Mental health promoting senior living environments

Graduation Research Plan

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Index

Introduction

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Aging can be a difficult process for many people. As a person grows older, they lose strength and mobility, they are more prone to various chronical diseases, which leads to a life with less opportunities and more disabilities. In addition older people are more likely to lose close friends and relatives, leaving them grieving and alone. Finally existential questions become more common, as their life becomes increasingly difficult and loses its meaning. As a result it is estimated that between 18 and 25 % of people aged over 75 are depressed, two thirds of the people over 80 are lonely and the same group is also most likely to commit suicide. (CBS, 2021; CBS, 2022; Rhebergen, 2022) This number is likely to be even bigger, because depressive symptoms in the elderly are often overlooked or attributed to other physical ailments (Vink et al., 2008; Boorsma et al., 2012).

Preventing and countering depression in the elderly would not only improve quality of life from a mental perspective, it could also prevent numerous comorbidities and alleviate symptoms for other unrelated illnesses (Kramer et al., 2009). Since the elderly are a continuously growing demographic, countering depression in this age group, could also significantly alleviate the pressure on the care system.

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Problem Statement

The topic of elderly depression healing and prevention is mainly focused, and rightly so, on psychotherapy and medication. Yet since retired seniors spend a large part of their day at home, it is a plausible assumption that they are greatly affected by the spatial qualities of their living environments. Additionally the presence or absence of certain spaces, might influence occupation and degree of communication with neighbors, which will ultimately influence one's mental state.

There are recent studies that explore evidence-based design of medical institutions and healing spaces for psychiatric facilities (Bradley et al., 2006). There are also more broad studies, focusing on the effect of urban environments on its inhabitants (Newton, 2022). Finally there are also various architectural theses that are aimed specifically at preventing loneliness in the elderly through architectural design (Jianing, 2022; Weng, 2019).

However there is a lack of research that combines these various fields with research-by-design to explore **how depression in senior living environments can be countered or prevented with a holistic architectural approach.** For example, a senior with a walker might feel more empowered in a barrier-free space, they might experience less anxiety if they reside in close proximity to a nurse or they might be less lonely in a dwelling with communal amenities, which collectively might counter some of the causes of depression or alleviate its symptoms.

It is therefore important to establish which architectural features promote mental health in the elderly, so that they can be systematically implemented in new senior living environments or applied in renovations of existing projects.

Introduction

Research Goals

The goal of this research is therefore **to reduce the prevalence and severity of depression among seniors.** In order to achieve this goal, I will create a list of architectural guidelines, which will help designers of senior living environments to make decisions that will promote mental wellbeing among the inhabitants.

Research Question

Therefore the research question for this thesis will be:

Which architectural features can contribute to the prevention or alleviation of late life depression in senior living environments?

To answer this question, I'll answer the following sub-questions:

1) What are known mood-lifting architectural features, derived from the fields of environmental psychology and evidence based design?

2) What mood-lifting architectural features can be found in state-of-the-art psychiatric facilities?

3) Which additional requirements can be derived from literature and case studies of specifically elderly living environments?

4) What are the main elements of elderly depression prevention and healing and (how) can they be stimulated through architecture?

Hypothesis

My hypothesis is that since the elderly spend most of their time at home, their living environments become the main source of daylight, pleasant views, occupation, physical activity and social interactions, which contribute to mental wellbeing (Beute & De Kort, 2018; Nasrallah & Pati, 2021). It is therefore important to consider these elements in the design of senior living environments. In this research I will therefore try to clarify links between architecture and mental health and I will translate these links into implementable architectural features.

