeless.*

Schweber, N. (2015, September 6). Life on the streets. New York Times. Found at [http://www.nytimes.com/interactive/2015/09/06/nyregion/07homeless-in-new-york-city.html?\\_r=1](http://www.nytimes.com/interactive/2015/09/06/nyregion/07homeless-in-new-york-city.html?_r=1)

*A reporter and a photographer visited homeless encampments across New York City, interviewing dozens of people, from teenagers to those in their 70s. Many had spent some time in the shelter system but preferred living on the streets because of safety or health concerns, or in order not to be separated from a companion.*

Substance Abuse and Mental Health Services Administration (SAMSA). Homeless Resource Center. Website. <http://homeless.samhsa.gov/Default.aspx>

*The Substance Abuse and Mental Health Services Administration's (SAMHSA) Homelessness Resource Center (HRC) is an interactive learning community dedicated to disseminating knowledge and best practices to prevent and end homelessness. It includes providers, consumers, policymakers, researchers, and public agencies at Federal, State, and local levels. Information is organized by topics. The section on housing covers transitional housing, shelters and supportive housing, focusing on their suitability for specific populations.*

The United States Conference of Mayors Task Force on Hunger and Homelessness. (2015). Hunger and homelessness survey: A status report on hunger and

homelessness in America's cities. A 22-city survey. Washington, D.C.: The United States Conference of Mayors.

*This report presents the results of a survey of 22 of the cities whose mayors serve on The U.S. Conference of Mayors' Task Force on Hunger and Homelessness. Officials were asked to provide information on the extent and causes of hunger and homelessness in their cities, and the emergency food assistance and homeless services provided between September 1, 2014 and August 31, 2015.*

## Children & Youth

Bassuk, E. & Rubin, L. (1987). Homeless children: A neglected population. *American Journal of Orthopsychiatry*, 57(2), 279-286.

*The authors conducted interviews with 82 families, including 156 children. Typical homeless family consists of a single mother with two or three children. Once homeless, these families are housed in substandard conditions in welfare hotels and motels or in shelters. Assessments of the children, both preschoolers and school age, revealed a majority were suffering developmental delays, severe anxiety and depression, and learning difficulties. Approximately half of the sheltered homeless children required psychiatric referral and evaluation.*

Neiman, L. (1988). A critical review of resiliency literature and its relevance to homeless children. *Children's Environments Quarterly*, 5(1), Street Children and Children in Homeless Families, 17-25.

*The introduction provides details about substandard living conditions of homeless families. After reviewing the literature and discussing factors that affect resiliency, the author cautions against adopting a view that stressful life conditions are life-enhancing, as this is not the case for most children. Although some children manage to cope better than others, "Clearly children cannot be abused and neglected for long periods of time and remain resilient."*

Oliveira, J. O. S., & Burke, P. J. (2009). Lost in the shuffle: Culture of homeless adolescents. *Pediatric Nursing*, 35(3), 155.

*Conducted over a period of 18 months, this ethnographic study examines reasons why adolescents choose to live on the streets and their survival mechanisms. Because of their fear of adults, they prefer to find their own place to live or sleep rather than go to shelters.*

Pearce, K.D. (1995). Street kids need us too: Special characteristics of homeless youth. *Research update. Parks & Recreation*, 3(12), 16,18, 20 and 22.

*Street kids remain at the fringes of society and are casualties of larger social problems including substance abuse, poverty, physical and emotional neglect, and physical or sexual abuse. Street kids are in need of public and private assistance but are unlikely to access public services because of their mistrust of adults. Since street kids*

*rarely seek assistance, outreach (also called streetwork) has been shown to be the most effective way to reach high risk, homeless youth. Outreach is most effective when the streetworker has a specific program or activity to suggest to the youth. Two successful recreation programs have been adventure-based recreation and theater groups.*

Penuei, W., & Davey, T.L. (1999). "I don't like to live nowhere but here": The shelter as mediator of U.S. homeless youth's identity formation. *Mind, Culture, and Activity*, 6(3), 222-236.

*Participants in this study were 17 homeless children and youth living in two family shelters in a large southeastern city. They were interviewed regarding questions about what makes an ideal home and how the shelter functions as a home. Some found the shelter unsatisfactory compared to their idea of home; some considered it an in-between stop until the family could get a home; and some considered it their home. The authors conclude: "One important implication of examining space in this way is that we can move researchers' and practitioners' understanding of shelter spaces beyond the dichotomous descriptors orderly and chaotic. Spaces for homeless children, and perhaps for the rest of us, are relational; that is, they are understood in terms of other spaces and the comforts, privacy, and meaning those spaces hold for children. These children view the shelter in relation to other spaces in their lives, and these positionings reflect differing "speaking consciousnesses" depending on the conditions of the shelter, the experience of families before becoming homeless, and children's conceptions of ideal home spaces."*

## Crowding [see also, Proxemics]

Aiello, J., Epstein, Y.M., & Karlin, R.A. (1975, April). Field research on human crowding. Paper presented at the Annual Meeting of the Western Psychological Association, 55th, Sacramento, CA.

*In a study of overcrowded residence halls, students who were triple crowded as opposed to double crowded were more dissatisfied with their living conditions and more quickly aroused. Women were more negatively affected than men. Crowding is a stressor; however, subjects' response to crowding is complex and variable.*

Aiello, J. R., & Thompson, D. E. (1980). Personal space, crowding, and spatial behavior in a cultural context. In Altman, I., Rapoport, A., & Wohwill, J.F. (Eds.), *Human behavior and environment*, vol. 4: Environment and culture (pp. 107-178). New York: Springer US.

*In an extensive review of the research on personal space and crowding in various cultures, the authors find support for the view that contact and noncontact cultures use space differently, leading to different experiences of crowding and different methods of coping with crowding. These differences are reflected in the architecture of these cultures. However, they note that more research is needed on how environmental design is both a product of respective cultures and an influence on the spatial behavior of individuals within those cultures.*

Anantha Krishna, K.S. (1991). Effect of architectural and spatial variables on the perception of crowding. *Architectural Science Review*, 34(3), 95-108.

*The study investigated the differences in behavioral responses of subjects between two sets of contrasting interior environments (public banks), "high-crowded" and "low-crowded" settings, which were classified as such on the basis of six spatial and architectural variables: the nature and placing of partitions, the level of illumination, the shape of the room, the number of persons seen through openings, the density of the inhabitation, and the number of people inside an office room. The study suggests that more open spaces alleviate the sense of crowding but are not always feasible due to building constraints. Two other strategies, increasing partitioning and decreasing illumination, also were effective in reducing perceptions of crowding and the resulting sense of stress and discomfort.*

Baum, A. (1976). Spatial and social aspects of crowding perception. *Environment and Behavior*, 8(4), 527-544.

*This study examined the effects of room color and visual complexity on perceptions of room capacity and judgments of crowding. Dark-colored rooms (which decrease perceptions of spatial availability) were perceived as smaller, stuffier, and more crowded than light-colored rooms (which appear to make the room seem larger) of the same size. Visual complexity, such as adding paintings, helped to distract occupants from the perception of crowding by giving them something else to focus their attention on.*

Baum, A., & Valins, S. (1974). Architecture, social interaction, and crowding. *Transactions of the New York Academy of Sciences*, 36(8), series II, 793-799.

*This study compared college students' reactions to two contrasting residence hall configurations: suite-design dormitories and corridor dormitories. It found that students in corridor dormitories experienced more sense of crowding, possibly because they had less control over the amount of social interaction they encountered. It affected their mood and behavior. Even outside the dormitory in a laboratory setting they tended to avoid social interaction.*

Baum, A., & Valins, S. (1979). Architectural mediation of residential density and control: Crowding and the regulation of social contact. *Advances in Experimental Social Psychology*, 12, 131-174.

*The article summarizes several experiments involving college students in dormitory settings. The authors found students in settings perceived to be of high social density experienced a sense of crowding and stress. They developed avoidance behaviors, such as not making eye contact, to cope, but these behaviors did not lessen their feelings of discomfort and stress. Avoidance behaviors were exhibited outside the dormitory setting in other social environments. The authors conclude: "Prolonged exposure to high social density and loss of regulatory control can therefore be expected to diminish residents' ability to cope."*

Bordas-Astudillo, F., Moch, A., & Hermand, D. (2003). The predictors of the feelings of crowding and crampedness in large residential buildings. In Gabriel Moser, et al., (Eds.), *People, places and sustainability* (pp. 220-227), Kirkland, WA: Hogrefe and Huber Publishers.

*Interviews were conducted with 162 inhabitants of three large residential buildings located in the 13rd district of*

*Paris. The authors found three variables are predictive of the two feelings of crowding and crampedness: the relationships with the inhabitants, the evaluation of the building density, and the satisfaction with respect to the area of the flat. The satisfaction with respect to the acoustic isolation and the evaluation of the number of flats per floor are only predictive variables of the feeling of crowding. If the objective measure of internal density (the area per person) is significantly related to the feeling of crampedness, it did not appear to be a predictive variable. Inhabitants having good relationships with the other tenants are less disposed to feel crowded, in line with a "buffering effect" of social support.*

Evans, G.W. (1979). Design implications of spatial research. In Aiello, J., & Baum, A. (eds.), *Residential crowding and design* (pp. 197-215). New York: Plenum Press.

*"Evans considers the implications of spatial research for the microenvironment (immediate, interior spaces). In his review of the psychological and physical variables that impact on spatial behavior he discusses two general areas of personal space and crowding that should be helpful to the designer: (1) investigations that have specified 'comfortable' spatial requirements as a function of individual characteristics, interpersonal situations, and social settings; and (2) the small number of empirical studies that have manipulated design parameters and measured the impact on perceived crowding. . . . the concept of stress is posited to be the critical mediating link."*

Evans, G. W., Lepore, S. J., & Schroeder, A. (1996). The role of interior design elements in human responses to crowding. *Journal of Personality and Social Psychology*, 70(1), 41-46.

The article investigates the role of a single theoretical construct, architectural depth as a potential moderator of the relationship between household crowding and psychological distress. The data indicate that depth may be a salient architectural feature in regulating household reactions to crowding. Persons living in homes with greater depth appear to be buffered from some of the harmful psychological health effects of crowding. Furthermore, this significant buffering process appears to be mediated by social withdrawal. Individuals in crowded homes suffer greater psychological distress in comparison to those from uncrowded homes. This does not occur, however, in homes with greater architectural depth. In addition, room brightness, subunit size, degree of private enclosure, as well as structural depth, may influence human responses to crowding. Sound attenuation, visual access and exposure, window views, and proximity to open spaces are some potential interior design elements warranting further exploration.

Evans, G. W., Lercher, P., & Kofler, W. W. (2002). Crowding and children's mental health: The role of house type. *Journal of Environmental Psychology*, 22(3), 221-231.

