

Enabling and Ageing-Friendly Neighbourhoods: An Eye-Tracking Study of Multi-Sensory Experience of Senior Citizens in Singapore

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Abstract : Our understanding and experience of the built environment are primarily shaped by multi-sensory, emotional and symbolic modes of exchange with spaces. Associated sensory and cognitive declines that come with ageing substantially affect the overall quality of life of the elderly citizens and the ways they perceive and use urban environment. Reduced mobility and increased risk of falls, problems with spatial orientation and communication, lower confidence and independence levels, decreased willingness to go out and social withdrawal are some of the major consequences of sensory declines that challenge almost all segments of the seniors' everyday living. However, contemporary urban environments are often either sensory overwhelming or depleting, resulting in physical, mental and emotional stress. Moreover, the design and planning of housing neighbourhoods hardly go beyond the passive 'do-no-harm' and universal design principles, and the limited provision of often non-integrated eldercare and inter-generational facilities. This paper explores and discusses the largely neglected relationships between the 'hard' and 'soft' aspects of housing neighbourhoods and urban experience, focusing on seniors' perception and multi-sensory experience as vehicles for design and planning of high-density housing neighbourhoods that are inclusive and empathetic yet build senior residents' physical and mental abilities at different stages of ageing. The paper outlines methods and key findings from research conducted in two high-density housing neighbourhoods in Singapore with aims to capture and evaluate multi-sensorial qualities of two neighbourhoods from the perspective of senior residents. Research methods employed included: on-site sensory recordings of 'objective' quantitative sensory data (air temperature and humidity, sound level and luminance) using multi-function environment meter, spatial mapping of patterns of elderly users' transient and stationary activity, socio-sensory perception surveys and sensorial journeys with local residents using eye-tracking glasses, and supplemented by walk-along or post-walk interviews. The paper develops a multi-sensory framework to synthesize, cross-reference, and visualise the activity and spatio-sensory rhythms and patterns and distill key issues pertinent to ageing-friendly and health-supportive neighbourhood design. Key findings show senior residents' concerns with walkability, safety, and wayfinding, overall aesthetic qualities, cleanliness, smell, noise, and crowdedness in their neighbourhoods, as well as the lack of design support for all-day use in the context of Singaporean tropical climate and for inter-generational social interaction. The (ongoing) analysis of eye-tracking data reveals the spatial elements of senior residents' look at and interact with the most frequently, with the visual range often directed towards the ground. With capacities to meaningfully combine quantitative and qualitative, measured and experienced sensory data, multi-sensory framework shows to be fruitful for distilling key design opportunities based on often ignored aspects of subjective and often taken-for-granted interactions with the familiar outdoor environment. It offers an alternative way of leveraging the potentials of housing neighbourhoods to take a more active role in enabling healthful living at all stages of ageing.

Keywords : ageing-friendly neighbourhoods, eye-tracking, high-density environment, multi-sensory approach, perception

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