Theoretical Framework

In order to combat **senior depression** it is important to understand its causes and treatment strategies. Vink et al. (2008) have reviewed various studies, focusing on senior depression risk factors, and propose to group the factors into three categories: biological, psychological and social. From these three categories strongest associations were found for: chronic diseases, poor self-perceived health, functional disability, personality traits, inadequate coping strategies, previous psychopathology, smaller network size, being unmarried, qualitative aspects of social network, stressful life events and female gender. In terms of elderly prevention Alexopoulos (2005) in his literature review *Depression in the Elderly* states that self-actualization plays a vital role in prevention, however since this actualization is hampered by various social and physical difficulties, the presence of occupational therapy can be very beneficial for both prevention and treatment. However once depression has been diagnosed, the combination of antidepressants and psychotherapy is the preferred practice. These practices can either be more or less effective, depending on the spatial qualities of the rooms that they are conducted in.

In order to understand how these spatial qualities influence the wellbeing of the elderly, it is important to understand the field of **environmental psychology,** which explores how the natural, social and built environments affect the psychological state of humans. For example, one of the most well-known findings of environmental psychology, is that a close connection to nature relieves stress (Kaplan & Kaplan, 1989). However in his review *Environmental Psychology matters* Gifford (2014) explains that people are not only affected by physical aspects of the environment, but also by emotional associations that they make through personal memory and cultural background. These emotional associations become ever more important for a mentally vulnerable group. For example in *Environmental and Therapeutic Issues in Psychiatric Hospital Design: Toward Best Practices* Bradley et al. (2006) map various elements that contribute to psychiatric patient wellbeing, according to different categories: ambient, architectural, interior design and social. They claim that countering the stigmatized institutional atmosphere of a psychiatric hospital is crucial for an optimal recovery process.

Once the theories of environmental psychology have been rigidly tested, they can be manifested in **Evidence Based Design (EBD),** which is a healthcare design philosophy that promotes decision-making, aimed at scientifically proven positive outcomes for its users. The main principles of EBD are explained by Ulrich et al.

Theoretical Framework

(2010) in *A conceptual framework for the domain of evidence based design*. The framework encompasses nine design variables: audio and visual environment; safety; wayfinding, sustainability; patient room; family, staff and physician support spaces. We can see that this categorization is more specific and is more tailored to the built environment than the framework proposed by Bradley et al. There are many more studies concerning EBD in healthcare spaces, like *Exploring the concept of healing spaces*, by DuBose et al. (2018), who establish six different design variables: homelike environment, access to views and nature, light, noise control, barrier-free environment and room layout. To create a more complete understanding of how people might be influenced by their environment, it is important to read a range of different frameworks and compare them to each other.

The fields of environmental psychology and EBD focus mainly on the general population. The elderly however are a rather specific demographic, often with unique lifestyles and needs. Another important difference is that although often receiving care, the elderly are not hospitalized; they are living in a permanent home. Therefore their living environments should vary greatly from (psychiatric) hospitals. Thus it is important to study literature on **elderly living environments**. In the *Design Manual: Living for the Elderly* Feddersen & Lüdtke (2012) have collected an overview of principles for elderly housing design. Special attention is paid to the symbolic role that the living environment plays in the final years in one's life: due to low occupation, a good community of neighbors is vital in providing meaning of life. Additionally as a person grows older their mental abilities are likely to change. Therefore designing appropriate environments for dementia patients is an important theme in the realm of residential design for the elderly. Feddersen & Lüdtke (2014) have therefore collected an additional overview of principles in *Lost in Space*, focusing specifically on living environments of dementia patients. They claim that self-evident architecture, familiarity and identity are vital for orientation within a complex or neighborhood. Finally since the elderly often deal with physical disabilities and need to use walkers or wheelchairs, their living environments should accommodate the use of these aids. In *Basics Barrier-Free Planning* Skiba & Züger (2020) provide a toolbox for accessible design on all scales, from floor plans to the design of the details.

Figure 1 depicts the four fields with their relevant resources. By combining these various fields, I will be able to establish the list of mood-lifting architectural features for the elderly.