Generally, there is good support for the claim that higher levels of interior residential density (people per room) are associated with elevated levels of psychological distress among adults. This study examines whether typical variations in housing type, specifically, single family, row house, or multiple unit dwellings, make any difference in how children respond to residential crowding. Children who live in multiple-family dwellings react more strongly to high-density conditions than those living in either single-family or row houses. The findings for the child's self-

reported mental wellbeing data indicate that high density in row houses may also be harmful. High-density living will be better tolerated when children live in smaller dwellings, preferably detached units; when they have a room of their own or at least a designated play space where they can be alone; when their residence is designed in such a way as to minimize uncontrollable social interactions; and when floor plan layouts provide better separation of rooms from one another.

Hui, M.K., & Bateson, J.E.G. (1991). Perceived control and the effects of crowding and consumer choice on the service experience. *Journal of Consumer Research*, 18, 174-184.

It has been suggested that perceived control is a crucial determinant of the quality of the two types of interactions (interpersonal and human environment) that constitute the service encounter. Two situational features of the service encounter, consumer density and consumer choice, were manipulated in the experiment, and their effects on the consumer's emotional and behavioral responses to the encounter were examined. Results show choice (i.e., control) can mediate the influence of density on perceived crowding and pleasure. A greater degree of choice can lower the consumer's perceived crowding. Whether density is perceived as a positive or negative depends on the type of environment (e.g., a bank vs. a bar) and the consumer's situational goals.

Inman, M., & Sinn, M. (1987). Family stress in the interior living environment related to the number of bathrooms. *Home Economics Research Journal*, 16(2), 103-108.

*The purpose of this study was to examine the relationships between number of bathrooms in the residential dwelling and (1) family social climate, (2) family perceptions and attitudes, (3) environmental stressors. Two hundred Indiana families were interviewed. Results indicated a significant relationship between stress levels within this group of families and number of bathrooms in the residential dwelling.*

Kaya, N. (2001). Satisfaction in a dormitory building: The effects of floor height on the perception of room size and crowding. *Environment and Behavior*, 33(1), 35-53.

*Two 5-story dormitory buildings, one housing men and the other women, in which all rooms are of identical size and have equal density, were chosen for the survey. The highest (fifth) and the lowest (ground) floor were included in this research with a sample of an equal number of male and female students for each. As predicted, residents on the highest floor perceive their rooms as larger and feel less crowded than residents of the lowest floor. Overall, when the room is perceived as larger and the feeling of privacy in a room increases, the satisfaction with a dormitory room also increases. In addition, perception of room size and crowding were influenced by social factors, including relations with other residents and with roommate, and personal characteristics, such as sex, family size, and personal background including the number of people sharing a bedroom at one's home, and whether the individual stays alone or shares a bedroom with others.*

Lowry, P. (1993). Privacy in the preschool environment: Gender differences in reaction to crowding. *Children's*

*Environments*, 10(2), School Design: A Continuous Process, 130-139.

*When placed in high-density conditions, children require and engage in more solitary play. A combination of high density with low resource availability tends to most consistently produce negative effects on child behavior, and on aggressiveness in particular. Preschoolers of both sexes aged 3- to 5-years old in two childcare facilities were provided one of two privacy areas (each 30" x 30"), one open and one more enclosed. The enclosed structure was preferred for solitary play and for interactive play when there was more density. The girls preferred enclosed structures more than did the boys for both types of play.*

McCain, G., Cox, V., Paulus, P. & Karlovac, M. (1981, April). Social disorganization as a critical factor in "crowding." Paper presented at the Annual Meeting of the Midwestern Psychological Association Convention. Found at <http://eric.ed.gov/?id=ED205435>

*Sense of social disorganization increases perceived sense of crowding. All other factors being equal, the degree of social disorganization is positively related to the degree of observed negative effects associated with housing conditions – most likely (1) when a group of strangers is brought together, (2) when the number of individuals is too large to constitute a single cohesive group, and (3) when there is a high incidence of strange individuals introduced into a group or constant change of individuals within group formation. Analysis of prisoner data found that high turnover increased social disorganization. Entry into new quarters creates social disorganization for the individual,*

*and entry into a dormitory environment presents the individual with greater problems.*

Murray, R. (1974). The influence of crowding on children's behavior. *Psychology and the Built Environment*, 112-117.

*The purpose of the study, which involved 250 children of both sexes in primary levels 4 and 5, was to test the hypothesis that crowded children are more aggressive and insecure. Crowding was defined as the number of persons per room, measured by household size and family size. The findings indicate that crowded children will tend to be more aggressive, impulsive and extroverted. If boys, they will be more neurotic, if girls less neurotic.*

Schmidt, D.E., & Keating, J.P. (1979). Human crowding and personal control: An integration of the research. *Psychological Bulletin*, 86(4), 680-700.

*Comprehensively reviews the literature on crowding and control. A situation will be evaluated as crowded when density or other related conditions restrict or interfere with the activities of an individual within the setting, i.e., the individual's sense of freedom and control over the environment. However, this can vary by culture, group or subgroup. In general, crowding results when a level of social stimulation occurs that is greater than that desired by the individual. Again, however, what may be deemed an optimal level of social contact varies with the individual and/or particular situation. Three types of control are reviewed: behavioral, cognitive, and decisional. The authors present a control-attribution model for how an individual responds to and assesses the environment in terms of behavioral,*

*cognitive and decisional control to arrive at a perception of crowding.*

Winchip, S., Inman, M., & Curtis Dunn, P. (1989). Stress due to crowding in multifamily dwelling interior spaces. *Home Economics Research Journal*, 18(2), 179-188.

*The study focused on perceived residential stress and family social climate of families in two stages of the family lifecycle, early (married with no children) and crowded (married with at least one child of preschool age) living in multifamily married student housing of the same size. Crowded families found their living conditions to be more crowded and more stressful. Those in crowded families adapted their behavior to cope with the stress, such as cutting back on entertaining, establishing house rules, or conducting more activities outside the home. They also scored lower on sense of cohesiveness, expressiveness and independence. The authors note that the presence or absence of children and the subjects' obligations as students may have affected stress levels.*

Zanter, F. (1980). Human response to residential crowding: An analysis of dormitory environments. (Unpublished master's thesis). Ohio State University, Columbus, OH.

*The study found that low-density conditions were more negative in terms of their effect on a student's physical and mental health than were high-density conditions, indicating that social isolation can be as damaging as overcrowding. It also found that physical and social environment affected health more than density. Social interaction can help mitigate the negative effects of an unpleasant and arousing environment. Women were more likely to do better in single living conditions than were men.*

## Culture and Identity

Christian, J., & Abrams, D. (2003). The effects of social identification, norms and attitudes on use of outreach services by homeless people. *Journal of Community & Applied Social Psychology*, 13(2), 138-157.

*The study found self-categorization as homeless emerged as a precursor of more specific and well-defined social identification with particular support services. In turn, identification with support services (i.e., not feeling stigmatized) increased uptake of the services both directly and indirectly. One interesting conclusion is that homeless people's use of outreach services does not merely reflect deliberative processes, such as weighing up the pros and cons of using services. A further important element is whether they have an ideological or principled orientation to their relationship with institutional authority, and whether they see the service as being on their own side of that relationship. The study found no distinctive or unique effects associated with gender, marital status or age and use of services, suggesting that effective interventions to increase uptake of outreach services should focus instead on social psychological rather than demographic variables.*

Gotham, K. F., & Brumley, K. (2002). Using space: Agency and identity in a public-housing development. *City and community*, 1(3), 267-289.

*In this ethnographic study of residents in a high-density public housing facility in a southern U.S. city, the authors found that the residents behave differently in different spatial locations – hot spaces, safe spaces and contested spaces – which entail different situational possibilities and*

*constraints, and thus affect the actions they take and their motives for doing so. Their use of space also shapes how they construct and avow personal identities that yield a measure of self-worth, dignity and personal autonomy.*

Kim-Godwin, Y. S., Clarke, P. N., & Barton, L. (2001). A model for the delivery of culturally competent community care. *Journal of Advanced Nursing*, 35(6), 918-925.

*The article presents a model for Culturally Competent Care in the delivery of community health care among culturally diverse populations. The components of culturally competent care are identified as caring, cultural sensitivity, cultural knowledge, and cultural skills. The model has applications for delivering services to diverse homeless populations.*

## Design: General

Bitner, M. J. (1990). Evaluating service encounters: The effects of physical surroundings and employee responses. *The Journal of Marketing*, 69-82.

*The author presents a model for evaluating consumer service encounters that posits consumers assess quality of service first by comparing it with similar previous experiences, then weighing factors in the current situation and, finally, attributing causes to those factors, either positive or negative. A portion of the model is then tested, which includes the physical surroundings, as cues in the physical environment may indicate the business's level of competence (e.g., organized = professional vs. disorganized = incompetent). Results show that an agency that was perceived as pleasant, beautiful, well kept, above average, neat, calming, efficient, etc., was considered more believable*

*and offering a higher level of customer service in handling a customer complaint than one which was perceived as disorganized, unpleasant, etc.*

Davis, T.R.V. (1984). The influence of the physical environment in offices. *Academy of Management Review*, 9(2), 271-283.

*The author presents a model for assessing how physical environments affect behavior in terms of physical structure, physical stimuli and symbolic artifacts. Specific aspects of the physical environment and how they can be manipulated to affect behavior or reinforce organizational goals are discussed for each section of the model.*

Dilani, A. (2009, February 6). Psychosocially supportive design: A salutogenic approach to the design of the physical environment. Paper delivered at 1st International Conference on Sustainable Healthy Buildings; Seoul, Korea. Found at <http://www.researchgate.net/publication/265349464>

*The paper is the result of a literature review of more than 300 articles on the field of the physical environment, health and behavior. The aim of psychosocially supportive design is to stimulate the mind in order to create pleasure, creativity, satisfaction and enjoyment. Topics examined relating to the physical environment include lighting, daylighting and windows; crowding; nature and nature views; color, space and landmarks; and sound and music.*

Orth, U. R., & Wirtz, J. (2014). Consumer processing of interior service environments: The interplay among visual complexity, processing fluency, and attractiveness. *Journal of Service Research*, 17(3), 269-309.

*Employing both an experiment and a field study, the authors show that high visual complexity reduces a service environment's attractiveness. Visual complexity is determined by factors such as the irregularity, detail, dissimilarity, and quantity of objects; the asymmetry and irregularity of their arrangement; and the variations in color and contrast. The authors show that high visual complexity reduces a service environment's attractiveness. Visual complexity is determined by factors such as the irregularity, detail, dissimilarity, and quantity of objects; the asymmetry and irregularity of their arrangement; and the variations in color and contrast.*

Poirier, L.M. (1986). Maslow interpreted for the residential environment. Open Access Master's Theses, Paper 621. Found at <http://digitalcommons.uri.edu/theses>

*Maslow's Hierarchy of Preponent Needs can be a useful tool for developers to take into consideration residents' general needs, thus increasing residential satisfaction. These include such factors as physiological needs (lighting, sound, thermal environment, and mobility) as well as the need for safety, belongingness, self-esteem, and self-actualization.*

Ulrich, R. S. (1991). Effects of interior design on wellness: Theory and recent scientific research. *Journal of Health Care Interior Design*, 3(1), 97-109.

