

eMOTIONAL Cities

Mapping the cities through the senses
of those who make them

Key linkages between urban environments and public health

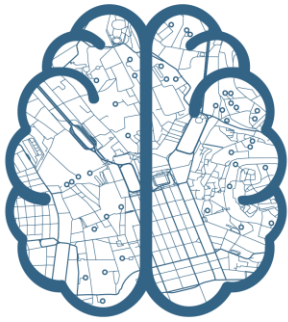
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Key-messages/Summary

The built environment plays a significant role in the quality of life, independence, and safety of people with mild cognitive disorders or dementia. By prioritizing user-centric design and addressing the unique needs of individuals with cognitive impairments, the built environment can enhance their well-being, independence, and ability to participate actively in society. Urban planners and architects increasingly rely on insights from neuroscience to create environments conducive to emotional well-being. This includes prioritizing walkability, ensuring equitable access to green spaces, using materials that evoke warmth and safety, and designing spaces that foster social connections. By understanding how the brain and emotions respond to the built environment, we can better align urban development practices with human neurological and emotional needs.



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Introduction

The connection between emotional health and the built environment is increasingly being understood through a neurological lens, shedding light on how the physical spaces we inhabit influence brain function, mood, and well-being. The built environment also plays a significant role in the quality of life, independence, and safety of people with mild cognitive disorders or dementia. By prioritizing user-centric design and addressing the unique needs of individuals with cognitive impairments, the built environment can enhance their well-being, independence, and ability to participate actively in society.

Linkages between urban environments and public health

1. Environmental Stressors and the Brain

The built environment can either alleviate or exacerbate stress, a key determinant of emotional health. Crowded spaces, high noise levels, poor air quality, and limited access to natural elements have

been shown to elevate cortisol levels and disrupt brain regions like the amygdala and prefrontal cortex, which regulate emotions and stress responses.

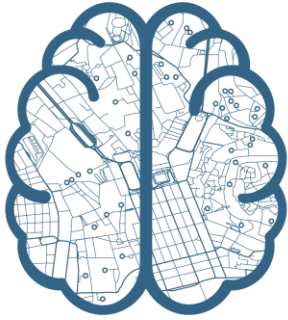
Conversely, environments with calming aesthetics, lower noise pollution, and green spaces foster relaxation and reduce neural hyperactivation related to stress.

2. Neuroplasticity and Environmental Design

The brain's capacity for neuroplasticity—its ability to adapt and rewire—responds directly to sensory stimuli in the built environment. Natural light, textured materials, biophilic design elements, and spatial layouts that encourage movement and social interaction can positively influence neural pathways associated with emotional resilience and cognitive function.

3. Nature and Emotional Regulation

Access to green spaces, parks, and vegetation-rich environments is strongly linked to improved emotional health. Neurological studies show that exposure to natural environments enhances



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activity in the brain's default mode network, associated with introspection and emotional regulation, while dampening activity in areas linked to rumination and anxiety.

4. Spatial Perception and Social Connectivity

Neurological research highlights that built spaces affect how individuals perceive themselves and connect with others. For example, environments that promote natural gathering points—such as plazas, shared workspaces, or well-designed public transit systems—activate brain regions associated with social bonding, reducing loneliness and promoting positive emotions.

5. Neurological Responses to Color and Aesthetics

Color, patterns, and visual cues in architecture evoke specific emotional and neurological responses. Warm colors, for example, activate arousal regions in the brain, fostering energy or anxiety, while cooler tones encourage calmness. The built environment's aesthetics, including proportions,

symmetry, and even acoustics, also influence neurological states that underpin emotional health.

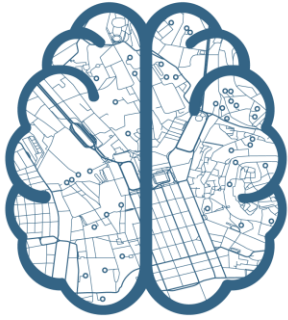
Implications for people with mild cognitive disorders

1. Cognitive and Navigational Challenges

- **Wayfinding difficulties:** People with dementia often struggle with navigation due to memory loss and impaired spatial orientation. Poorly designed spaces with complex layouts, lack of clear signage, or inconsistent visual cues can increase confusion and anxiety.
- **Familiarity:** Environments that feel familiar and intuitive reduce stress and support better wayfinding. Incorporating recognizable landmarks and maintaining consistency in spatial layouts can help.

2. Impact on Safety

- **Trip hazards:** Uneven surfaces, clutter, and poor lighting can



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increase the risk of falls, which are a common concern for individuals with cognitive impairments.

- **Accessibility:** Barriers like narrow doorways, stairs without railings, or inaccessible bathrooms can limit mobility and independence.

3. Psychological Effects

- **Sense of control:** Well-designed environments promote autonomy by enabling individuals to perform daily tasks with minimal assistance.
- **Overstimulation:** Excessive noise, clutter, or overwhelming visual stimuli can trigger agitation or confusion. Conversely, calming environments with appropriate lighting, acoustics, and organization can reduce stress.
- **Social isolation:** Poorly planned spaces may discourage social interaction, while environments designed for gathering and interaction can foster a sense of community.

Conclusion and Insights for Urban Planning

Dementia-friendly design: This approach emphasizes simplicity, safety, and familiarity. Key principles include clear sightlines, non-slip contrasting flooring, and minimizing unnecessary changes in the environment.

Calm color schemes: Using soft, neutral colors can create a soothing atmosphere, while avoiding bold patterns that may confuse or disorient individuals.

Sensory engagement: Design elements that stimulate the senses, such as textured surfaces or areas with gentle sounds (e.g., water features), can have positive effects.

Public spaces: Ensure urban areas are accessible and easy to navigate with clear signage, consistent design, and safe pedestrian routes.

Community centers: Design spaces that encourage engagement and activity, such as gardens, recreational rooms, and sensory-focused areas.