Health-supportive city planning

Integrating perspectives from residents, professionals, and policy officers on public health risk factors in the built environment

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PREFACE

Dear reader,

The topic of health and the environment has fascinated me since I took an extra course during my bachelor called "Water, health and development" at the department of biology. I have many fun memories of following this course, not least because I followed it together with my flat mates and none of us were actual biologists. Even though I still cannot name different mosquitoes by their Latin name, I have learnt much about how health outcomes can be shaped by environmental factors. This is exactly why I got interested in this topic, because spatial planning is all about shaping the environment and health is an original and pioneering approach to spatial planning. Or, depending on how you look at it, it is the most ancient approach to spatial planning. Either way, it is an innovating approach to acquire better health through planning and it raises immediate questions on how this could be approached in a post-modernistic society.

The past few years, I have done many projects related to the healthy planning domain, such as a project about the role of air pollution in planning, about mental health in planning, about planning solutions for dementia and about health effects of climate change. Health is a component in spatial planning that could move certain debates forward. It is for example enabling the translation of gains in livability to measurable benefits. In this thesis, my final project of this master's degree, I approach health from a holistic perspective and theorized spatial planning choices for health in an poly-rational manner. This provides more clarity on hidden structures within planning interventions and it shows why certain health-ntervention might work well in one place, but won't work well at another place. This knowledge enables to bring the two domains of science closer, health and spatial planning, and contributes to approaching health-supportive city planning in an interdisciplinary manner.

Writing a master's thesis has thought me many things beyond knowledge on spatial planning. I've learnt a lot about working on my own. I usually gain much motivation from working in teams on project and a master's thesis is definitely a one persons's job. I can be overwhelmed by the idea of how big the final product should be. The toughest challenge was my own mind; my thesis is definitely an achievement on keeping up the spirit. I'm proud of myself on staying positive and taking actions to make this process fit me as a person. I've been able to conduct this research with a lot of dedication and I'm still more than happy about choosing the path that I've chosen. I would really recommend everyone to create yourself the most favorable environment thinkable when conducting such a project and to keep being driven by your research.

Besides my own efforts, I'm grateful for all the support I have been given to successfully finish this master's thesis. Especially finishing the thesis "on time" feels like an accomplishment, which wasn't possible without some people in my life. I would like to thank Mirne, Corry and Victoria for always being there, for listening to me when it was difficult and for reminding me to drink tea, take me on a walk or take me to the river beaches. Also, I would like to thank my parents, my sister and my brother, for always being welcome in their homes, for being able to call them at every moment of the day and for offering me perspective. My parents unconditionally supported me throughout the project. I'm thankful for Marjolein, for reading the whole thesis for me and I'm thankful for my writing buddies, for always making sure to start at 9:15 (okay, five minutes later) and to remind ourselves "tomorrow is another day". In addition, I would like to thank my supervisor Henk-Jan Kooij, for our interesting meetings, the good working atmosphere and always making time for my questions. Lastly, I would like to thank Wibe for being my biggest support, reading everything for me and backing me in more ways possible then I could count.

I wish all of my readers a valuable and enjoyable time.

SUMMARY

The increased attention for managing public health through the built environment is resulting in many questions related to how health-supportive city planning should manifest itself. Determining what a health-supportive city environment entails has been running into issues of non-linearity and social reality that influence the relation between people, place and health in a complex manner. In this thesis, it is aimed to gain more insights in the complex relation between people, place and health, by focusing on the role of poly-rationality in relation to spatial aspects for health, employing the following main question:

What is the role of poly-rationality in relation to the perspectives of involved actors in designing a health-supportive urban planning transformation, such as the renewal and transformation of the Topaasstraat and Van Peltlaan?

Poly-rationality is studied through the framework of the Cultural Theory of Risk, which identifies four rationalities: individualism, egalitarianism, hierarchism and fatalism. Using a case study research design, these rationalities were studied per actor involved in the planning process. The analysis focused on three domains of urban planning for health: Physical Activity, Community Interaction and Psychosocial Wellbeing. A constant comparative analysis, using policy papers, interviews and survey data, underpins the conclusions that are drawn. The main findings of this research indicate that for every studied spatial aspect, poly-rationality plays a role in the understanding of how actors approach various solutions and management options. No specific difference between the dominant rationality in relation to Physical Activity, Community Interaction and Psychosocial Wellbeing was found, because every spatial aspect on its own resulted in a specific interplay of rationalities. However, between the actors, differences could be identified in approaching the spatial aspects that were studied: Residents were found to employ all rationalities, contractors were found to be mainly egalitarian and the municipality was found to be mainly hierarchical. In situations where all actors were approaching the issue from the same perspective, agreement was accomplished easily. Also, when a situation was managed from multiple perspectives by the municipality, this led to positive attitudes among the other actors. However, when a certain strategy was dominant among one actor that conflicted with the idea of another actor, this led to friction or misunderstanding between them. In situations of disagreement, the dominant actor has been found decisive, which is usually either the municipality due to their right to decide on issues, or the residents that have a power to legitimize plans. To move forward from situations of friction and misunderstanding, strategies from various points of view regarding rationality are recommended. Insights in the four rationalities has explained to some extent what the source is of the non-linearity problem in health-supportive city planning. Apart from understanding, it creates opportunities to shape policy in a poly-rational manner. In literature, clumsy solutions are proposed as a way to address wickedness in spatial issues and this research explains that besides the final solution, also the planning process should be addressed in a clumsy manner.