*The author presents a theory of supportive design and focuses particularly on ways in which healthcare settings can improve wellness using interior design to reduce stress. He posits healthcare environments can reduce stress if they are designed to foster (1) a sense of control with respect to physical-social surroundings, (2) access to social*

support, and (3) access to positive distractions to physical-social surroundings. Specific interior design solutions are discussed for each of the three strategies.

## Design for the Homeless: Group Living Environments

Berens, M. J. (2014). Uncommon commons: Facility for the homeless sets design standard for dignity and independence. *ASID ICON*, Summer 2014, 40-41. Found at <http://browndigital.bpc.com/publication/?i=210163>

*The article surveys the interior design solutions incorporated into Bud Clark Commons in Portland, Ore., in order to meet the needs and concerns of the homeless populations it serves.*

Davis, S. (2004). *Designing for the homeless: Architecture that works*. Berkeley, CA: University of California Press.

*Based on his personal practice and experience, as well as interviews with facility administrators, the author examines how architecture can help address the needs of the homeless and presents a detailed program of structural and interior design elements to consider when designing for the homeless. A number of case studies of different types of environments for the homeless are presented.*

Goering, P., Durbin, J., Trainor, J., & Paduchak, D. (1990). Developing housing for the homeless. *Psychosocial Rehabilitation Journal*, 13(4), 33-42.

*Based on interviews with 38 homeless women and a six-month ethnographic study of women in two homeless*

*shelters, the authors derived four planning principles for developing housing for the homeless: 1. Normal community living in long-term or permanent housing is the desired goal for homeless people. 2. Permanent housing with flexible supports rather than residential treatment programming is the preferred model. 3. Consumer involvement in planning and governing the residence is essential. 4. A commitment to ongoing review of both the quality of housing and the adequacy of services provided is necessary. The authors propose a housing model, including architecture (in the form of a typical apartment building with private apartments), based on these principles.*

Pothukuchi, K. (2003). Working women's hostels in Bangalore, India: Incorporating life-cycle issues in shelter policy. *Journal of Architectural and Planning Research*, 20(2), 91-109.

*Based on a survey of 126 residents in 12 hostels, this study describes hostel environments and relations, and analyzes the functions they serve from the residents' perspective. Most of those studied had rooms occupied by between four and eight women, with collective bathrooms on the main floor or outside the main residential building. Bathrooms and toilets were typically under-provided, shared by anywhere between three and 15 or more women. In one rather well designed hostel, rooms opened out into a corridor wrapped around an internal courtyard. In this hostel, rooms with attached bathrooms had three women to a room. Most hostels also had collective dining rooms, a waiting area, and facilities for washing and drying clothes. Among other aspects, hostels that received the highest levels of satisfaction offered decent amenities in terms of the*

*amount and quality of living and storage space, cleanliness and maintenance, decent meals and other basic needs, security from theft (through the presence of lockable closets or steel cupboards).*

Zavotka, S. & Teaford, M.H. (1997). The design of shared social spaces in assisted living residences for older adults. *Journal of Interior Design*, 23(2), 2–16.

*This study examined part of a Social Space Attachment Model that hypothesized that assisted living designs that match residents' previous homes lead to greater life satisfaction. Personal attachment occurs in new surroundings when the interior space is similar in purpose and visual stimuli to a resident's previous home environment. However, most assisted living residences tend to be more formal and focus on large social spaces that lack privacy. The authors conclude, "For older adults to become attached to and use assisted living social spaces, interior designs must relate to past experiences. Designs should usually include semi-formal or informal traditional styles, more familiar colors, personal accessories, and opportunities for privacy."*

## Dignity

Clarke, I. (2009). Design and dignity in hospitals. *Studies: An Irish Quarterly Review*, 419-428.

*Design must both positively enable dignity and then positively maintain and reinforce it. It is proposed that a significant goal in the design of healing environments is the promotion of the quality of being for the occupants on a moment-to-moment basis. The author sets out eight core characteristics of design that enable presence in the*

*hospital to "feel rather more on the individual's own terms."*

Hoffman, L., & Coffey, B. (2008). Dignity and indignation: How people experiencing homelessness view services and providers. *The Social Science Journal*, 45(2), 207-222.

*Drawing on a database of more than 500 transcribed interviews with people experiencing homelessness we find that descriptions of interactions with staff and providers were predominantly expressed in sharply negative terms, with experiences of objectification and infantilization being commonplace. In response to these experiences, nearly all were angry, and many simply opted out of the social service system in order to maintain a sense of dignity and self-respect. This suggests that the perpetuation of homelessness is not internal to the homeless individual as many claim, but rather may be embedded in the service industry itself, which subjects both clients and providers to bureaucratic forms of authority and experiences of disrespect.*

Miller, A. B., & Keys, C. B. (2001). Understanding dignity in the lives of homeless persons. *American Journal of Community Psychology*, 29(2), 331-354.

*Eight types of events were identified that sustain dignity such as being cared for by staff and having resources available to meet basic needs. Eight types of events were found that undermine dignity, such as being yelled at or insulted by staff persons and having staff use rules in an excessive and arbitrary way. Two outcomes followed the sustenance of dignity including increased self-worth and motivation to exit homelessness. Three outcomes followed the undermining of dignity including anger, depression, and feelings of worthlessness.*

Paradis, E., Bardy, S., Cummings-Diaz, P., Athumani, A., & Pereira, I. (2011). We're not asking, we're telling: An inventory of practices promoting the dignity, autonomy, and self-determination of women and families facing homelessness. Toronto: The Canadian Homelessness Research Network Press. Report housed on the Homeless Hub at [www.homelesshub.ca/Library/View.aspx?id=55039](http://www.homelesshub.ca/Library/View.aspx?id=55039).

*Services are more likely to uphold women's autonomy, dignity, and self-determination when they: directly involve women facing homelessness in designing and delivering policies and programs; promote women's strengths, skills, self-reliance, and mutual support; and reflect and respond to diverse needs, identities and experiences.*

## Empowerment

Comerio, M. C. (1987). Design and empowerment: 20 years of community architecture. *Built Environment* (1978-), 15-28.

*A review of the community design movement in the United States and Europe, the article traces the shift from working with community organizations to rehabilitate existing housing to helping community groups own that housing. Among other observations, the authors point out, "good social motives do not always results in good design," and contend, "the social motivization behind community design should not preclude good design." They end by asserting, "The first principle of community design is to recognize the rights of all citizens to have a voice in decisions that affect the places they inhabit, work, and linger in."*

Feldman, R. M., & Westphal, L. M. (1999). Participation for empowerment: The greening of a public housing development [Participation with a view]. *Places*, 12(2), 34-37.

*"Empowerment is developed through an ongoing, accumulative process: experience builds up through repetitive cycles of action and reflection, which help people cultivate individual and collective skills and resources that help them effect positive changes in their environments and lives. . . . While participation may complicate and slow down the process, it also increases the likelihood that users needs and interests will be recognized and incorporated into the design and plans."*

Tang, L. C. (2014). Reworking homelessness: Dignity and power at two Oahu shelters. (Unpublished master's thesis). University of Oslo, Norway. Found at <http://urn.nb.no/URN:NBN:no-45165>

*The researcher examines the questions: What does staying at a shelter do to you? How are power imbalances acted out, and how is power being challenged? How do the residents at the two shelters uphold a sense of dignity and respect while being residents? Observations at two shelters revealed; At the family shelter, many used the ability to avoid relations to the staff and volunteers and to complain about food and services to keep a sense of dignity and feeling of autonomy. Through the expression of discontent, residents at the family shelter challenged the power relations especially prominent in the giver/receiver of gifts relationship they experience. The men and unsheltered use a completely different strategy, focusing on politeness, friendliness and*

*emphasizing “good behavior” as to gain respect from staff members and volunteers. The means used to achieve respect and to even out power imbalance are very different, but serve the same purpose.*

Ware, N. C., Desjarlais, R. R., AvRuskin, T. L., Breslau, J., Good, B. J., & Goldfinger, S. M. (1992). Empowerment and the transition to housing for homeless mentally ill people: An anthropological perspective. *New England Journal of Public Policy*, 8(1), article 26.

*This article examines issues that arise for homeless mentally ill individuals in making the transition from shelter living to permanent residences. Empowerment, as the authors define it, means self-determination, which in turn means the exercise of control. In the project described, tenants set house rules on a number of fundamental issues and are gradually expected to assume control over other decisions. Self-help is another dimension of empowerment, i.e., doing for oneself the tasks that formerly required help from residential staff. Finally, empowerment embraces the principle of normalization. The authors examine the impact of the transition from shelter to housing in regards to privacy, relationships, and management of personal economics. The “golden rule” of empowerment for these tenants is “to do unto other tenants as you would like them to do unto you.” At times, however, tenants and staff may have differing views of what constitutes empowerment.*

Zimmerman, M. A. (1990). Taking aim on empowerment research: On the distinction between individual and psychological conceptions. *American Journal of Community Psychology*, 18(1), 169-177.

*This article summarizes the contributions to a special section of the American Journal of Community Psychology of research on communities and empowerment. After commenting on the contributions of the individual papers to empowerment theory, the author further delineates the construct of psychological empowerment and distinguishes it from individually oriented conceptions of empowerment. “Contextual factors are an essential component of empowerment theory but equally critical are intrapsychic factors such as cognitive, personality, and motivational aspects of control. . . . For example, an empowered person may have no real power in the political sense, but may have an understanding of what choices can be made in different situations. . . . Ultimately, psychological empowerment is a contextual construct that They end by asserting, “The first principle of community design is to recognize the rights of all citizens to have a voice in decisions that affect the places they inhabit, work, and linger in.”*

## Families

Anthony, K. H., & Dufresne, M. (2007). Potty parity in perspective: gender and family issues in planning and designing public restrooms. *Journal of Planning Literature*, 21(3), 267-294.

*This article describes how public restrooms have historically discriminated by class, race, physical ability, sexual orientation, as well as gender. It examines how public restrooms pose special health and safety problems for women, men, children, elderly, persons with disabilities, and caregivers. It includes sections on new designs for unisex and family restrooms: “Family restrooms can have multiple unisex toilet rooms within them, but may also have space*

*allocated for other amenities and often share a common hand-washing and diaper-changing area. In addition, upscale family facilities may include family lounges, private nursing rooms, and baby changing areas." Several case studies, including photographs, are included.*

Lindsey, E. W. (1998). The impact of homelessness and shelter life on family relationships. *Family Relations*, 243-252.

*Family shelters have been built, existing shelters have been opened to families, and transitional housing programs have been initiated, often with very little attention paid to the unique issues presented by families. When shelters that previously served single men and/or women have been opened to families, frequently the same rules have been applied to families as to singles, regardless of how inappropriate or how destructive they are to family relationships. Interviews were conducted with mothers living in family shelters. Participants reported increased closeness and heightened quality and quantity of interaction with their children, but a disruption in their roles as disciplinarians and providers/caretakers. Factors which mothers perceived to affect relationships were shelter conditions (rules and interactions with staff and residents), the mother's emotional state, and the child's emotional state, temperament, and behavior. The sanitary conditions in shelters ("nasty") were also of concern to some mothers.*

Pable, J. (2012). The homeless shelter family experience: Examining the influence of physical living conditions on perceptions of internal control, crowding, privacy, and related issues. *Journal of Interior Design*, 37(4), 9-37.