Theoretical Framework

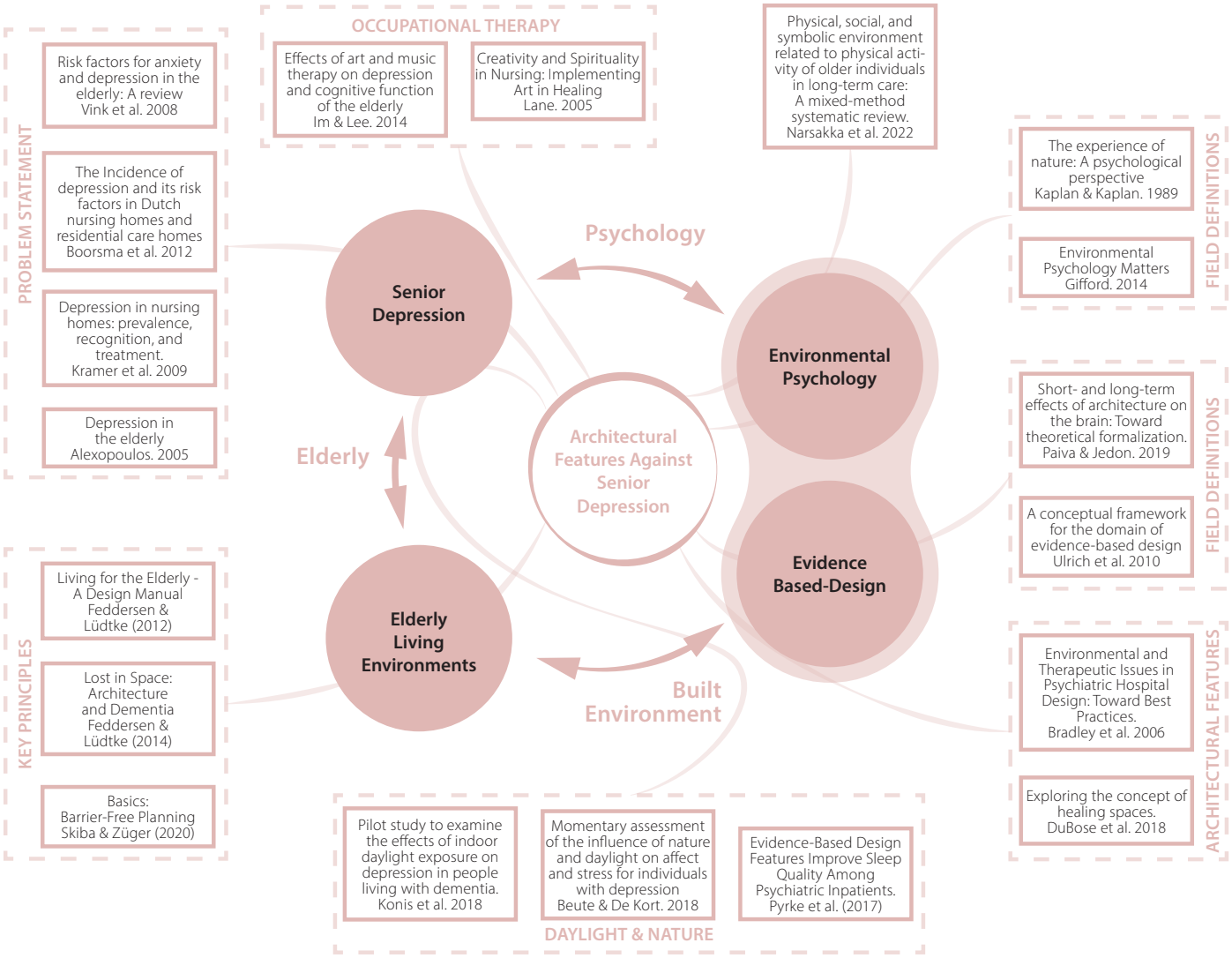

Figure 1 - Diagram of theoretical framework, by author

Methodology

In order to answer the research question

Which architectural features can contribute to the prevention or alleviation of depression in senior living environments?