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1. INTRODUCTION

Reader's guide – The introduction chapter provides an overview of the general context of this master's thesis, which consists of four sections. First, the core idea of this research is introduced. Next, the main question and sub-questions are presented. Subsequently, an elaborate explanation of the social and scientific research is given, to support the choice for the central question of this master's thesis.

1.1. The notion of health-supportive city planning

Urban planning and design have been acknowledged for decades as a crucial factor in health outcomes. Hence, it is no wonder that the fields of research on urban planning and public health emerged together in the nineteenth century. Public health was approached from the socio-spatial dimensions at the origin of becoming a formal field of science. At this time, it focused on infectious disease prevention mainly, because this caused the greatest health burden during that time. A shift in attention towards biostatistical issues within the domain of public health, and simultaneously towards institutional debates within the domain of urban planning, caused the fields of study to separate over time. However, in recent years renewed attention is given to its interconnectedness for the prevention of chronic diseases (Haveman-Nies et al., 2010), Macintyre & Ellaway, 2003). Since a few decades, urban health and well-being are given increased global attention, for example through policy agendas such as the World Health Organisation's (WHO) healthy cities project and the Sustainable Development Goals (SDGs) (WHO, n.d., United Nations, 2015).

The socioecological perspective on health supports the idea that urban planning and public health are connected, and it shows health is determined by a range of factors from the individual level to the macro-environmental level. Studies by Lalonde (1974) and Dahlgren & Whitehead (1991) describe a holistic model to understand populations' health outcomes. From macro to micro level, they indicate the following factors as health determinants:

1) a combination of general socio-economic, cultural, and environmental factors;
2) living and working conditions like housing, sanitation, education, employment, and healthcare services;
3) social and community networks;
4) individual lifestyle factors; and
5) age, sex, and other constitutional, biological factors.

The first three categories can be defined as the Social Determinants of Health (SDOH), because they are factors originating beyond the scope of the individual. These are opportunities for intervention through e.g. spatial planning (Dahlgren & Whitehead, 1991, US Department of Health and Human Services, n.d.).

Various views exist on what a healthy state of being means: ranging from a classic definition about the absence of disease, to the definition of positive health about a complete state of physical, mental, and social well-being, and the definition of planetary health which considers population health together with the health impacts of human-caused disruptions of the earth's systems. Moreover, health and the experience of disease is dependent on different social realities, historical situations, and cultural contexts. Similarly, the influence on health by SDOH are dependent on different social contexts. This results in a complex relationship between health outcomes and health determinants (Frumkin, Frank & Jackson, 2004, Haveman-Nies et al., 2010).

It is debated how health determinants are related to urban planning and design elements (Kent & Thompson, 2014). Research has identified a variety of neighborhood characteristics associated with residents' health determinants. Although specific causal relations are difficult to grasp due to the impossibility to conduct experimental, laboratory studies in urban planning research, pathways can still be identified and theorized, and thus be used to accomplish health-supportive city planning (Northridge, Sclar & Biswas, 2003).

1.2. Research aim and question

Considering the complexity of the relation between health outcomes and health determinants, and the complex relation between health determinants and urban planning and design characteristics, bridging the gap between urban planning and public health in research is not easily done. There are no simple success formules for creating healthy neighborhoods (Frumkin, Frank & Jackson, 2004). An urban design intervention for health requires an in-depth understanding of the specific locational situation of the neighborhood through the eyes of residents, because the aim is to alter residents' their social practices to healthier ones. Hartmann (2012) suggests it is better to approach such complex issues from a poly-rational perspective, in which expectations of various actors can be managed within a reasonable framework of views instead of a pluralistic and diffuse chaos. To obtain the information on perspectives of actors involved, research suggests that participatory processes are a key element to create interventions that are effective and inclusive. So far, little empirical research has been undertaken to gain a better understanding of the perspectives of actors involved in healthy urban planning, even though it has been emphasized as a key issue to get more insights on (Northridge & Freeman, 2011, Brand, 2005).

As a result, the main purpose of this study is to gain better understanding of the role of poly-rationality in relation to the perspectives of residents, professional stakeholders and policy officers involved in a health neighborhood intervention, to provide insights in the creation of (un)successful plans for healthy urban planning and design. To reach this aim, empirical research was conducted using a case study. As a case study, the renewal and transformation of the Topaasstraat and Van Peltlaan in the city of Nijmegen, the Netherlands was selected.

The aim of this master's thesis is translated to in the following main question:

What is the role of poly-rationality in relation to the perspectives of involved actors in designing a health-supportive urban planning transformation, such as the renewal and transformation of the Topaasstraat and Van Peltlaan?