*Sources indicate that homeless shelter dormitory bedrooms are highly crowded with low privacy, which may affect quality of experience that lead to residents' perceived loss of control and helplessness. Research suggests that personal environmental control features may lessen these effects and increase a resident's sense of internal control. To enhance the sense of internal control, the author of this study altered a homeless shelter bedroom, adding a series of control features including lighting for reading, bed curtains, and increased storage. The altered bedroom was perceived as more private and less crowded than the unaltered control room (with unchanged square footage), and supported the parents' need for child monitoring and ability to act as an authority figure.*

Parlakian, R. (2010). A home away: Meeting the needs of infants, toddlers, and families experiencing homelessness. *Zero to Three*, 30(3), 21-26.

*Families with children are among the fastest-growing segments of the homeless population. The article presents strategies for a variety of ways infant-toddler programs can address the developmental needs of children and families experiencing homelessness, both in the classroom and on home visits.*

Swick, K. J. (2005). Helping homeless families overcome barriers to successful functioning. *Early Childhood Education Journal*, 33(3), 195-200.

*The author articulates key stressors in the lives of families who are homeless: isolation of parents and children from needed resources, including not having a housing situation where one is safe and secure; loss of sense of control*

over their lives; concerns about one's physical safety and psychological security (due to overcrowding, lack of privacy, and mental instability of some residents in shelters). The author argues for a systemic approach to aiding homeless families and the need to help them overcome barriers to empowerment in order to break the cycle of homelessness.

## Gender

Burlingham, B., Peake Andrasik, M., Larimer, M., Marlatt, A., & Spinger, C. (2010). A house is not a home: A qualitative assessment of the life experiences of alcoholic homeless women. *Journal of Social Work Practice in the Addictions*, 10(2), 158-179.

*This study explored the lived experiences of homeless alcoholic women as they negotiated housing. The study set out to research why these women were homeless and how their personal life histories influenced their decisions to stay in or leave housing. The emergent themes strongly indicated that participants' personal histories of childhood, home life, alcohol and drug use, and relationships influenced both barriers and facilitators to sustained housing. Participants' commonplace descriptions of coping with home lives that were not ideal by self-medicating with alcohol and leaving home to "escape" demonstrate the normalization of negative and often chaotic home lives. One of the primary research questions focused on the underlying reasons for the participants' homelessness and what factors shaped their choice to stay or leave various housing situations in the past. Not surprisingly, participants' histories influenced their personal barriers to housing as shelter experiences of sleep disruption and theft, and histories of abuse were prevalent*

*in their accounts. These histories emerged clearly in one woman's identification of ideal housing as having a door that can be locked and a safe place to sleep and shower.*

Elias, J.E., & Inui, T.S. (1993). When a house is not a home: Exploring the meaning of shelter among chronically homeless older men. *The Gerontologist*, 33(3) 396-402.

*The study examined the lives of 35 chronically homeless older men in downtown Seattle, with special attention to their experience of shelter. For many, the shelter provides safety, support, community, and an opportunity to regain sobriety—but only temporarily. The author also notes that social meaning of shelter among older homeless persons has attributes similar to that of home among domiciled older persons, suggesting these attributes may be associated primarily with the aging process.*

Liu, W. M., Stinson, R., Hernandez, J., Shepard, S., & Haag, S. (2009). A qualitative examination of masculinity, homelessness, and social class among men in a transitional shelter. *Psychology of Men & Masculinity*, 10(2), 131.

*The men in the study reported mostly negative personal appraisals of their current homelessness, but also expressed hopefulness in escaping their situation. One of the interesting findings in this study was that many of the men did not believe their masculinity changed (i.e., diminished) as a result of their homelessness. While these men do recognize that people see them negatively, this perception by others is largely attributed to the men's homeless condition and not related to their masculinity. The men's masculinity may be recuperated by taking responsibility for one's own actions,*

*and this is supported by some of the men when they regard their homelessness as a result of their poor decisions.*

Mottet, L., & Ohle, J. (2006). Transitioning our shelters: Making homeless shelters safe for transgender people. *Journal of Poverty*, 10(2), 77-101.

*Most homeless shelters in the United States are segregated by sex, with placement based on assumptions about a person's gender. As a result, transgender youth and adults, who identify as or express a gender different from their birth sex, can experience extreme difficulties in obtaining adequate and safe shelter. Many shelters are physically unsafe for transgender people, fail to provide adequate protections for their privacy, or do not respect their autonomy to define their own gender identity. Recommendations for improving shelters for transgender people include design elements for the lobby and intake areas, restroom and shower privacy, and sleeping arrangements. One of the challenges for making shelters safer for transgender people is to provide appropriate accommodations without stigmatizing them or isolating them from others.*

Potthoff, J. K., Chihucos, T. R., & Rosenberg, H. (1997). Women's satisfaction with residential drug/alcohol treatment facilities: Interior design implications. Unpublished manuscript, Bowling Green State University, Bowling Green, OH.

*There is a need to better understand the relationship between patient satisfaction with the interior environment of treatment facilities and patient well-being. Based on a study of five such shelters, the authors have developed a number of specific suggestions for the interior design of*

*drug and alcohol treatment centers for women (described on pg. 254), in terms of spatial-structural arrangements, furnishings, materials, color, lighting, and accessories.*

Valentine, G. (1990). Women's fear and the design of public space. *Built Environment*, 16(4), 288-303.

*"The design of the public environment can have an influence on women's perception of safety and hence on their willingness to use spaces and places. This certainly suggests that those concerned with the design of and care for public space should ensure that there are no hidden or dark corners, enclosed spaces with few exits or signs of neglect and lack of social control. Such measures will help women to use and take greater control over public space, whether or not they increase women's real safety. However, the social relations within a space and the group(s) who control that space socially are more important influences on how safe women feel than its design."*

Walsh, C. A., Rutherford, G. E., & Kuzmak, N. (2009). Characteristics of home: Perspectives of women who are homeless. *The Qualitative Report*, 14(2), 299-317.

*Previous research indicates that women experiencing homelessness have significantly different needs than homeless men. The literature shows that only a small number of women who are homeless use shelters, and those who do are less comfortable in shelters than men. Based on interviews with homeless women, the study provides a number of recommendations for the location and design of shelters to make them more suitable for women, based on a defined set of criteria for what constitutes a sense of "home." Among others: "Physically, home is quiet, clean,*

and structured. Amenities such as a telephone, working appliances, a refrigerator, heat and hot water, a front door, and adequate living space were all identified by the participants as basic needs that are critical for a place to even begin to feel like home. In particular, it was important to the women to have a door to be able to close to contain themselves in their own space and to open to include those of their own choosing. They indicated that the space should provide facilities to do laundry and keep themselves clean.”

## Healing Environments

Evans, G. W. (2003). The built environment and mental health. *Journal of Urban Health*, 80(4), 536-555.

*In reviewing the research related to the built environment and mental health, the author lists both direct and indirect mental health effects of the physical environment (summarized in two tables). Among direct effects, mental health of psychiatric patients has been linked to design elements that affect their ability to regulate social interaction (e.g., furniture configuration, privacy). Residential crowding (number of people per room) and loud exterior noise sources (e.g., airports) elevate psychological distress but do not produce serious mental illness. Indirectly, personal control, socially supportive relationships, and restoration from stress and fatigue are all affected by properties of the built environment.*

Evans, G. W., & McCoy, J. M. (1998). When buildings don't work: The role of architecture in human health. *Journal of Environmental Psychology*, 18(1), 85-94.

*The authors describe five dimensions of the designed*

*environment that could affect human health by altering stress levels: stimulation, coherence, affordances, control, and restorative. Included is a table listing specific interior design elements for each of the five dimensions.*

Felgen, J. (2004). A caring and healing environment. *Nursing Administration Quarterly*, 28(4), 288-301.

*“When health professionals consciously create environments of healing, their efforts visibly affect practitioners, the practice, and the physical space. Initiating and sustaining a therapeutic relationship with patients and their families is central to caring and healing environments.”*

Huelat, B. J. (2003). *Healing environments: Design for the mind, body and spirit*. Alexandria, VA: Medezyn.

*Environments can heal, but they can also harm. By designing with an eye towards the body, mind and spirit, we can create environments that promote healing and inner peace. The author presents a holistic approach to the design of healing environments – with individual chapters on the body, senses, knowledge, mind, nature and the spirit. She argues that design is more than decoration; that it can help people survive hostile places by immersing themselves in the positive pleasures of being human.*

Lewis, C. A. (1994). Human health and well-being: The psychological, physiological, and sociological effects of plants on people. *Horticulture in Human life, Culture and Environment* 391, 31-40.

*Given a choice, people prefer settings with vegetation over those lacking vegetation. Research indicates such settings*

*reduce stress, promote peace, tranquility, enhanced self-esteem, and a sense of mastery of the environment. Among other findings, gardening has been shown to positively affect the self-image and social relationships of prison inmates.*

Schweitzer, M., Gilpin, L., & Frampton, S. (2004). Healing spaces: Elements of environmental design that make an impact on health. *Journal of Alternative & Complementary Medicine*, 10 (Supplement 1), S-71.

*The authors survey the existing research on those elements of the built and natural environments most often asserted by proponents as being inherently healing or promoting health. From their survey, they develop a hierarchy of the effects of environmental elements ranging from the simply nontoxic or safe to those that provide a "positive context" to those that are actively salutogenic. Among other findings, they note that, in regards to safety, carpeting is linked to an increased perception of walking security. They cite Ulrich (2001) as source for salutogenic solutions, especially in regards to reducing stress.*

Ulrich, R. S. (1999). Effects of gardens on health outcomes: Theory and research. In Marcus, C.C., & Barnes, M. *Healing gardens: Therapeutic benefits and design recommendations* (pp.27-86). New York: John Wiley & Sons.

*The author examines research and theory relevant to the effects of gardens in health facilities, with particular emphasis on the effects of passive visual experiences with gardens on stress reduction and other medical outcomes. He finds gardens in healthcare facilities are important stress*

*mitigating resources for patients and staff inasmuch as they foster a sense of control and privacy, social support, physical movement and exercise, and access to nature and other positive distractions. He then provides guidelines and examples of design of healing gardens.*

Ulrich, R. S. (2001). Effects of healthcare environmental design on medical outcomes. In *Design and Health: Proceedings of the Second International Conference on Health and Design* (pp. 49-59), Stockholm, Sweden: Svensk Byggtjänst.

*The article presents an outline of a Theory of Supportive Healthcare Design that generates design guidelines that can be flexibly applied to a wide range of healthcare environmental questions. The Theory of Supportive Design proposes that the capability of healthcare environments to foster improved outcomes is linked to their effectiveness in promoting stress reduction, buffering, and coping. At a general level, the process of supportive healthcare design begins by eliminating environmental characteristics that are known to be stressful or can have direct negative impacts on outcomes (loud noise, for instance). Additionally, supportive design goes a major step further by emphasizing the inclusion of characteristics and opportunities in the environment that research indicates can calm patients, reduce stress, and strengthen coping resources and healthful processes by fostering control, including privacy; promoting social support; and providing access to nature and other positive distractions.*

Ulrich, R. S., Simons, R. F., Losito, B. D., Fiorito, E., Miles, M. A., & Zelson, M. (1991). Stress recovery during exposure to natural and urban environments. *Journal of Environmental Psychology*, 11(3), 201-230.

