

# Architectural care

## How the design of a public building can benefit our mental wellbeing

### Introduction

Health has influenced architecture since ages. Already Vitruvius was writing about the necessity of studying medicine as a complementary knowledge, necessary to shape the healthiness of the dwellings.<sup>1</sup> In Accademia delle Arti del Disegno in Florence, one of the first art academies in the world, anatomical dissection was obligatory for the students to get acknowledged with the human body. This example was later followed by the academies in Rome and Paris.<sup>2</sup> Consequently, with the emergence of modernism, Le Corbusier advocated for the conditions of hygiene, sunlight, and access to greenery as basic needs for human wellbeing in cities.<sup>3</sup> However, due to the influence of war and rapidly developing technologies, more and more attention was given to having a healthy mind. One of the advocates of studying the human brain was Richard Neutra, declaring that its functioning is no less important for an architect than the properties of various construction materials. He has seen architecture as a prevention measure, that can help people function healthy in their hectic modern lives.<sup>4</sup>

70 years later, the issue of mental wellbeing still remains relevant. In a survey commissioned by the European Commission, 46% of responders reported having an emotional or psychological problem within the last 12 months. Compared to other countries, Denmark performs well on this score, but still more than 1 in 4 Danish people indicated feelings of fatigue as recently dominating their daily lives.<sup>5</sup> National Health Profile published in 2021 revealed that during the past 11 years, the low mental health score among Danish citizens has increased by 7.4 percent points.<sup>6</sup> In the Capital Region, the patients' admission for psychiatric hospital care has increased from 50 293 in 2020 to 56 688 in 2023.<sup>7</sup> At the same time, a 2007 Structural Reform of Danish hospitals wants to prioritize quality of care over geographical proximity to hospitals.<sup>8</sup> The new way of financing healthcare was also supposed to encourage municipalities to invest in preventive health measures.<sup>9</sup> This indicates the need to search for new methods of preventive societal care.

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<sup>1</sup> Vitruvius, Morgan, and Vitruvius, *The Ten Books on Architecture*.

<sup>2</sup> Sealy and Lee, 'Anatomy and Academies of Art I'.

<sup>3</sup> Le Corbusier, *The Athens Charter*.

<sup>4</sup> Neutra and Lamprecht, *Survival through Design*.

<sup>5</sup> European Commission, Brussels, 'Flash Eurobarometer 530 (Mental Health)'.

<sup>6</sup> 'Danskernes Sundhed'.

<sup>7</sup> 'Psykiatrisk Sygehusvæsenet'.

<sup>8</sup> Raahauge et al., *Architectures of Dismantling and Restructuring*.

<sup>9</sup> Christiansen, 'Ten Years of Structural Reforms in Danish Healthcare'.

## A holistic approach to mental health

Due to the progress in the disciplines related to medicine, the approach to mental health has evolved from focusing on treatment to more comprehensive methods, which involve different disciplines of life.<sup>10</sup> In 2004, the notion of *wellbeing* was included in the World Health Organisation's definition of mental health, formulated as an ability to cope with everyday life problems, learn and work productively, realise own abilities and contribute to the community.<sup>11</sup> This prevailing idea is based on three types of wellbeing: happiness and life satisfaction (hedonic wellbeing), societal contribution (social wellbeing) and self-realisation (eudaimonic wellbeing).<sup>12</sup> Data shows, that when well-being is high, the likelihood of experiencing mental illness decreases, whereas poor mental health diminishes overall well-being.<sup>13</sup> Therefore, the promotion of mental well-being constitutes one of the methods of mental health prevention.

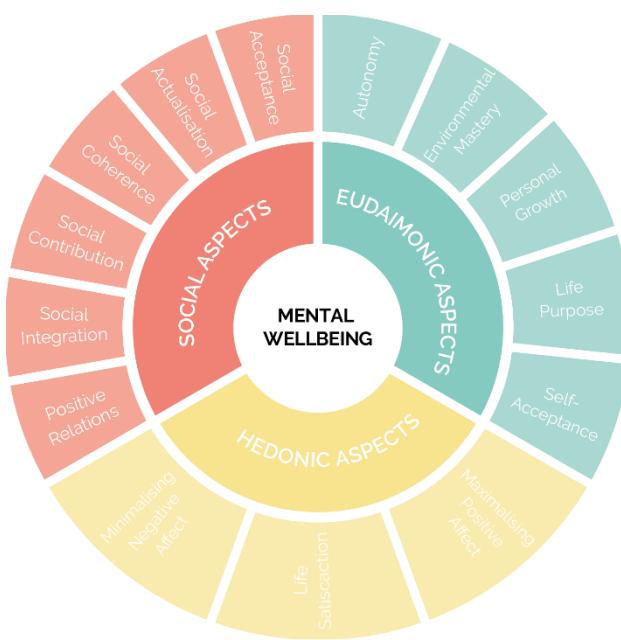


Figure 1. Model of wellbeing containing three second-order factors. Based on Gallagher et al., 2009.

