

A Matter of Perception

SETTING STANDARDS FOR SENIOR HOUSING DESIGN/

By Steven Orfield

AS WE MOVE away from an institutional model of senior care to one that is more residential and resident-focused, we must consider the perceptual performance of the elderly. Older residents have a different level of perceptual range and sensitivity in all areas of perception and their changing patterns of behavior add significantly to additional perceptual changes.

This population has a more limited perceptual range, a slower perceptual response, more sensitivity to perceptual noise, and slower cognitive response in processing perceptual input. Effectively, seniors are experiencing a slower world at lower resolution than the younger populations.

Recently, the Architectural Research Consortium (founded by Minneapolis-based Orfield Laboratories in 2009) has completed a new certified building performance standard (CBPS) for senior housing that takes account of the following perceptual standards for seniors at various ages.

VISUAL DOMAIN

In the visual domain, the range of issues experienced includes less ability to deal with low contrast signals (low contrast graphics on appliances and other products, small lettering, low contrasts in wall and floor transitions, perception of low reflectance surfaces and transitions), difficulty with glare (daylighting and lighting, glossy surfaces reflecting brightness, dark surfaces around windows and doors), and difficulty with temporal transitions and their required visual adaptation (dark room to bright room and the reverse, movement from indoors to outdoors). Visual noise can become very prominent, with seemingly normal fixtures causing disability glare due to their high values of luminance. Newer, more energy efficient lighting is usually significantly higher in glare than the products it replaces.

AURAL DOMAIN

Acoustically, the range of issues experienced includes dealing with reverberation (more acoustically reflective spaces), dealing with background noise (HVAC and device noise, activity noise, TV and other audio sources), and dealing with low levels of intelligible signals (quiet voices, TVs and music sources with too much bass). There are also differences in adaptation to high and low noise levels. Unfortunately, there is often the misperception in assisted living and nursing facilities that addressing residents loudly will solve the communications problems, when speaking clearly in quieter spaces is far more successful.

THERMAL DOMAIN

Thermal comfort theory suggests that comfort is a function of temperature, humidity, air velocity, clothing type and activity level. Seniors often stay home more, wear lighter clothing and have lower activity levels. Even with fully healthy seniors, clothing types (CLO values) and activity levels (MET values) can change thermal comfort requirements significantly. Thus, a calculation of thermal comfort in a nursing home will often find that the staff will be predictably comfortable at the cost of discomfort for the residents.

AIR QUALITY AND OLFACTORY DOMAIN

Seniors are less able to perceive smells, so they get reduced perception of taste (of which smell is a large component) as well as less perception of danger (smell of burning, for example), and less perception of air quality. It is very important that air quality is monitored and that safety issues that relate to smell have a redundant channel for warning.

TASTE

While not strictly a matter of design, residents also have a reduced sense of taste as they age. A recent study suggested that approaching 80 to 90 years of age, the perception of the taste of animal fat may drop to one-twentieth of its prior level. It is hypothesized that this may be causing seniors to eat diets with higher levels of animal fat to provide equivalent sensory reward.

CONCLUSIONS

Senior housing design is an area of practice that can be quite rewarding. But its most important connection with the resident, perceptually-based design, is highly non-intuitive. The designer cannot experience the lower contrast, lower resolution and slower experience world of the senior resident. Thus, it is important to put standards in place to ensure that their experience is, as far as we can control, evocative of their experiences throughout life, rather than an experience of visual and aural complexity that can cause them to withdraw and become less involved in life. **i**

Steven Orfield is the President of Orfield Laboratories, the nation's only multidisciplinary building performance and occupancy quality consulting lab. He is also founder of the Open Plan Working Group and the Architectural Research Consortium, two organizations that focus on research and evidence-based design.

Effectively, seniors are experiencing a slower world at a lower resolution than younger populations.