*A study was devised to test the hypothesis that if individuals are stressed, an encounter with most unthreatening natural environments will have a stress reducing or restorative influence, whereas many urban environments will hamper recuperation. Findings were consistent with the predictions of the psycho-evolutionary theory that restorative influences of nature involve a shift towards a more positively-toned emotional state, positive changes in physiological activity levels, and that these changes are accompanied by sustained attention/intake. Content differences in terms of natural vs. human-made properties appeared decisive in accounting for the differences in recuperation and perceptual intake.*

van den Berg, A. (2005). Health impacts of healing environments; A review of evidence for benefits of nature, daylight, fresh air, and quiet in healthcare settings. Groningen, Netherlands: University Hospital Groningen.

*This literature review of 97 studies conducted over a period of 30 years provides a systematic overview of clinical and other evidence for the health benefits of nature and natural elements as components of healing environments. Four key features were selected that have been the topic of extensive research inside and outside clinical settings: nature, daylight, fresh air and 'quiet' (or absence of noise). Based on the empirical evidence provided in the studies under review, the author finds the effectiveness of design for healing environments varies considerably depending on which element is being considered: "For each element*

*separately, the available evidence can be summarized as follows: There is solid evidence that ventilation of fresh air is associated with improved self-reported and medically diagnosed health. There is sufficient evidence that viewing nature can reduce stress and pain. There is weak evidence that the presence of indoor plants can lift people's mood and reduce self-reported symptoms of physical discomfort. There is weak and inconclusive evidence for health benefits of daylight in buildings. There is some evidence for health benefits of environmental measures that promote quiet in buildings. There is a lack of direct evidence for benefits of visits to 'healing gardens.'" She concludes, "This finding underlines the importance of distinguishing between healing and healthy environments in evidence-based design. Features that are generally perceived as healing, such as gardens and sunlight, are not necessarily most effective when it comes to improving health. Conversely, features that have a large impact on people's health, such as sinks and hand cleaner dispensers, are not necessarily experienced as healing and soothing for the soul."*

## Personal Control

Burger, J. M. (1989). Negative reactions to increases in perceived personal control. *Journal of Personality and Social Psychology*, 56(2), 246.

*Control is defined for the purposes of the article as the perceived ability to significantly alter events. A review of the research suggests three features of increased personal control that may decrease the desirability of that control. Personal control will be seen as less desirable when it (a) leads to an uncomfortable level of concern for self-*

presentation, (b) decreases the likelihood that the person will be able to achieve desired outcomes, or (c) leads to an increase in predictability that draws the person's attention to the aversive aspects of the situation. Both situational and personality variables can affect whether the perceived level of control is positive or negative. Generally, situational and personality variables that increase the likelihood of a poor outcome and increase the severity of the consequences of the poor outcome will lead to a greater chance that the person will relinquish control, experience anxiety, or do more poorly on a subsequent task. On the other hand, those situational and personal variables that increase the likelihood of a good outcome and increase the positive aspects of that outcome, or that highlight the positive feelings generally associated with feeling masterful and competent, will lead to the opposite reactions.

Dion, D. (2004). Personal control and coping with retail crowding. *International Journal of Service Industry Management*, 15(3), 250-263.

To understand the role of personal control in the crowding process, it is important to take under consideration the entire crowding process: the way clients perceive the crowded encounter (cognitive crowding), their affective reactions (affective crowding) and the strategies used to cope with the situation (coping). In previous research, the author identified two crowding processes: the social and the spatial crowding processes. The effect of personal control in a crowded situation relies on the way density is perceived and experienced. Thus, it is important to make a distinction between the spatial and social crowding processes since they are more or less subject to personal control. To avoid

negative reactions to spatial difficulties managers should try to enhance consumers' personal control. Among the three sources of personal control (behavioral, decisional and informational), results indicated that informational control is the most efficient. Having better information on the situation, the clients can anticipate difficulties, prepare themselves and adopt adequate coping strategies. Having a feeling of control over their environment, visitors feel competent to cope with the environment. Concerning social difficulties faced in overcrowded places, it is recommended to limit social interactions to regulate waiting lines by installing tickets distributors or barriers and to partition the place in order to avoid visual contacts between clients.

Lee, S.Y.L., & Brand, J.L. (2005). Effects of control over office workspace on perceptions of the work environment and work outcomes. *Journal of Environmental Psychology*, 25, 323–333.

The results of a study of workers in an open plan office environment showed that more personal control over the physical workspace (e.g., adjustment) and easy access to meeting places led to higher perceived group cohesiveness and job satisfaction.

Rothbaum, F., Weisz, J. R., & Snyder, S. S. (1982). Changing the world and changing the self: A two-process model of perceived control. *Journal of Personality and Social Psychology*, 42(1), 5.

The authors identify two types of personal control: primary, in which the individual attempts to change things that offer resistance; and secondary, in which the individual attempts to adjust to resistances, e.g., by "choosing" to "go with the

*flow.” The latter behavior is exhibited when the individual attempts to fit in more effectively with the environment they are in. Whether an individual chooses to assert control or adapt to the situation depends on their personality and the extent to which they feel threatened by the situation.*

Sparr, J. L., & Sonnentag, S. (2008). Feedback environment and well-being at work: The mediating role of personal control and feelings of helplessness. *European Journal of Work and Organizational Psychology*, 17(3), 388-412.

*The study examined employees’ personal control and feelings of helplessness at work as partial mediators of the relationship between the supervisor-employee feedback environment and well-being, job satisfaction, job depression, job anxiety, turnover intentions) at work. It found feedback environment to be positively related to job satisfaction. Moreover, feedback environment was negatively related to job depression, turnover intentions, and feelings of helplessness, and was positively related to personal control over information and (marginally) decisions at work. Personal control over information, in turn, was negatively related to job depression, job anxiety, and turnover intentions, and positively related to job satisfaction, and helplessness was related to these outcome variables in the reverse direction. Personal control over decisions positively predicted job satisfaction and negatively predicted job depression. This finding suggests that personal control at work might be one important resource in an advantageous feedback environment, but that the prevention of lack of control (helplessness) is even more important.*

Thompson, S. C. (2002). The role of personal control in

adaptive functioning. In Snyder, C.R., & Wright, E. (Eds.), *Handbook of positive psychology* (pp. 202-213). New York: Oxford University Press USA.

*Empirical evidence has shown that increased perceived control exerts a significant, positive impact on human physical and psychological well-being. Two situational features of the service encounter, consumer density and consumer choice, were manipulated in an experiment involving consumers, and their effects on the consumer’s emotional and behavioral responses to the encounter were examined. It was found that perceived-control (i.e., choice) can contribute to exploring different ways to create a more pleasant service experience. The results also show that a greater degree of choice can lower the consumer’s perceived crowding in the service encounter.*

Veitch, J. A., & Gifford, R. (1996). Choice, perceived control, and performance decrements in the physical environment. *Journal of Environmental Psychology*, 16(3), 269-276.

*In an experiment with university students, choice over workstation lighting was given or denied, and subjects performed the tasks at workstation with lighting that either was their preferred configuration (of three choices) or their least-preferred configuration. As hypothesized, subjects who actually had a choice regarding the lighting reported perceived control over the lighting. However, contrary to expectations, they performed more poorly and more slowly on the creativity task in comparison to the no-choice subjects. The authors conjecture that it is possible, although unanticipated, that self-presentation and fear of*

failure were heightened in the choice group, as a result of a conscientiousness of being judged more severely due to having received their choice.

Ward, J.C., & Barnes, J.W. (2001). Control and affect: the influence of feeling in control of the retail environment on affect, involvement, attitude, and behavior. *Journal of Business Research*, 54(2), 139-44.

*Perceptions of control in the retail environment are likely to evoke affect because they are related to the consumer's judgment of whether the environment will facilitate or frustrate goal achievement. Environments perceived to facilitate goal achievement engender positive affect, arousal, and involvement. Environments perceived to frustrate goal achievement evoke the opposite effects. The study was conducted by asking participants to make field trips to a variety of fast food restaurants, with the ostensible purpose of tasting the food. Customers who had a higher versus lower sense of control in retail service environments reported feeling more pleasant, aroused, and involved. The results demonstrate positive returns on consumer feelings of control in terms of shopper feelings (e.g., pleasure, mood) and reactions to the environment (e.g., attitude to the environment, frequency of exposure). The authors observe that while providing consumers more control can add to the cost of retail design, the resulting positive affect will likely contribute to more positive transactions.*

## Privacy

Chiao, T., & Grossberg Katz, D. (2009). Private/public: Rethinking design for the homeless. *UrbanOmnibus.net*, November 11, 2009. <http://urbanomnibus.net/2009/11/>

private-public-rethinking-design-for-the-homeless/

*In this brief on how architects and designers could begin to "design design" to address the needs of small-scale providers of services for the homeless, the authors, founders of a design and research collaborative based in New York City, provide a brief case study of a provider of medical services for the homeless they have been working with that is run out of the basement of a church. They state: "Perhaps the most pressing issue faced by small-scale homeless service providers is the need to engage in very private interactions in very public spaces. In the case of the clinic, patient histories, physical exams and diagnoses all take place in one open room, where flimsy screens and a noisy environment serve as the only buffers offering any sense of privacy. On the other hand, the clinic's open model maintains visual connections among staff, doctors and patients at all times, creating a less intimidating environment for patients. Building openness and privacy simultaneously is one of the main design challenges of the project. Additional challenges include creating a sense of permanence and solidity for users who are cycling through a variety of unstable conditions; providing clarity and legibility in a complex system of unfamiliar interactions; and employing the politics of shape, scale, material and color to transform a dismal, leftover space into a comfortable and inviting environment for users and staff alike."*

Kratzer, D. (2014). Privacy, security and dignity: POE of safe haven dorm partition environment. *ARCC Journal*, 526-34. Found at <http://arcc-journal.org/index.php/repository/article/view/306/242>

*flimsy screens and a noisy environment serve as the only buffers offering any sense of privacy. On the other hand, the clinic's open model maintains visual connections among staff, doctors and patients at all times, creating a less intimidating environment for patients. Building openness and privacy simultaneously is one of the main design challenges of the project. Additional challenges include creating a sense of permanence and solidity for users who are cycling through a variety of unstable conditions; providing clarity and legibility in a complex system of unfamiliar interactions; and employing the politics of shape, scale, material and color to transform a dismal, leftover space into a comfortable and inviting environment for users and staff alike."*

Kratzer, D. (2014). Privacy, security and dignity: POE of safe haven dorm partition environment. ARCC Journal, 526-34. Found at <http://arcc-journal.org/index.php/repository/article/view/306/242>

*This paper presents post-occupancy evaluation findings of a homeless shelter dorm station design + build architecture student project conducted in conjunction with Project H.O.M.E., the largest social service agency in Philadelphia. During programming, the number one survey request from the users was for an increase in privacy. Project H.O.M.E. initially listed "opportunities for privacy" as a vital component for establishment of resident dignity but were quite strict on this being minimal for safety reasons. Contrary to the conditions of privacy run the issues of safety and security that are founded in visibility. A set of five safe design criteria emerged. People feel safer in spaces that*

*are: 1) bright and well lit, 2) are colorful, 3) are clean, 4) are visible (one can see into them and be seen from them), and 5) are claimed and owned. Residents expressed during the programming phase the want for a place in the shelter that was private and "theirs" – a place they could be responsible for. The ability to create opportunities for privacy while allowing sightlines and visibility for safety created the most obvious design dilemma. A very high priority for Project H.O.M.E. was that the stations not harbor insects, be easily cleaned and extremely durable. Also, the stations were not to be "too nice." If the design were too comfortable residents would not want to leave. The final station solution was a plastic and steel system comprised of three components that can be detached and reconfigured in a variety of modular arrangements – a headboard, a side privacy panel, and a circular privacy end unit. Details of the POE evaluate specific design issues. The POE confirmed that the design provides a safe level of privacy and territories are well established.*

## Proxemics

Andersen, P., Gannon, J., & Kalchik, J. (2013). Proxemic and haptic interaction: The closeness continuum. In Hall, J.A., & Knapp, M. L. (Eds.), *Nonverbal Communication*, 2, (pp. 295-329). Berlin: De Gruyter Mouton.