Combining the influence of healthcare problems on architecture and the current strategy of Danish healthcare authorities, this research aims to find architectural solutions that can contribute to fostering mental wellbeing as a method of healthcare prevention. To conduct this research, the main research question was formulated:

### How the architecture of a public building can support the mental wellbeing of its users?

In this question, *support* relates to each of the aspects of mental wellbeing, and therefore: minimizing the negative and maximizing the positive influence of the built environment on human psychology and physiology, fostering social connections and promoting self-development through programmatic measures. In this context, programmatic measures refer to the types of functions and activities intentionally incorporated into the built environment that are wide-ranging, inclusive, and promote a healthy lifestyle. This coordinated strategy ensures accommodating people from different age groups, with various abilities and lifestyles, and therefore fostering positive outcomes across the entire community.

<sup>10</sup> Gautam et al., 'Concept of Mental Health and Mental Well-Being, It's Determinants and Coping Strategies'.

<sup>11</sup> 'Mental Health'.

<sup>12</sup> Gallagher, Lopez, and Preacher, 'The Hierarchical Structure of Well-Being'.

<sup>13</sup> Gautam et al., 'Concept of Mental Health and Mental Well-Being, It's Determinants and Coping Strategies'.

## Research framework

As analysed by Gallagher et al., although tightly connected, various components of mental wellbeing are best represented by the three second-order constructs of hedonic, eudaimonic, and social wellbeing.<sup>14</sup> Therefore, this structure will be used to provide a research framework in relation to the architecture of a public building. In some models, social and eudaimonic wellbeing aspects are connected under the factor "positive functioning". Due to this interconnectivity, one subquestion was formulated, however, the results will be divided according to three second-order factors structure.

### **Subquestion 1: What are the current findings connecting architecture to mental wellbeing?**

Epistemes: phenomenology.

Method: desk research.

As various studies have shown, architecture impacts human psychology and physiology in significant ways.<sup>15</sup> Based on these findings, the term *neuroarchitecture* has emerged – a multidisciplinary field that incorporates beneficial stimulation derived from the neurosciences into the built environment. These findings include shapes and proportions of indoor spaces, lightning, colours, sounds and smells that influence human physiology, cognitive skills, emotions and behaviours, measured in experiments. As consisting of objective data, this part contributes to the research as a quantitative method.

### **Subquestion 2: How the program and the design of the building can support mental wellbeing?**

Epistemes: typology and praxeology

Method: Case study and interview with the project leader of Exhale

As the building should perform its intended purpose effectively, the architecture has to be suitable for its program. To investigate better the matter of the size of the spaces and providing adequate facilities, this research will look into an existing example of a pavilion dedicated to the TU Delft students' mental wellbeing. This qualitative approach can also provide insight into the design process, user experience feedback and understanding of challenges and limitations, that might emerge during the project implementation.

Method: Comparative case study

To gain an understanding, of what currently is considered a *wellbeing architecture*, a selection of public buildings declared as supporting, promoting or beneficial for mental wellbeing will be chosen. A critical analysis of similarities and differences will be used to identify similar patterns. This phase of the study is a mixed method, combining quantitative data about existing structures, with a discourse analysis related to the notion of *wellbeing architecture*.

## Goal of the research

Through the existing examples and experimentally measured scientific findings, this research aims to collect data about the positive influence that architecture has on human psychology and physiology. Additionally, the proposed programs' range will help to determine functions for the future architectural designs, that want to contribute to people's mental wellbeing. Those solutions will be later used for designing a pilot public building project in the area of Nordvest in Copenhagen, that can positively impact the mental wellbeing of its users.