Some guiding objectives and related sub-questions were formulated, to guide the research towards its aim. The first objective is to identify poly-rationality in the field of health-supportive urban planning. Furthermore, the second objective is to obtain an understanding of the various dominant rationalities of the actors involved in a health-supportive planning process: residents, contractors, and policy officers. The third objective is to identify whether an overall rationality in the planning process can be identified among the actors. Lastly, an assessment is made on whether poly-rationality improves on the insights in potential frictions that arise in the planning process of health-supportive interventions. As a method, constant comparative analysis is applied to find out about similarities and differences in reasoning of the involved actors in the planning process.

The objectives result in the following guiding questions are formulated to support the main question:

1. How can poly-rationality be identified within health-supportive urban planning interventions?

2. What are dominant rationalities of residents in their perspectives on the lived and perceived experience of health-supportive urban characteristics?

3. What are dominant rationalities of contractors in their perspectives on the perceived and conceived experience of health-supportive urban characteristics?

4. What are dominant rationalities of municipal officers involved in urban planning in their perspectives on the perceived and conceived experience of health-supportive urban characteristics?

5. How does poly-rationality lead to friction within the health-supportive planning process and how can this be overcome?

1.3. Societal relevance

The current public health debate in the global north specifically focussing on non-communicable diseases (NCDs), of which many are categorized as lifestyle diseases. Due to sedentary behavior, an aging society, consumption of unhealthy fast food and other factors related to living in developed countries, the prevalence of NCDs and in particular lifestyle diseases is increasing. As a result, these diseases are gaining political concern due to the significant health burden they cause in global northern nations (Kent & Thompson, 2014). The focus on healthy lifestyles and living is defined as the New Public Health, because a move is made away from infectious disease prevention to chronic disease prevention (Annas, 1997).

Looking at the Dutch context, the existence of the National Prevention Program illustrates that lifestyle diseases are high on the political agenda. This program acknowledges that lifestyle diseases cause the greatest share of the national health burden (Ministerie van Volksgezondheid, Welzijn en Sport, 2018). The Dutch National Institute for Public Health and the Environment (RIVM) created several policy schemes to address these present-day health issues from an environmental planning approach, namely the Healthy Urban Living program and the strategic program Environment and Health (RIVM, 2018, RIVM, n.d.-a). The Healthy Urban Living program focuses on identifying characteristics of a healthy city. Currently, awareness about the views of experts on healthy city planning measures and characteristics is established, but it is not yet clear which healthy planning measures are marked as important by residents. The Environment and Health strategic program is focused on designing healthy planning processes, and they desire to obtain more knowledge on the residents' perspectives to successfully implement health-supportive city planning interventions. In this master's thesis, residents' perspectives are studied and matched together with that of expert stakeholders in a case study setting, which could contribute to this societal debate.

Additionally, healthy planning processes increase in importance in the Netherlands due to the expected implementation of the New Environmental Law in 2022, which dictates to take health into account in planning processes (RIVM, n.d.-b). Under former legislation, this was not a mandatory part of the formal planning process, meaning this new regulation increased attention and interest in health-supportive planning and design. Since this a rather new topic to consider for spatial planners, it is interesting to see if there are specific conflicts present within the different perspectives of residents, expert stakeholders, and policy officers.

Apart from the societal relevance of health itself, health-supportive urban planning is also expected to result in co-benefits. Livability factors, climate adaptation factors and health factors for the built environment have much in common, thus resulting in efficient interventions through creating win-win situations (Badland et al., 2014).

1.4. Scientific relevance

On the topic of health-supportive planning, two movements of thinking can be found in the scientific literature. Both movements are discussed, and the last part of this section brings them together to constitute the knowledge gap that this research contributes to.

1.4.1. Review on public health in relation to urban planning interventions

The first movement in the field of health-supportive planning dedicates itself to measuring health effects of specific urban planning features, measures and characteristics. Accordingly, several studies have been conducted on the intersection of public health and urban planning and design, to identify specific concepts, theories, and domains in which relationship between of health and planning becomes evident. In a literature review, Kent & Thompson (2014) identified three key public health risk factors on which urban planning interventions are expected to make the greatest improvement. These are physical activity, community interaction and healthy nutrition. Later, complementary empirical research of Thompson, Paine, Judd & Randolph (2018) added psychosocial wellbeing through therapeutic aspects of the environment to this list of most promising domains for health-supportive urban planning.

In much current work, specific domains or specific urban form features are studied to quantify the health-environment relationship. Much of this research is done cross-sectionally, on topic-specific case studies, e.g. neighborhood characteristics and physical activity (Lee, Lee & Choi, 2018), or the role of green spaces for health (Markevych et al., 2017).

Although many urban form characteristics can be linked in theory to key public health risk factors, these associations need to be interpreted with caution. It is difficult to apply traditional study designs that would allow for identifying a causal relationship to urban planning intervention. Randomization and control groups in traditional trials are impossible to implement. Furthermore, the SDOH are all concepts with a certain social component to them. Researchers (Frumkin, Frank & Jackson, 2004, Kent & Thompson, 2014) emphasize that interventions for health in the built environment should be acknowledged for their complexity and therefore taken as such. Linear or single-component analysis usually leads to disappointing results, whereas integrative health-supportive planning concepts seem to be more promising.