*Fundamental to proxemic behavior is personal space and related issues of territoriality and crowding. Haptic behavior includes instrumental behavior, used during care or servicing of other people, including nurturant behavior and sexual behavior. Proxemic and haptic behavior is crucial to interpersonal influence attempts and the communication*

*of power and control. Privacy, protection and freedom from harassment necessitate the setting of boundaries to prevent intrusion. Many aspects of tactile and spatial behavior are universals, though considerable cultural and climactic differences exist.*

Baldwin, S. (1985). Effects of furniture rearrangement on the atmosphere of wards in a maximum-security hospital. *Hospital and Community Psychiatry*, 36(5), 525-528.

*Alterations were made in seating arrangements in ward dayrooms in a maximum-security hospital over two 14-day periods. The intervention provided some minor improvements in patient behavior and socialization as compared with the control group. It is likely the intervention itself and not the specific seating arrangements accounts for the perceived differences. However, the changes were notable enough that nursing staff later implemented the intervention in other wards and requested better seating.*

Karlin, R. A. (1980). Social effects of crowding on humans. In Cohen, M.N., Malpass, R.S., & Klein, H.G., (Eds.), *Biosocial Mechanisms of Population Regulation* (pp. 225-46). New Haven: Yale University Press.

*A literature review of research on crowding, including residential crowding, transportation crowding, classroom crowding, crowded shopping facilities, and crowded working conditions. Crowding is perceived when one's goal is blocked. This may be caused by lack of privacy, extremely close proxemic interaction, or resource scarcity (i.e., insufficient space / congestion). If a solution is not forthcoming as a result of similarities in the composition of the crowd, learned behavior or cultural factors, individuals*

*will either try to escape from the situation or try to change it. If both are inconvenient or impossible, negative effects will occur.*

Laughead, A. L. (1999). Illumination level as an influence factor on proxemic behavior (Unpublished master's thesis). Virginia Polytechnic Institute, Blacksburg.

*Lighting can affect the way space is perceived due to the placement and quantity of light in space. The study examined the potential effect of bright versus dim illumination level on personal space requirements, specifically the intimate, personal, and social proxemic distances in simulated hotel and medical waiting/reception areas. The quantitative results showed that under general ambient bright and dim lighting conditions, there were no significant differences in personal space requirements in the waiting/receptions area behavioral setting. Thus, lighting does not appear to be a determining factor in achieving adequate personal space. The qualitative analysis agreed with these results, noting other factors as being more important, such as, the proximity to others, presence of tables (assuming they hold reading materials), and a view of the entire space. This phenomenon means ambient illumination level does not play a large role in determining proxemic distances between individuals in waiting area settings.*

Raybeck, D. (1991). Proxemics and privacy: Managing the problems of life in confined environments. In Harrison, A.A. & Clearwater, Y.A. (Eds.), *From Antarctica to outer space* (pp. 317-330). New York: Springer.

*Among factors influencing perceptions of privacy and crowding, the author mentions design and environmental*

elements, such as the pleasantness of the environment, color and lighting (as it affects arousal). The structure of the environment, including shape, size, and amount and location of both fixed and moveable objects, and paths of ingress and egress, can markedly influence both the perception of the environment by its occupants and patterns of interaction between them. Ways to help manage problems of life in confined environments include mixed-sex groups, establishing spatial norms, avoiding unpleasant or arousing design elements, and providing more personal control over objects and elements of the space, such as furniture, color, and lighting.

Thompson, S. (2013). The applications of proxemics and territoriality in designing efficient layouts for interior design studios and a prototype design studio (Unpublished doctoral dissertation). California State University, Northridge.

*The purpose of this project was to understand and examine the importance of designing successful spatial layouts and furniture arrangements that will enhance the learning experiences and social interactions among interior design students. Territoriality and proxemics were chosen as the main criteria for the development and design of an interior design studio. The existing studio contained paneled cubicles with high privacy walls. In order to improve communication and interaction, each student was provided an independent modular workstation that will include a drafting table, laptop computer, work area, and storage for personal items, classroom work and materials. All units will be set up in a double U-shape configuration for easy instructor access while promoting individual privacy*

*for each student. The chosen configuration addresses the design application of territoriality and proxemics as it relates to creating appropriate spacing, boundaries, privacy, and furniture layouts and arrangements.*

## Safety / Security

Bridgman, R. (2003). Safe haven: The story of a shelter for homeless women. Toronto: University of Toronto Press.

*The author, an urban anthropologist, explores the perspectives of the women who work and live at Savard's, a unique shelter for homeless women in Toronto. She uses the design and development of Savard's – a housing model developed by women for women — as an opportunity to document the project's original vision and what happened once it opened. There are few rules at Savard's. Women may come and go as they wish, and referrals to other services are made only when a woman has indicated interest in taking action on her own behalf. It is a model that aims to provide a safe haven for the chronically homeless. Chapter 5 documents the design process of the facility.*

Stamps, A. E. (2005). Visual permeability, locomotive permeability, safety, and enclosure. *Environment and Behavior*, 37(5), 587-619.

*This article reports four experiments with dependent variables of open or enclosed and safe or threatening, and independent variables of gaps, size of gaps, location of gaps, orientation of gaps, boundary height, locomotive permeability, and visual permeability. Impressions of enclosure were much more influenced by visual permeability than by locomotive permeability, but the reverse was*

found for impressions of safety, which were more strongly influenced by locomotive than by visual permeability. Among other findings, in the study, more open spaces correlated with greater sense of safety; other influences affecting perceived sense of safety may be distances, possible hiding places, and lighting; locating a gap in the middle of a wall made the room feel more open and safer, while small amounts of gap made the room seem more enclosed and unsafe; visual permeability influenced impressions of enclosure: more visibility meant more openness, regardless of whether one could move through a boundary.

## Shelters / Housing Architecture & Design

Badger, E. (2012). How high design can help the homeless. City Lab.com, June 18, 2012. <http://www.citylab.com/cityfixer/2012/06/how-high-design-can-help-homeless/2295/>

*The article reports on the work of the Skid Row Housing Trust, a Los Angeles-based organization that has been renovating and providing permanent supportive housing for the city's homeless for more than 20 years. More recently, the Trust has been building its own developments that remarkably mimic market-rate condos. The strategy is built on the idea that high design matters for the homeless, too, because it changes the dynamic between these buildings and their residents – and between both of them and the communities in which they're located.*

Farmer, T. (2009). Bridge homeless shelter cuts neighborhood crime by 18%. Inhabitat.com, July 25, 2009. <http://inhabitat.com/bridge-homeless-shelter-wins-aia-national-housing-award/>

*The article reports on the Bridge, a modern homeless shelter in downtown Dallas. With the lofty goals of remediating homelessness, improving the urban environment and providing a model of sustainability, the designers set out to change the paradigm for the homeless with a facility that supports guests, provides a safe and attractive work environment, and improves the surrounding communities. The facility includes a number of sustainability features, including a green-roof dining area, substantial daylighting, and a graywater system.*

Ferro, S. (2014). Michael Maltzan's quest to remake housing for the homeless. fastcodesign.com, November 20, 2014; published in Fast Company, March 2015. <http://www.fastcodesign.com/3038425/slicker-city/michael-maltzans-quest-to-remake-housing-for-the-homeless>

*The article reports on several projects the architect has designed for the Skid Row Housing Trust in Los Angeles. The goal is to build facilities that integrate into the existing neighborhood.*

Pable, J. (2005). Design response to homelessness. Implications, 4(7). Found at [http://www.informedesign.org/\\_news/jul\\_v04r-p.pdf](http://www.informedesign.org/_news/jul_v04r-p.pdf)

*The author begins by explaining homelessness and presenting specialized programming considerations for designing shelter environments, then discusses designers' current responses to homelessness and how these responses might expand and evolve. Tips for shelter design offered by homeless persons and shelter staff include: Offer an ironclad way of keeping one's place in line that does not necessarily require physically standing in it. For safety, strategically*

orient seating so users are facing out from sheltering walls. Think carefully about spatial volumes that may be over-whelming; provide “retreat” spaces. Balconies can be an aesthetic addition to a build-ing, but they may also invite suicide attempts. Separate restrooms for staff should be provided. Bedroom furniture should not be constructed of wood as bedbugs can burrow into the wood grain and become impossible to eradicate.

Pable, J., & Fishburne, K. (2014). Resident perceptions of homeless shelter interiors and potential implications for future shelter design. Academic Research Report. Informedesign. November, 2014. <http://www.informedesign.org/Portals/0/Academic%20Research%20Reports/ARR%20Pable%20and%20Fishburne%20R111214.pdf>

*This research report discusses the potential role that empirical research can play in designing homeless shelters so that they stand the best chance of assisting their residents, staff, and visitors. Psychological constructs related to homeless shelter environments may be much different than constructs held by residents regarding a typical home, as residents stay only temporarily; also because shelter residents are often in mental and sometimes physical crisis when they get there, and thus may have significant questions about their identity, purpose, and worth. Interviews with residents revealed, for example, that bunk beds painted black were associated with being imprisoned. How residents perceive their room’s size or its furniture, the presence or absence of privacy, how they can or cannot store their possessions, and how they are permitted or hindered from displaying objects that support their identities can positively or negatively affect their state*

*of mind. The authors offer examples of how seemingly abstract conclusions like constructs can yield practical design recommendations by reporting on two past studies and one currently ongoing study that describe where these constructs came from and efforts currently afoot to validate their existence.*

Wasmer, B. (2005). Shelter and the homeless. Paper submitted for Arch 407 course, December 5, 2005. University of Oregon, Eugene. Found at [https://scholarsbank.uoregon.edu/xmlui/bitstream/handle/1794/1917/ARM\\_Wasmer.pdf?sequence=1](https://scholarsbank.uoregon.edu/xmlui/bitstream/handle/1794/1917/ARM_Wasmer.pdf?sequence=1)

*The author describes projects by “a handful of contemporary designers [who] have discovered the resourcefulness inherent in their space-making tools and have embarked on a new identity for the homeless by way of shelter design.” He concludes, “Designers have the ability to generate a new identity for homeless because they can design a variety of shelters that promote and project individuality, self-sufficiency and dignity.”*

## Special Populations

Christensen, R. C., Hodgkins, C. C., Garces, L., Estlund, K. L., Miller, M. D., & Touchton, R. (2005). Homeless, mentally ill and addicted: The need for abuse and trauma services. *Journal of Health Care for the Poor and Underserved*, 16(4), 615-622.

