Emotional Living Spaces – Development of a Methodology for Identifying and Designing Emotional Spaces A. Röder, C. Günther. *Gerontechnology* 25(s)

Purpose This research project responds to demographic challenges that will have a significant impact on healthcare, housing concepts, and social structures [1]. Forecasts show a significant increase in the number of older adults, those in need of care [2], and people with dementia [3]. To ensure long-term, stable, and holistic care, housing concepts need to consider individual needs to enable safety, comfort, and participation. In this context, previous research revealed a special dimension of perception: Emotional Spaces (ES) [4]. These arise as an individual connection between spatial experiences, biography, and sensory perception. Although not visible or tangible, they are physically and emotionally perceptible and influence well-being through memories, relationships, and values associated with feelings and space. Studies prove that sensory experiences have a major impact on well-being, and visual stimulation can promote cognitive abilities [5]. The project aims to develop a generic concept for designing an atmospheric, sensually appealing ES for people who are no longer able to express themselves verbally, such as people with advanced dementia living in a special type of housing, such as senior-friendly housing projects or care facilities. **Method** A novel methodology was developed to conceptualize and design individual ES by integrating existing, adapted, and newly designed methods from visual and qualitative spatial research. This approach includes an innovative toolbox consisting of three modules, providing differentiated insights to emotional responses to specific spatial situations and atmospheres. Results of these responses can be translated into architectural and design strategies. The method examines physical, sensory, and affective factors (e.g., geometries, proportions, light, materials, colors, furnishings), as well as the impact on emotional well-being. The toolbox contains a database-supported image library that is used to systematically determine visual and atmospheric preferences. Biographical interviews and surveys on emotions were conducted for validation purposes. The effectiveness was tested in a pre-study with eight participants over 65 years, living in a care facility. After the first evaluation, new images, supported by the databased information, were generated by using AI. The results were evaluated with the participants. **Results and Discussion** Preliminary findings indicate that the methodology enables the efficient identification of individual ES and accurately represents their spatial influencing factors without implementing interviews. The toolbox gives detailed insights into emotional responses and allows systematic evaluation of atmospheres and visual preferences. This supports the identification of preferred spatial qualities that promote emotional well-being and reduce stress. The results provide important insights for dementia research, architectural psychology, and gerontology. The methodology delivers a framework for adapting living spaces to the individual needs of the older adults and can be integrated into care and living concepts. However, further development is required regarding the completeness of atmospheric situations, as well as the integration of additional sensory dimensions, such as acoustics and olfaction. This research contributes to a transition in understanding dwelling not only as a functional condition but also as an emotional and atmospheric process that supports to well-being and participation. Especially for people in advanced stages of dementia, ES may significantly enhance quality of life. Future research will include a revised toolbox and involve a scaled-up version of the study with a greater number of participants to substantiate the qualitative findings.

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