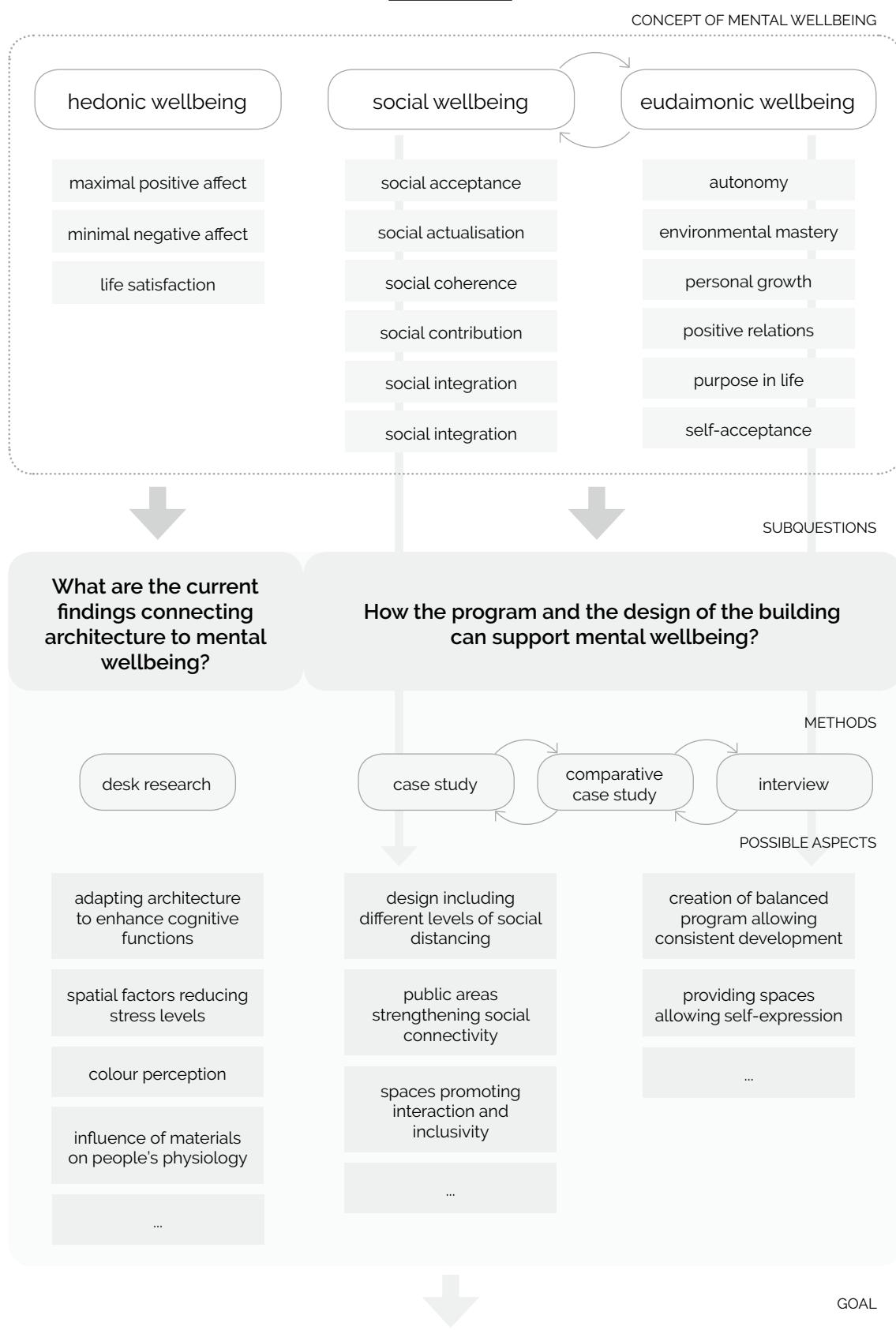
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<sup>14</sup> Gallagher, Lopez, and Preacher, 'The Hierarchical Structure of Well-Being'.

<sup>15</sup> Medhat Assem, Mohamed Khodeir, and Fathy, 'Designing for Human Wellbeing'.

In the same way that architects consider biodiversity and carbon footprint, future designers should prioritize the mental wellbeing of building users as a fundamental strategy for design thinking. This project will serve as a prototype for this concept, offering an opportunity to test and refine the idea of architecture oriented towards mental wellbeing. The proposed solutions - including the use of colours and materials, spatial layout, and illumination - represent a logical framework aiming at evoking positive behavioural, physiological and psychological responses. This model can be further developed and validated through practical application and research, and potentially revolutionize how we approach architectural design with mental wellbeing at its core.

**How the architecture of a public building can support the mental wellbeing of its users?**



*Figure 2. Research plan diagram.*

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