*This paper examines an empirical investigation of the lifetime prevalence of trauma (defined as sexual and/or physical abuse) in a cohort of adults enrolled in a federally funded initiative that provides treatment for homeless*

*persons suffering the effects of comorbid substance use and serious mental illness, and considers the impact of this information on clinical programming. Of this population, 100% of the homeless women with co-occurring disorders had experienced a life-altering traumatic event while 68.6% of the homeless men also reported trauma histories.*

Cohen, M. B. (1989). Social work practice with homeless mentally ill people: Engaging the client. *Social Work*, 505-509.

*The author articulates an approach toward engaging homeless mentally ill people, based on experiences of social workers in five programs funded by the New York Department of Mental Health Community Support Systems. Specific engagement strategies include making a clear offer of service, providing services in a volunteer and flexible manner, gearing services to meet clients' perceived needs, and building connections between clients through mutual aid groups. Undergirding these strategies is the goal of client empowerment. Individuals can be helped most effectively if they have control over their environment.*

Hurlburt, M.S., Wood, P. A., & Hough, R.L. (1996). Providing independent housing for the homeless mentally ill: A novel approach to evaluating long-term longitudinal housing patterns. *Journal of Community Psychology*, 24(3), 291–310.

*The study focused on the housing outcomes of 362 clients who took part in a study of supported independent housing. The results strongly support the argument that many mentally ill homeless clients have the capacity to achieve independent housing; however, for some clients*

*independent housing is not an immediately viable option. One variable that appears to have an impact is gender. Women tend to achieve housing consistency more quickly than men. Substance abuse in particular can seriously affect the success of supported housing, making it inappropriate for some individuals.*

Neale, J., & Stevenson, C. (2013). A qualitative exploration of the spatial needs of homeless drug users living in hostels and night shelters. *Social Policy and Society*, 122(4), 533-546.

*Interviews with homeless drug users regarding their experience in shelters revealed their desire more privacy, personal space, social interaction, safe and defensible spaces, institutional support (such as drug treatment services), and basic amenities, such as a clean bed, reasonably nutritious food, access to a kettle and basic kitchen facilities, hygienic bathrooms and a toilet, with toilet paper, on the floor or landing where they were sleeping. In addition, they highlighted the need for more behavioral structures and boundaries.*

Rosenheck, R., Bassuk, E., & Salomon, A. (1998). Special Populations of Homeless Americans. Found at <http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.368.7506>

*Homeless Americans are an exceptionally diverse population, including representatives from all segments of society. Attention to the distinctive characteristics of subgroups of the homeless is important in facilitating service delivery and program planning, but may also diffuse attention away from shared fundamental needs, and*

*generate unproductive policy debate about deserving vs. undeserving homeless people.*

## Stress / Stress Alleviation

Bishop, K. (2011). Considering art in a hospital environment from children's and young people's perspectives. *Asian Journal of Environment-Behaviour Studies*, 2(5), 13-24. Found at <http://fspu.uitm.edu.my/cebs/images/stories/a2may11c2.pdf>

*Studies have argued that creating aesthetically pleasing environments will contribute to patients' well-being by influencing their emotional response to the experience and environment. Art is one way to achieve this, as it addresses a need to experience variation in sensory stimuli to enable constant attention and engagement in an environment. The findings from this study indicate that the artwork in this hospital is appreciated by patients in a similar capacity. Because the art varies constantly within the environment, it demands the attention of passersby, which enables it to function, at the very least, as a distraction and often, as much more than this in patients' experience. The artwork aided in alleviating the children's stress of being in a hospital environment by helping to provide an atmosphere of welcome and comfort and to undermine the identity of the building as a hospital.*

Bringslimark, T., Hartig, T., & Patil, G. G. (2009). The psychological benefits of indoor plants: A critical review of the experimental literature. *Journal of Environmental Psychology*, 29(4), 422-433.

*The reviewed experiments addressed a variety of outcomes,*

*including emotional states, pain perception, creativity, task-performance, and indices of autonomic arousal. Some findings recur, such as enhanced pain management with plants present, but in general the results appear to be quite mixed.*

Dijkstra, K., Pieterse, M. E., & Pruyn, A. (2008). Stress-reducing effects of indoor plants in the built healthcare environment: The mediating role of perceived attractiveness. *Preventive Medicine*, 47(3), 279-283.

*Subjects exposed to a photo of a hospital room with plants reported less stress than those in the control condition. Mediation analysis confirmed that indoor plants in a hospital room reduced feelings of stress through the perceived attractiveness of the room.*

Karnik, M., Printz, B., & Finkel, J. (2014). A hospital's contemporary art collection: Effects on patient mood, stress, comfort, and expectations. *HERD: Health Environments Research & Design Journal*, 7(3), 60-77.

*The researchers sought to assess whether the diversity in subject matter, imagery, and media in the art collection of a hospital would positively affect patient mood, comfort level, stress level, and expectation of visit. Based on surveys of patients, they found a majority of respondents noticed the artwork, had improved moods and stress levels due to the artwork, and reported that the art collection positively impacted their overall satisfaction and impression of the hospital.*

Lohr, V. I., Pearson-Mims, C. H., & Goodwin, G. K. (1996). Interior plants may improve worker productivity and

reduce stress in a windowless environment. *Journal of Environmental Horticulture*, 14, 97-100.

*When plants were added to this interior space (a windowless computer lab on campus), the participants were more productive (12% quicker reaction time on the computer task) and less stressed (systolic blood pressure readings lowered by one to four units). Immediately after completing the task, participants in the room with plants present reported feeling more attentive (an increase of 0.5 on a self-reported scale from one to five) than people in the room with no plants.*

Vischer, J. C. (2007). The effects of the physical environment on job performance: towards a theoretical model of workspace stress. *Stress and Health*, 23, 175-84.

*The author reviews the research literature on the work environment and stress. Physical environmental factors found to contribute to stress in the workplace include spatial organization (e.g., open layouts, proximity to needed resources and washrooms), architectonic details, ambient conditions and resources, and view or visual access from the workspace. As environmental stressors, [these] can influence physiological processes, produce negative affect, limit motivation and performance, and impede social interaction. Closely related to spatial organization are ambient conditions such as sound, visual openness and light, as well as ventilation and thermal comfort. Architectonic details, which include colors and decoration, signage, artwork and design details, convey meaning and can have symbolic significance that affects people emotionally. In addition, a mismatch between the demands*

*placed on workers and the control they have over the physical environment in which they meet those demands is by definition stress-generating.*

## Trauma

Bloom, S. L., & Farragher, B. (2010). *Destroying sanctuary: The crisis in human service delivery systems*. London: Oxford University Press.

*The nation's mental health and social service systems have been under relentless assault, with dramatically rising costs and the fragmentation of service delivery rendering them incapable of ensuring the safety, security, and recovery of their clients. Complex interactions among traumatized clients, stressed staff, pressured organizations, and a social and economic climate that is often hostile to recovery efforts recreate the very experiences that have proven so toxic to clients in the first place. The authors present an organizational change method that has become known as the Sanctuary Model, which lays the groundwork for establishing safe havens for individual and organizational recovery. It provides a plan, process, and method for creating trauma-sensitive, democratic, nonviolent cultures that are far better equipped to engage in the innovative treatment planning and implementation that is necessary to adequately respond to the extremely complex and deeply embedded injuries that clients have sustained.*

Center for Substance Abuse Treatment. (2014). *Organizational assessment for trauma-informed care*. In *Trauma-informed care in behavioral health services*. Treatment Improvement Protocol (TIP) Series, No. 57.

*A self-administered assessment tool for staff and key stakeholders for use in developing or re-evaluating trauma-informed services.*

Elliott, D. E., Bjelajac, P., FalLOT, R. D., Markoff, L. S., & Reed, B. G. (2005). Trauma-informed or trauma-denied: Principles and implementation of trauma-informed services for women. *Journal of Community Psychology*, 33(4), 461-477.

*Homelessness and its related dangers is a prevalent source of trauma among women. The authors identify 10 principles that define trauma-informed service, discuss the need for this type of service, and give some characteristics of trauma-informed services in eight different human service areas.*

FalLOT, R. D. and Harris, M. (2009). Creating cultures of trauma-informed care (CCTIC): A self-assessment and planning protocol. Community Connections, Washington, D.C. Found at [http://www.vawnet.org/summary.php?doc\\_id=3449&find\\_type=web\\_sum\\_GC](http://www.vawnet.org/summary.php?doc_id=3449&find_type=web_sum_GC)

*Human service systems become trauma-informed by thoroughly incorporating, in all aspects of service delivery, an understanding of the prevalence and impact of trauma and the complex paths to healing and recovery. Trauma-informed services are designed specifically to avoid retraumatizing those who come seeking assistance as well as staff working in service settings. These services seek "safety first" and commit themselves to "do no harm." The assessment section on safety includes a number of physical environmental factors to consider in providing trauma-informed care. These include: Where are services delivered? What signs are there? Are they welcoming? Clear? Legible?*

*Are doors locked or open? Are there easily accessible exits? How would you describe the reception and waiting areas, interview rooms, etc.? Are they comfortable and inviting? Are restrooms easily accessible?*

Hopper, E. K., Bassuk, E. L., & Olivet, J. (2010). Shelter from the storm: Trauma-informed care in homelessness services settings. *The Open Health Services and Policy Journal*, 3, 80-100.

*Research has shown that individuals who are homeless are likely to have experienced some form of previous trauma; homelessness itself can be viewed as a traumatic experience; and being homeless increases the risk of further victimization and retraumatization. This paper explores the evidence base for trauma-informed care (TIC) within homelessness service settings, including a review of quantitative and qualitative studies and other supporting literature. The authors provide an overview of existing programs and guidelines for programs. An appendix lists specific trauma issues found among subgroups, i.e., men, women, children, veterans and others.*

Hummer, V. L., Dollard, N., Robst, J., & Armstrong, M. I. (2010). Innovations in implementation of trauma-informed care practices in youth residential treatment: A curriculum for organizational change. *Child Welfare*, 89(2), 79-95.

*This article reviews the literature on trauma and children in the child welfare system and discusses case studies of trauma-informed practices in OOH treatment programs and the curriculum Creating Trauma-Informed Care Environments, which resulted from study findings.*

*The organizational factors related to the successful implementation of trauma-informed care identified from the case studies are summarized.*

National Center on Family Homelessness. (n.d.). Trauma-informed organizational toolkit for homeless services.