1.4.2. Review on the participatory approach in health-supportive planning

The second movement on the topic of health-supportive city planning is focused on the social component of planning and health. Due to the social aspects of health, as for example illustrated through the framework of SDOH in chapter 1, several published studies describe the role of participatory processes in health-supportive city planning as essential. Northridge & Freeman (2011, 594) illustrate the relevance of participation by concluding that "participatory processes (...) may offer the best hope for success" in healthy urban planning projects. The process as described should be open to unscheduled information, dialogical instead of technical, based on consensus and applied to group processes, and they should relate to return processes (Jareño-Ruiz, De-Gracia-Soriano & Jiménez-Delgado, 2019).

The need for participatory processes is emphasized by Northridge & Freeman (2011), because it provides insights into the values and boundaries of stakeholders involved. In addition, Brand (2005) and Jareño-Ruiz, De-Gracia-Soriano & Jiménez-Delgado (2019) explain that for successfully intervening on social practices it is required to understand the life-worlds of people. After all, one of the key aims of a spatial planning intervention to acquire better health outcomes in a neighborhood is to alter their social practices. If the social realities of the community are not well understood, people might subvert, disobey, modify, or sabotage a badly implemented healthy planning intervention.

Furthermore, a recent study by Thompson, Paine, Judd & Randolph (2018) suggests that the perspective of residents is often not well understood by policy officers and experts. Residents usually have more expertise in day-to-day issues that they run into in their environment, compared to experts. Also, stigmas of a neighborhood influences the perception of possible solutions by outsiders, such as contractors and policy officers. This is no surprise when looking at Lefebvre's Production of Space framework (Soja, 1996), which describes the lived space, perceived space and conceived space as three ways to comprehend space. Residents have expertise on the lived space and perceived space, whereas experts, if they do not use the area in their daily social practice, only have expertise on the perceived and conceived space. This crucial difference can only be overcome by increasing the understanding of a specific neighborhood through dialogue.

Pineo et al. (2019) advocates for community engagement and synthesized four reasons to advocate in favor of participatory processes in urban health interventions:

1) Involvement of the community will increase the sense of power among residents in governance;
2) Input of the community improves the understanding of policy makers about the community's needs, and it balances out expert knowledge claims;
3) Conflicting views are revealed through participatory processes which opens opportunities to discuss solutions and build consensus;
4) Inclusion of the community leads to more knowledge among residents and other stakeholders about the health impact of environmental factors.

It is a widely spread phenomenon to advocate in favor of participatory city planning, and health-supportive city planning is no exception regarding this notion. But in practice, organizing participation itself can be a challenge. The aim is to reveal a variety of experiences, realities and needs of the residents through participation, but the residents' self-selection process of whether to actively involve oneself in the participation process must be considered. Theory on poly-rationality helps to identify motives of whether to participate. Managing expectations of participation in a pluralistic way might be a potential solution to increase the robustness of the outcomes of the participatory process in complex problems in spatial planning (Hartmann, 2012).

1.4.3 Knowledge gap

Obtaining a holistic understanding of the urban characteristics and their implications for public health risk factors is recognized as essential in order to come to effective city planning interventions. Thompson, Paine, Judd & Randolph (2018) advocate that the complexity of the context of the built environment and the nature of socio-spatial practices can only be grasped through integrated research. However, little research has been conducted in integrated health-supportive city planning research. Many studies focus on a specific health or planning issue only, which contradicts the recommendation by Thompson, Paine, Judd & Randolph. Thus, this integrated master's thesis' approach is expected to enrich the scientific debate in this academic niche.

Thompson, Paine, Judd & Randolph (2018, p.38) explain:

> *"Healthy built environment practice will be assisted by a move away from the current predilection for conventional topic-specific studies towards deeper, composite, and interdisciplinary approaches [that are, ed.] better able to reveal the intricacies of the people-place-health dynamic"*

Apart from the holistic understanding, interdisciplinary research is highlighted as a promising direction in which to take health-supportive city planning research. This means considering both health and social sciences at once. Public health is considered a natural science, whereas urban planning is seen as a social science. The underlying scientific differences of both research fields results in a so-called applicability gap, causing difficulties employing the knowledge of both fields combined in practice. Interdisciplinary research is expected to overcome this issue and arrange solutions that are applicable in practice (Thompson & Mccue, 2016).

In addition, many researchers like Jareño-Ruiz, De-Gracia-Soriano & Jiménez-Delgado (2019), Pineo et al. (2019), Northridge & Freeman (2011), Brand (2005) motivate that considering the perspectives of residents improves the effectiveness of healthy planning interventions. They suggest that including residents' specific community knowledge is even a requirement to minimize adverse effects of planning interventions. This master's thesis shows the value of participatory spatial planning through the framework of poly-rationality. Urban form is not linearly related to health outcomes, and a more sophisticated approach leads to more robust and effective health-supportive city planning interventions.