I will first need to form an overview of existing mood-lifting features, derived from the findings of evidence based design and environmental psychology. I will also look at case studies of state-of-the-art psychiatric facilities, which are often designed to promote mental wellbeing of their patients.

Once I have established this first list of mood-lifting architectural features, I will need to adapt them to the specificities of the older population, since this demographic is likely to have special needs, stemming from their unique lifestyle and possible mental or physical limitations. Furthermore senior depression has different origins and symptoms than (young) adult depression. I therefore need to create an understanding of the causes of elderly depression and strategies for depression treatment. For this I will need to read existing literature and perform in-depth interviews with the elderly and geriatricians. Once I have identified the specificities of elderly depression I can use research-by-design to append the list with features aimed at countering senior depression specifically. It is then important to establish whether the elderly agree with the proposed features, through a later survey.

The final list of proposed features will be tested and implemented in an architectural design proposal for a redevelopment of an existing and architecturally outdated nursing or retirement home.

On the following pages I will elaborate on each step of the research process.

Methodology

Part I - Literature Review: Evidence Based Design & Environmental Psychology

In this part I will review the present findings in the fields of Evidence Based Design (EBD) and environmental psychology. I will translate the findings into a comprehensive list of mood-lifting architectural features with application recommendations.

Part II - Case Studies: Learning from state-of-the-art psychiatric facilities

In this part I will examine five case studies of state-of-the art psychiatric facilities. I have chosen psychiatric facilities, since their link to mental health is more evident than that of senior residences.

The choice of psychiatric facilities to be analyzed will be based on the following criteria:

- must be built after 2015
- must be critically acclaimed
- information and plans should be available

Based on these criteria, the following projects were selected:

1) Vejle Psychiatric Hospital - 2017 - Arkitema Architects
   This facility has received a European Healthcare Design Award for Mental Health in 2018.
2) Orygen and OYH Parkville – 2018 - Billard Leece Partnership this facility has received a European Healthcare Design Award for Mental Health in 2019.
3) Slagelse Psychiatric Hospital - 2015 - Karlsson Architects & VLA Architects - AR Healthcare Award 2016
   +MIPIM Award 2017
4) Aabenraa Psychiatric Hospital - 2015 - White Arkitekter
   2017 International Academy for Design & Health Award
   +MIPIM Award 2016
5) Psychiatric Hospitals Ballerup -2016- RUBOW Arkitekter
   Explicitly mentions use of Environmental Psychology

I will compare the different projects with each other to establish any similarities and then speculate about the effects these qualities could have on the mental wellbeing of the patients. If they appear positive, I will add them to the list of mood-lifting architectural features.

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Part III - Case Studies and literary review: Learning from state -of-the-art retirement homes

In this part I will perform a literature review to establish which architectural features need to be added or altered due to the specific needs of the elderly demographic. Additionally I will analyze five case studies of contemporary retirement homes.

The choice of retirement homes to be analyzed will be based on the following criteria:

- must be (re)built after 2010
- must be innovative
- information and plans should be available

Based on these criteria, the following projects were selected:

1) Kaleidoscoop - 2010 - LEVS Architecten
   A retirement home, combined with a cultural and medical center for the neighborhood
2) Liv Inn Hilversum - 2021 - Raumkultur
   A retirement home, focused on resident participation and autonomy
3) De Makroon - 2015 - De Archietecten Cie
   A retirement home, with intensive care and medical facilities on the first floor and public amenities for the neighborhood in the ground floor.
4) Sun City Kobe Tower - 2018 - Richard Beard Architects
   A luxury retirement home, with various amenities in the plinth. Zen-inspired spaces and views promote mental wellbeing.
5) Dr. George W. Davis Senior Residence - 2016 - DB architect
   A low-income retirement home, with community center for elderly from the larger neighborhood in the plinth
6) Hokkori House - 2019 - DOG Architects
   A small-scaled assisted living community for (semi) independent seniors. Community and nature oriented.