*The Trauma-Informed Organizational Toolkit provides programs with a roadmap for becoming trauma-informed. The Toolkit offers homeless service providers with concrete guidelines for how to modify their practices and policies to ensure that they are responding appropriately to the needs of families who have experienced traumatic stress. Section II of the assessment tool covers elements of the physical environment, including lighting, privacy, locks for bathroom and places to store belongings, and a place for children to play.*

Substance Abuse and Mental Health Services Administration (SAMSA). (2014). SAMHSA's concept of trauma and guidance for a trauma-informed approach. HHS Publication No. (SMA) 14-4884. Rockville, MD: Substance Abuse and Mental Health Services Administration.

*The purpose of this paper is to develop a working concept of trauma and a trauma-informed approach and to develop a shared understanding of these concepts that would be acceptable and appropriate across an array of service systems and stakeholder groups. The first principle of SAMHSA's six-principles trauma-informed approach to service delivery is safety, which includes making sure the physical setting is safe.*

## Veterans

Desai, R. A., Harpaz-Rotem, I., Najavits, L. M., & Rosenheck, R. A. (2008). Impact of the Seeking Safety program on clinical outcomes among homeless female veterans with psychiatric disorders. *Psychiatric Services*, 59(9), 996-1003.

*Female veterans have three to four times greater risk of homelessness compared with their civilian counterparts. The article presents data on the one-year client-level outcomes of homeless women veterans who received services through a program called Seeking Safety compared with those of women who received care from the Homeless Women Veterans Programs before Seeking Safety became available. Seeking Safety is an intervention consisting of 25 individual modules that address issues of safe behaviors and relationships, life skills, and relapse prevention. The central tenet of this treatment is that safety is the first priority, as operationalized by abstinence from drugs and alcohol (if there is an alcohol problem), avoidance of self-destructive behavior, the establishment of healthy social networks, and general self-protection. Seeking Safety appears to have had a moderately beneficial impact on several clinical outcomes, including social interaction, but did not have an impact on levels of substance abuse.*

Guthrie, K. A., & O'Donnell, C. (n.d.). Trauma-informed care: Building environments that lead homeless veterans toward recovery. Parts I & II. PowerPoint presentation.

*This presentation examines the causes and types of trauma that lead female veterans into homelessness. An important component of trauma-informed care for these veterans*

*is environmental safety, including privacy, noise control, choice of seating, easy exit, signage, accessibility and decoration.*

Women's Bureau. (2010). Trauma-informed care for women veterans experiencing homelessness: A guide for service providers. Washington, D.C.: U.S. Department of Labor.

*Trauma Informed Care for Women Veterans Experiencing Homelessness is designed to be used by community-based service agencies that work with homeless female veterans in a variety of settings (e.g., emergency shelters, domestic violence shelters, transitional and supportive housing programs, outpatient settings). Leaders within these organizations who are looking to improve their effectiveness in engaging the female veterans they serve can use this guide to begin the process of becoming trauma-informed. Section Two: Providing Trauma-Informed Care in Homeless Service Settings mentions that need for safety in the physical environment.*

## Wayfinding & Intuitive Use

Gärling, T., Böök, A., & Lindberg, E. (1986). Spatial orientation and wayfinding in the designed environment: A conceptual analysis and some suggestions for post-occupancy evaluation. *Journal of Architectural and Planning Research*, 3(1), 55-64.

*This paper presents a conceptual framework that attempts to identify some of the psychological and cognitive subprocesses involved in spatial orientation and wayfinding. Based on the model and review of research literature, the*

*author concludes that wayfinding problems are usually worse for individuals new to a space. Sign-posting systems are therefore essential to help newcomers navigate the space. In highly complex environments, however, sign-posting may not be sufficient.*

Hidayetoglu, M. L., Yildirim, K., & Akalin, A. (2012). The effects of color and light on indoor wayfinding and the evaluation of the perceived environment. *Journal of environmental psychology*, 32(1), 50-58.

*The experiment was conducted with the participation of 102 university students who experienced the indoor environments with various color and light variables, and evaluated these environments using concrete concepts like clear/blurry, attractive/unattractive, navigable/un-navigable and inviting/repellent. The scores for attractiveness and remembrance of warm colors were found to be higher than those for other colors, and the median scores for the positive perception of correlated color temperature were found to be higher than those concerning high and low level temperatures. However, it was confirmed that the use of warm and cool colors in indoor environments with low light levels were not taken into consideration by users of a space and were perceived negatively. Moreover, it was determined that compared to the males, females preferred high brightness levels.*

Hölscher, C., Meilinger, T., Vrachliotis, G., Brösamle, M., & Knauff, M. (2006). Up the down staircase: Wayfinding strategies in multi-level buildings. *Journal of Environmental Psychology*, 26(4), 284-299.

*Three specific strategies for navigation in multilevel*

*buildings were compared. The central point strategy relies on well-known parts of the building; the direction strategy relies on routes that first head towards the horizontal position of the goal, while the floor strategy relies on routes that first head towards the vertical position of the goal. The floor strategy was preferred by experienced participants over the other strategies and was overall tied to better wayfinding performance. A cognitive-architectural analysis of the building revealed seven possible causes for navigation problems. Especially the staircase design was identified as a major wayfinding obstacle.*

Jung, J. W., & Gibson, K. (2007). The use of landmarks in fire emergencies: A study of gender and the descriptive quality of landmarks on successful wayfinding. *Journal of Interior Design*, 32(2), 45-57.

*Results of a study involving college students suggest that the describability of landmarks provided a positive influence to route communication. Post hoc analyses revealed that participants using describable landmarks (DL) had a significantly lower (faster) total time than those with no landmarks (NL).*

Lawton, C. A. (1996). Strategies for indoor wayfinding: The role of orientation. *Journal of Environmental Psychology*, 16(2), 137-145.

*The experience of disorientation, especially if it occurs frequently, might be expected to heighten anxiety about performing wayfinding tasks. The purpose of the study was to determine whether an orientation strategy based on directional cues constitutes a separate strategy of indoor wayfinding, distinct from such strategies as attending to*

*building configuration or relying on external assistance about the route to be followed. The results showed an orientation based on directional cues did constitute a separate strategy. However, the results also suggest that individuals do not rely on just one wayfinding strategy, and that a route strategy may be preferred in an environment rich in route information and landmark directiveness.*

Lawton, C. A., & Kallai, J. (2002). Gender differences in wayfinding strategies and anxiety about wayfinding: A cross-cultural comparison. *Sex Roles*, 47(9-10), 389-401.

*Two studies examined gender and cultural differences in wayfinding strategies and anxiety about wayfinding. Men in both Hungary and the United States reported greater preference for a strategy of orienting to global reference points, whereas women reported greater preference for a strategy based on route information. A higher level of wayfinding anxiety was reported by Americans, and women in both countries reported greater wayfinding anxiety than did men. Women in both countries reported feeling less safe than did men. Feeling of personal safety and wayfinding strategy preferences mediated the gender difference in wayfinding anxiety.*

Mandel, L. H. (2013). Finding their way: How public library users wayfind. *Library & Information Science Research*, 35(4), 264-271.

*The study found library users' wayfinding behavior to be generally inconsistent over time, but that there are users who stick to predominant segments (those segments used heavily to connect two particular nodes, or stops). Those segments tend to be the straightest or most direct segments*

*connecting two given nodes.*

Murphy, P. (2012). Wayfinding planning for healthcare facilities. Newport Beach, CA: GNU Group. Found at <http://www.gnugroup.com/wp-content/uploads/2015/07/Healthcare-Wayfinding-GNU-Group.pdf>

*Integrated Wayfinding relies on multiple layers and forms of communication to assure that users have all of the information they need to get to their destinations, on time and with maximum ease. Architecture and interior design can have a powerful impact in providing orientation cues. Intelligent floor planning and relationships of rooms and departments can aid immeasurably in wayfinding. Renovations, and new construction, can capitalize on interior design that incorporates colors, materials, graphics and other visual clues that can designate floors, zones, departments, and provide help in giving directions.*

O'Neill, M. J. (1991). Effects of signage and floor plan configuration on wayfinding accuracy. *Environment and Behavior*, 23(5), 553-574.

*Results of a study on a college campus show that as floor complexity increases wayfinding performance decreases. Graphic signage produced the greatest rate of travel in all settings, but textual signage was the most effective in reducing wayfinding errors, such as wrong turns and backtracking. Overall, the addition of signage resulted in a 13% increase in rate of travel, a 50% decrease in wrong turns, and a 62% decrease in backtracking across the five settings. However, plan configuration was found to exert a significant influence regardless of signage, because the wayfinding performance of participants with access to*

*signage in the most complex settings remained equivalent to, or significantly poorer than, those in the simplest settings with no signage.*

Obeidat, I., Obeidat, S., & Amor, C. (2011). Wayfinding by color guide people to find their way in the built environment. *Arts and Humanities Graduate Student Paper Conference Abstracts*, 271-291. Lubbock, TX: Texas Tech University Graduate School.

*The authors reviewed the available literature on wayfinding strategies to find out possible useful locations for applications of color and incorporating the prior research work on the issue. Findings include: Wall color in the built environment may provide a relatively easy, low-cost strategy for promoting increased relaxed feelings and easy wayfinding. When using color in design for wayfinding, it should be identified as a color-coding system, not just as decoration. Color is used to create focal points that help in identifying and reaching desired destinations within the built environment. Additionally, color is used to help distinguish landmark features and interior spatial variations. Color in this manner can provide a reference point for wayfinding during an emergency.*

Rooke, C. N., Tzortzopoulos, P., Koskela, L. J., & Rooke, J. A. (2009). Wayfinding: Embedding knowledge in hospital environments. *HaCIRIC*, Imperial College Business School, London, UK, 158-167.

*The aim of this paper is to establish whether hospital environments can be embedded with knowledge in order to improve wayfinding. The authors started from the premise that the use of signs alone has failed to solve wayfinding*

*problems and uncovered from literature evidence that it is possible to embed other forms of knowledge in the physical properties of the environment. These include the use of prominent landmarks, color, features of the buildings and environment that allow for an intuitive performance of activities without reliance on signs and the strategic placement graphical information in such a way that it is in agreement with the architectural layout of the environment.*

Werner, S. & Schindler, L.E. (2004). The role of spatial reference frames in architecture: Misalignment impairs way-finding performance. *Environment and Behavior*, 36(4), 461-482.

*In this study, the authors provide empirical evidence that way-finding performance and the ability of people to orient themselves in their environment depends partly on geometrical relations between different parts of the space. The authors propose that the misalignment of local, cognitive reference frames suggested by architectural features leads to way-finding problems and impairs the integration of spatial knowledge. Overall, the results provide evidence that the orientation of different parts of a building can be an important factor in way-finding performance and therefore in the usability and the positive experience of a space. Misalignment of local reference frames, as investigated in this study, led to a deterioration of way-finding speed and to a decrease in pointing accuracy, indicating that participants were less clear about the relations between different parts of the building. In addition, the spatial relations, especially differences in orientation between different parts of a building, seem to play a role in how humans are able to organize and to integrate spatial knowledge.*



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