To go about with participation in complex issues, Hartmann (2012) suggests that participation should be approached from a poly-rational perspective, based on the four rationalities of Cultural Theory: individualism, egalitarianism, hierarchism and fatalism. These concepts can be used to guide the expectation management in addressing the issue. He explains that in wicked problem situations, identified as issues that are complex, normative, and uncertain, different expectations should be taken into account to create robust solutions. The aspects complexity, normativity, and uncertainty are also clearly part of the health-supportive city planning, because such an intervention entails many factors to take into account at once, it entails a certain judgement on "right" and "wrong", and it is unclear which solutions are bringing about which effect. Through the scheme of poly-rationality, participatory processes can be managed through the expectation of the different rationales at play. Simultaneously, planning activities are expected to turn out more robust when diverse rationalities are incorporated into the planning process. However, these premises still have to be researched through empirical research.

The second reason why Cultural Theory is applied in this master's thesis is the focus on health risk factors. Cultural Theory has been developed to gain more understanding of how people and policy makers deal with environmental risk factors. The framework thus has been developed from the point of view of natural-caused risk factors. Since city planning creates landscapes that are completely human-made, it is relevant to see how the Cultural Theoretical approach turns out in human-caused risk factor situations (Tansey & Oriordan, 1999).

All in all, this master's thesis builds upon the scientific debate on health-supportive city planning through a diversity of theoretical and methodological choices. First, an integrated perspective on health is taken instead of a topic-specific one. Secondly, an interdisciplinary methodological approach is taken to overcome the applicability gap that topic-specific knowledge may encounter. Thirdly, the

participation process has a central role in this master's thesis, based on the theoretical premises of Cultural Theory as proposed by Hartmann (2012).

2. THEORY

Reader's guide – The theory chapter is composed of two sections. First, the main theories that support this research are introduced. Both structuralist and dialogical views are discussed. In the second section, the conceptual framework is presented, and the core concepts of this research are operationalized.

2.1. Introduction to the theoretical framework

2.1.1. Healthy city planning theorized

Associating public health risk factors with urban form and design features originates from the socio-theoretical approach of structuralism. This approach argues that structures, like the built environment, influence social practices, e.g. health-related practices, and to some extent even determine these practices (Gatrell & Elliott, 2015). Based on this approach, research has identified indicators that explain and predict the health and wellbeing phenomena in a specific area (Orii, Alonso & Larson, 2020).

For example, Markevych et al. (2017) built a conceptual model using the structure of green spaces in relation to various health outcomes. In this conceptual model, three pathways are explained: green spaces help reducing harm, restores health-related capacities, and builds health-related capacities. Reducing harm means mitigating exposure to health stressors, restoring capacities means restoration and recovery from health stressors, building capacities means developing good health. In health sciences, two important distinctions can be found in approaching health issues: causes of illnesses and causes of good health. The pathways reducing harm, restoring capacities and building capacities address both of these approaches, making it a holistic approach to address health problems. These pathways could therefore be applied to other types of spaces beyond green space, to get an overview of the healthy living capacity of a place.

Various studies have been conducted on topic-specific health issues in spatial planning science. In those studies, individual associations of reducing harm, restoring capacities, or building capacities have been found. However, defending the causality of these associations has been difficult; interventions have not always resulted in the desired or prospected outcome of the intervention. This contradicts the idea that structures are the only predictor for health. Still, four public health domains have been identified as promising in addressing public health through planning: physical activity, community interaction, healthy nutrition and psychosocial wellbeing (Frumkin, Frank & Jackson, 2004, Kent & Thompson, 2014, Thompson, Paine, Judd & Randolph, 2018).

The structuralist approach provides helpful insights into the potential causal relation between urban form and health, but it has been found that reviewing the physical built environment alone is not enough to thoroughly understand what the health-built environment relationship entails. Therefore, it is suggested that the effectiveness of the planning and design features depends above all on the understanding of the contextual and situational factors at play beyond physical urban form (Brand, 2005, Thompson, Paine, Judd & Randolph, 2018). An approach including healthy design principles has only proved to be insufficient in transforming the health of residents with a neighborhood intervention (Frumkin, Frank & Jackson, 2004). Northridge & Freeman (2011) argue that truly understanding the health-supportive mechanisms should derive from stakeholder engagement within inclusive city planning processes. An intervention of healthy city planning should be viewed as social change, in which the key component "social" should be well-understood.

Motives for understanding the social context derive from the behavioral aspects of many health issues, like the issues of physical activity, community interaction, healthy nutrition and psychosocial wellbeing. An important theory in behavioral change is the Theory of Planned Behavior. This theory explains that behavioral intention is formed based on three aspects: 1) Someone's personal attitude towards a certain behavior; 2) Someone's social environment's attitude toward a certain behavior; and 3) Someone's perception of how easy it is to uptake a certain behavior (Ajzen, 1991). This clearly demonstrates why understanding the social context is important, besides the environmental structure of place, to come to meaningful health-supportive urban planning interventions. All in all, a mix of structures and behavioral aspects are of importance in designing healthy cities.

Recognizing the relation between health and built environment by considering the relevance of the social practice, a theoretical framework based on three principles is produced: people, place and health. The people-place-health nexus offers the base for the theoretical framework in this master's thesis. The model in Figure 1 shows this basic model with all of the three components (Thompson, Paine, Judd & Randolph, 2018).