Part IV - Questionnaire, literary review and research by design: Establishing treatment and prevention strategies through architecture

I will start this part by establishing the causes and treatment strategies of elderly depression through a literature review. To get a more nuanced and thorough understanding of the topic I will conduct in-depth interviews with geriatricians at the Liv Inn

Methodology

retirement home in Hilversum and I will survey its residents. To promote honesty, the questionnaires will be made anonymous. The questions for the surveys will be based on the Geriatric Depression scale, (Bleeker,1985) but will be made less emotionally draining and will encompass questions about lifestyle and social connections, to establish which factors alleviate and which factors promote negative emotions. After generating a list of causes for these emotions, I will try to counter them (where possible) with architectural features, which I will derive from a research-by-design approach.

Many of the bigger problems, like bereavement or existential fear, cannot be addressed through architecture. And so proper depression treatment consists mainly of psychological therapy and medication. But there are various other mental health-promoting strategies, like exercise, art therapy, gardening etc., which can be integrated into retirement homes (Im&Lee, 2014). I will therefore establish which spaces are necessary to facilitate occupational therapies. The result will be a list of plug-and-play architectural solutions to encourage occupation among the senior residents. These solutions will be appended to the list of mood-lifting architectural features.

Part V - Survey: Elderly review of toolbox

Finally after completing parts I through IV, I will be left with a list of mood-lifting architectural features for the elderly. However in order for them to be effective, they need to be accepted by the intended users. I will therefore perform a second survey with the residents of the Liv Inn of Hilversum, asking them to assess the proposed list of features. Using their evaluation I will sort the list according to popularity. For additional overview I will also divide the list into three categories: material-spatial features, organizational-functional features and social neighborhood features. (see figure 2)

Part VI - Design Proposal

In order to illustrate the applicability of the proposed list of features, they will be implemented in an architectural design proposal. The proposal will focus on a redevelopment of an existing nursing or retirement home. Since there already exist many elderly living environments, which will all need renovation at some point in the future, it is useful to create a positive example of how a renovated environment could look.