Figure 1
People-place-health Nexus
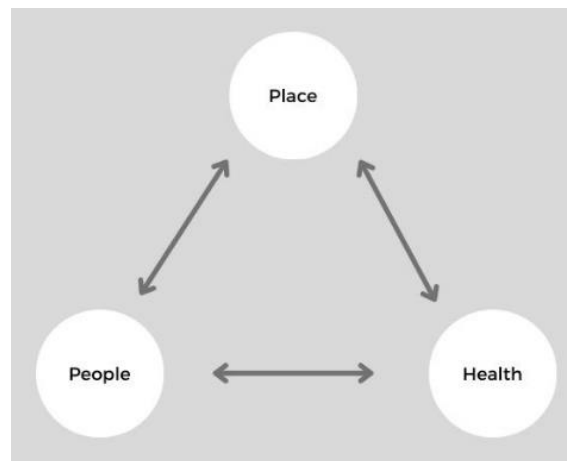
2.1.2. Engagement of health risk perceptions in city planning

Deriving from the importance of the social aspect in urban planning for health, participatory processes take up an important role. Participatory processes are underpinned by the notion of communicative planning; in dialogue, the variety of perceptions on an urban issue becomes evident to support taking refined interventions. Although this variety of perceptions of space can be endless, the conceptual framework of Cultural Theory of Risk by Douglas (1992) is helpful in recognizing how the variety of perceptions on the health risk of a place can be understood. Cultural Theory acknowledges the importance of cultural values, which leads to several potential correct actions that can be considered in risk-situations, whereas other prominent risk-perception theories either assume only one action is the right one – Rational Choice Theory – (Starr, 1969) or that risk-perception is only a matter of imperfect functioning of neurocognition resulting in imperfect actions – the psychometric approach (Kahneman, Slovic & Tversky, 1982).

Instead of one right choice, Cultural Theory explains that every social situation can be understood from four ideal types of rationality, individualism, egalitarianism, hierarchism, and fatalism, which lead to several actions that are considered the right one. This theory focuses explicitly on social situations

and provides a lens through which the perceptions and actions of individuals, groups or institutions can be understood and explained. All rationalities can never perfectly co-exist next to each other, because a perfect rational situation for one type of rationality, rejects the other types of rationalities. This leads to conflict over the right course of action to take (Davy, 2008, Schmitt & Hartmann, 2016).

The rationalities are distinguished by two dimensions: grid and group. Strong grid-thinking means that rational decision-making and organization should be shaped by external authority and laws such as by religious authority and institutional forces. Low grid-thinking on the other hand recognizes that rational decision-making and organization should be shaped based on the idea that everyone is equal, which means providing authority to the decision-maker itself leads to the best possible choices. Strong-grid rationalities are hierarchism and fatalism, while weak-grid rationalities are individualism and egalitarianism. Strong group-thinking means that rational choices and actions are community bounded, through solidarity, collective norms, and social values. Low group-thinking means that rational choices and actions can be decided best by a person itself. Strong-group rationalities are egalitarianism and hierarchism, while weak-group rationalities are individualism and fatalism (Davy, 2008, Schmitt & Hartmann, 2016).

Cultural Theory helps to explain the pluralistic extent to which space is socially produced and thus helps to increase understanding of the perceptions of residents and other stakeholders. Through the four rationalities, eight perceptions on the city can be defined. Mono-rational cityscape will be the only reasonable for some social situations, but it will be an undesired cityscape for other social situations, as Table 1 (see the following page) shows. For example, a situation that is focused on egalitarian principles is great when it comes to activities focused on sharing and the community, while at the same time this situation might feel like an excluding place for individuals "outside" the community. At the same time, bottom-up initiatives may thrive in an egalitarian place, but top-down rules may experience adversity. Taking this information into account in the field of spatial planning can lead to more robust interventions for health-supportive city planning. By creating interventions that relate to more than one rationality – which causes the intervention to be imperfect from all rational perspectives – clumsy solutions can be designed. Although these are imperfect, those solutions can increase the social sustainability of the cityscape because aspects of various rational perspectives are found in the design. This means it applies to a wider variety of social situations (Davy, 2008, Schmitt & Hartmann, 2016).

Given the theoretical knowledge on poly-rationality, the implications should be considered why and in what way poly-rationality through participatory process should be incorporated in order to grasp a variety of social realities. The reason to obtain these rational perspectives through participatory processes can be explained using the theory on the social production of space. Citizens that live in a certain area have expertise on the local, lived-space knowledge, i.e. knowledge about day-to-day practices happening in the neighborhood. Lived space is one of the three components of the social production of space, together with perceived and conceived space. Perceived space entails the thoughts, feelings and meaning that certain locations or areas induce, and conceived space entails the imaginary representation of a certain space, usually produced by individuals without being part of it such as city planners (Soja, 1996). So, for city planners understanding the spatiality of an area to the fullest means they need to gain expertise on the lived space and perceived space, i.e. viewing the city through the eyes of its residents.

The second question on how to employ the poly-rational perspective on city planning participation processes is explored by Hartmann (2012). Planning through poly-rationality means anticipating the participatory expectations. Cultural Theory not only provides insight in understanding various social

realities of a city, but it can also be used deliberately to enrich the participatory process. Motives of why residents participate in a process can be synthesized into four categories "I can", "I care", "I may", and "I don't", which all apply to a different purpose of the participation trajectory. Also, they all ask for a different, viable participatory approach, to engage a diverse range of perspectives.

The purpose of participation is to increase the quality of the plan through good and innovative ideas, to increase the democratic value of the plans and to legitimize them. On the other hand, participation can be avoided purposefully, for example to execute ideas quicker. The four rationalities, individualism, egalitarianism, hierarchism and fatalism, apply to these purposes respectively. Inviting these perspectives to the planning process means addressing them by their motive. For the individualistic perspective and purpose, incorporating a competitive or self-responsible element may work well. For the egalitarian perspective and purpose, activating a community through specific topics that they care about might be a good choice. For the hierarchical perspective and purpose, informing citizens of their role in a formal planning procedure might be the best option. Lastly, for the fatalistic perspective and purpose, it may be best to leave room for withdrawal from the process and sometimes to accelerate the process through less participation (Hartmann, 2012). Table 1 summarizes the eight city perspectives and their participatory expectations.

Table 1

The eight cities & their respective participatory expectation (Davy, 2008, Hartmann, 2012)

Rationality	City of the self	City of the other	Participatory expectation
Individualism	The bold city	The careless city	I can
Egalitarianism	The sharing city	The excluding city	I care
Hierarchism	The well-ordered city	The despotic city	I may
Fatalism	The relaxed city	The indifferent city	I don't

The perspectives of individualism, egalitarianism, hierarchism and fatalism are applied in this thesis to the concepts of the health domains in the built environment: physical activity, community interaction, healthy nutrition and psychosocial wellbeing. Ultimately, these concepts influence the health pathways that occur in the built environment. In the following section, it is discussed how these concepts are related and how those concepts are studied in this thesis.

2.2. Operationalization

2.2.1. Conceptual framework

The basic framework of this thesis was introduced in 2.1, and it consists of the elements of people-place-health. However, this framework does not provide for a sophisticated explanation on the relations between the three concepts. This master's thesis focusses on how on the relations between these three concepts are shaped. Three elements are introduced in the framework to better understand the people-place-health relation. The conceptual framework is showed in Figure 2 (see the following page).

Figure 2

Framework of the health-supportive urban planning system
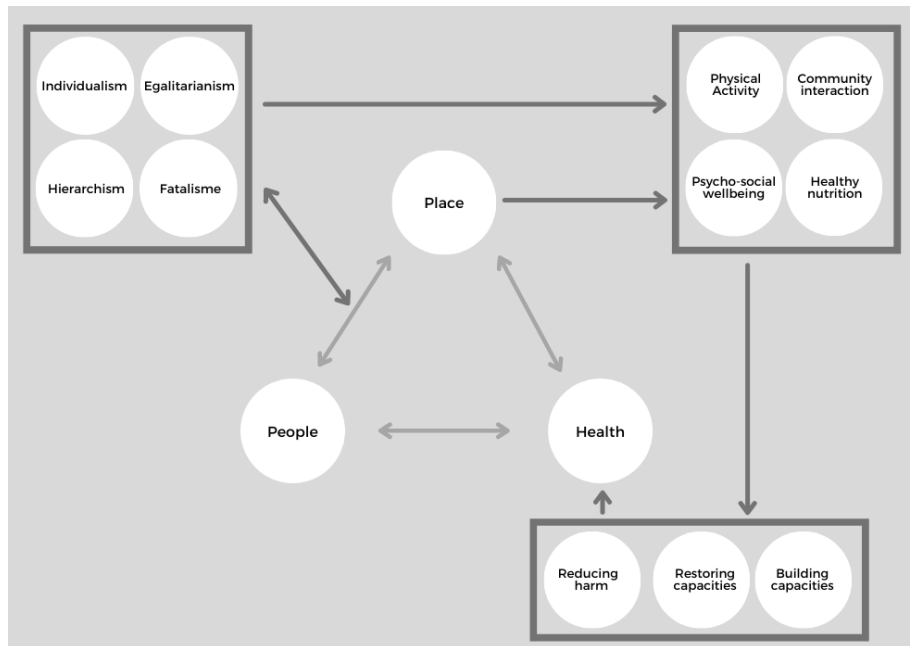
First, the four rationalities are incorporated in the model as a shaping factor of the people's perspective on place (Dave, 2008). Secondly, the four promising public health domains in spatial planning are added to specify on which factors the spatial influence is expected to be most relevant. Additionally, the influence of poly-rational perspectives on those promising domains is taken into account too (Thompson, Paine, Judd & Randolph, 2018). Finally, the pathways of spatial public health factors are added to explain how the public health domains can influence health outcomes through the three identified pathways (Markevych et al., 2017). This master's thesis emphasizes the aspects of poly-rationality and their influence on the spatial public health domains, meaning the first part of the conceptual model.