Workplan

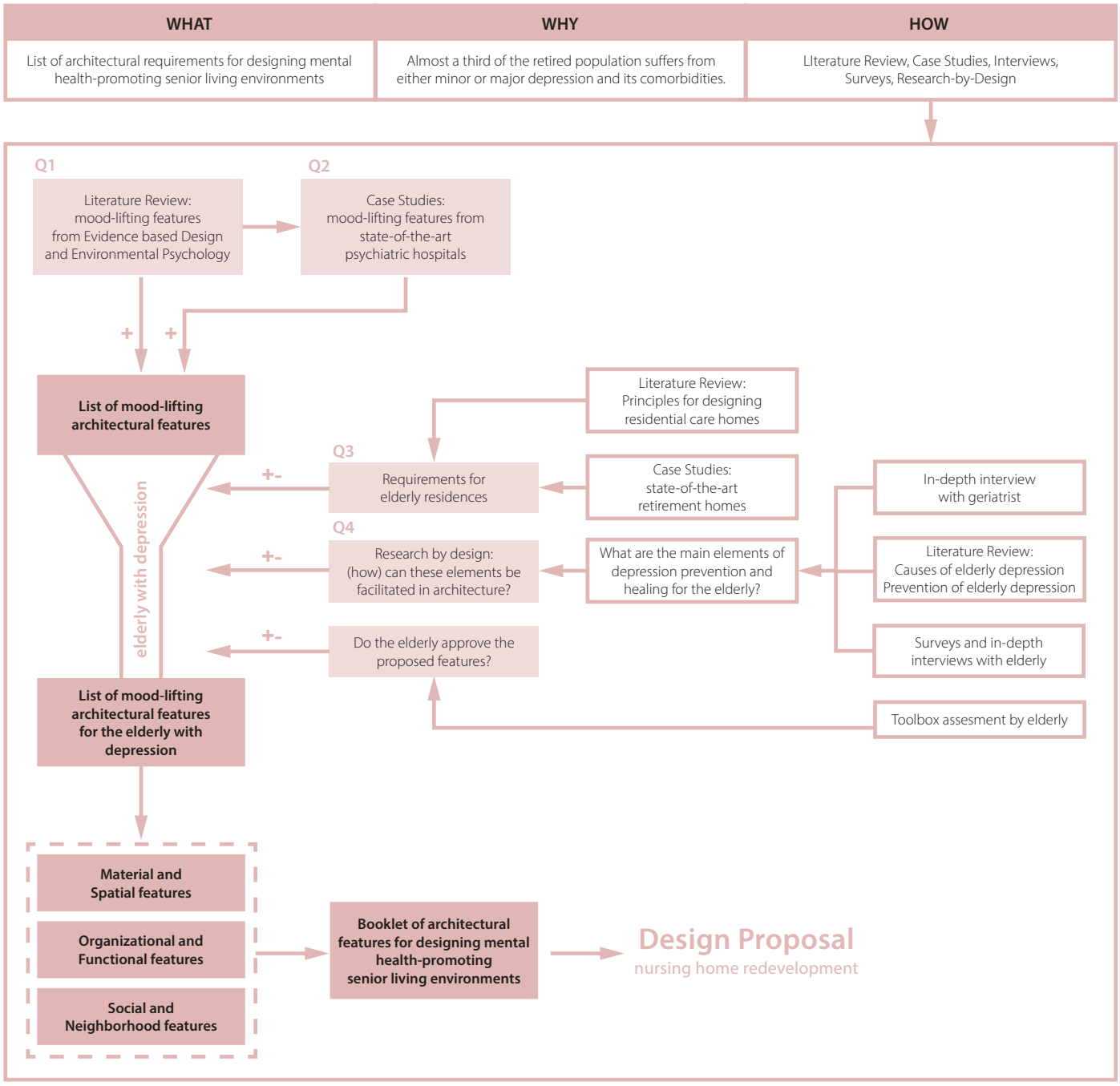

Figure 2. Research Diagram, by author

Workplan

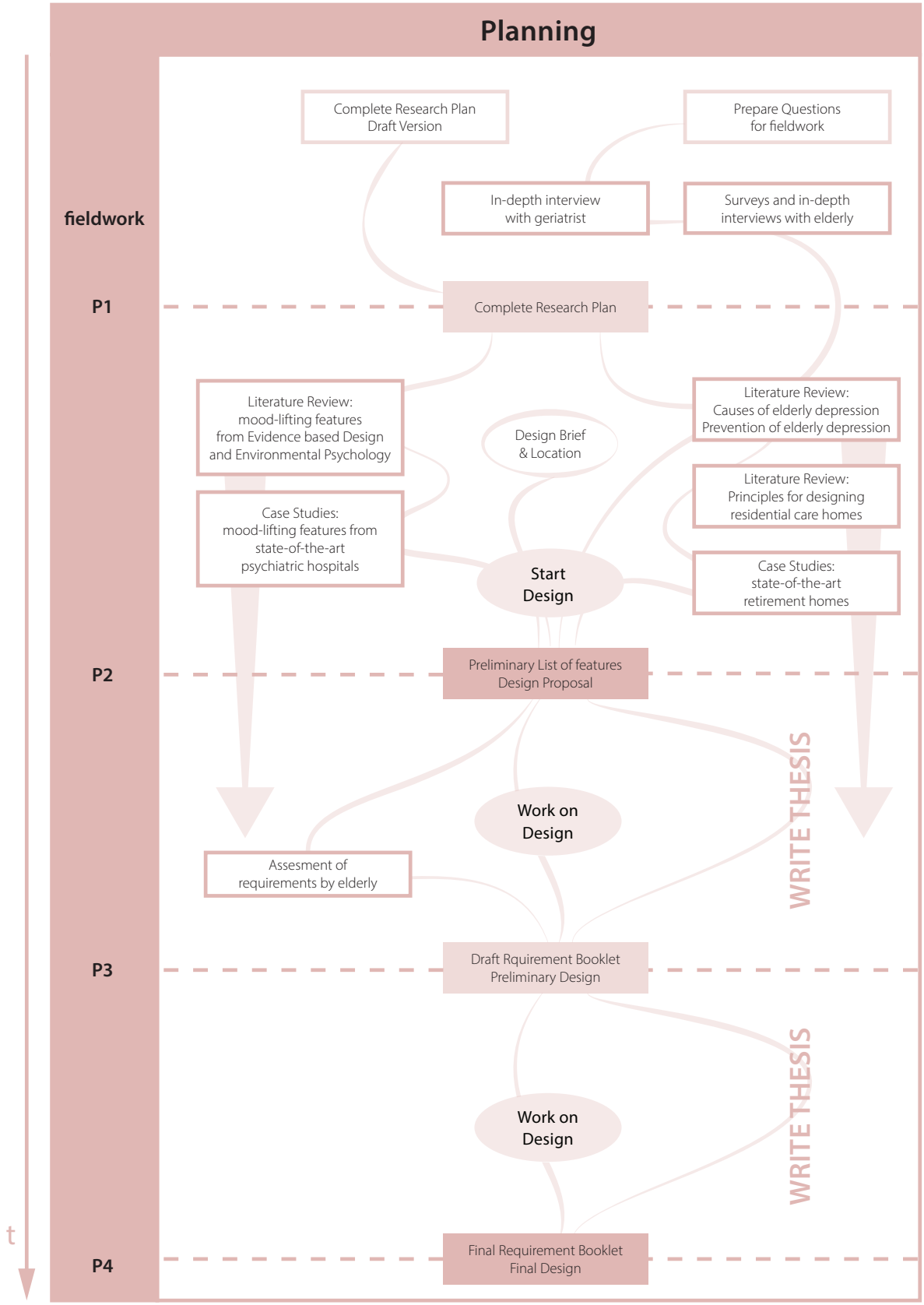

Figure 2. Research Planning, by author

Definitions

Dementia - A group of symptoms, such as memory loss and decline of thinking and language skills. The symptoms can be caused by a range of different diseases, of which Alzheimer's is the most common (Alzheimer's Association, 2022).

Elderly - Older persons, usually retired (Merriam-Webster, n.d.-a).

Environmental Psychology - A psychological field, studying the relationships and influences between individuals and their natural, built and social environments (Gifford, 2014).

Evidence Based Design (EBD) - A healthcare design philosophy that promotes decision-making, aimed at scientifically proven positive outcomes for its users (Ulrich, 2010).

Mental Wellbeing - A state of emotional empowerment, peace and satisfaction, characterized by the separation of life's adversities from one's sense of self-worth (Nortje, 2021).

Mood-lifting Architectural Features - Spatial, programmatic, organizational or aesthetical characteristics of a building, that promote mental wellbeing (see mental wellbeing) of its users (definition by author).

Nursing Home - A residential complex for elderly (see elderly) or chronically ill people, who are in need of intense daily personal or nursing care. (Merriam-Webster, n.d.-b)

Retirement Home - A residential complex for the elderly (see elderly), usually age-restricted to 55+ or 65+. The inhabitants of the complex are typically relatively independent, but have access to light care. (Britannica, n.d.)

Senior Depression - Depression as experienced by the elderly (see elderly). Depression is a mood disorder, that affects how people feel, think and act. Common symptoms include low self-esteem, indifference, feelings of sadness or anxiety and fatigue. (National Institute of Mental Health, 2022)

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