2.2.2. Operationalization of the poly-rational perspectives in relation to people and place

Poly-rationality is based on the four rationalities of Cultural Theory: Individualism, Egalitarianism, Hierarchism and Fatalism. It can be used as a framework to move forward from wicked problems that deal with uncertainty, complexity and normativity to create meaningful interventions. Through poly-rationality, multiple perceptions on dealing with certain risks and problems can be comprehended through the rational, specific grid-group characteristics (Hartmann, 2012).

Individualism is a libertarian rationality; the world is perceived in a rather stable state of trial and error in which individuals know what is best for themselves. This view is based on low-grid and low-group thinking, meaning the best choices and actions can be made when little external restrictions and high self-concern influence these choices and actions. An unregulated environment leaves room for spontaneous actions and entrepreneurialism. Then, everyone gets equal opportunities through transparency and openness. Through this rationality, one is mainly concerned with its own needs and interests and with achieving an environment that will help with this (Schmitt & Hartmann, 2016, Hoppe, 2007, Dake, 1992).

Egalitarianism is a rationality concerned with social justice; the world is perceived as unstable. This view is based on low-grid and high-group thinking. Only through an emphasis on the community, and on community's self-organization based on consensus and cooperation, the right choices and actions can be taken. A bottom-up regulated environment, through values such as solidarity and peer pressure,

creates the conditions for the best opportunities for everyone. One is mainly concerned with the communal needs and interests and with achieving as little interference from outsiders as possible in social situations that provoke this reasoning (Schmitt & Hartmann, 2016, Hoppe, 2007, Dake, 1992).

Hierarchism is a utilitarian rationality, i.e. the world is viewed in a more or less stable position, only if society gives its power to an institution that will take care of the community's needs. This view is based on high-grid and high-group thinking. Through rules and regulations, the best choices and actions will be taken. A top-down regulated environment, based on structure and institutions, creates opportunities that are best for everyone in which regulations are guiding. Imposing formal rules that define the boundaries of actions is the main concern of this rationality (Schmitt & Hartmann, 2016, Hoppe, 2007, Dake 1992).

Fatalism is not concerned with justice, because it perceives the world based on luck and fate. It views society as chaotic and supposes that it is not possible to actively try to change the world. It derives from high-grid and low-group thinking. Through this reasoning, one feels powerless and feels it is impossible to arrange anything that influence choices and actions to a desired outcome. A fatalist would thus not concern itself with this (Schmitt & Hartmann, 2016, Hope, 2007, Dake, 1992).

2.2.3. Operationalization of the public health domains in relation to people-place-health

The four public health domains that have been found to be influenced by spatial aspects are physical activity, community interaction, healthy nutrition, and psychosocial wellbeing. The domains are concepts that consist of a broad spectrum of aspects. First, physical activity includes the amount of body movement, which e.g. includes doing sports, cycling to work, or gardening. Two main motives can be found in the literature for physical activity: utilitarian activity and recreational activity. For the first type, people use physical activity to serve another purpose like going to work or getting the garden fixed. For the second type, physical activity itself is the purpose. In that case, people are driven by a desire to move, expressed in activities like sports. Also, physical activity can be both utilitarian and recreational, e.g. when somebody wants to hike, and at the same time wants to socialize with friends while hiking (Kent & Thompson, 2014, Frumkin, Frank & Jackson, 2004).

Community interaction is about being socially connected to others. It is a more complex concept, since it is defined by experience and feelings of belonging. The need for these may differ across individuals. Community interaction can unfold in many ways, where a distinction can be between organized and un-organized interaction. Un-organized interaction is incidental interaction which happens, for example, when greeting neighbors on the street. Organized interactions are arranged meetings of members of a community, like a neighborhood barbeque (Kent & Thompson,2014).

Healthy nutrition is a more straightforward concept, since it is about the intake of food. The accessibility of certain types of food nearby can influence the consumption of food by its surrounding community. Healthy food access is therefore of big importance to ensure regular nutritious food consumption. Access to healthy food is not just defined by distance, it is also about affordability – if a community cannot afford the healthy food choices nearby, they are more likely to turn to less healthy alternatives. Also, setting the norm in the environment plays a role, like (un)healthy food advertisement on streets or fast-food chain stores near schools (Kent & Thompson, 2014, Thompson, Paine, Judd & Randolph, 2018).

Psychosocial wellbeing is about the feelings of general health and well-being. The expectation here is that in an otherwise similar situation, a community with high coping mechanisms has better health outcomes than a community with lower coping mechanisms. These coping mechanisms can be shaped

through environmental factors, e.g. the healing effects of a welcoming, green park or the harming effects of violence on the street (McCay et al., 2017, Thompson, Paine, Judd & Randolph, 2018).

In principle, when people have an increased amount of physical activity, community interaction, healthy nutrition and psychosocial wellbeing, it is most likely that their overall health outcomes will improve as well. The four domains can be associated with specific city planning features that may stimulate this desired behavior. Table 2 provides a synthesized overview of these features, based on Kent & Thompson (2014), McCay et al. (2017), and Frumkin, Frank & Jackson (2004). It shows the extensive amount of planning and design features that can be used to explain health outcome in a neighborhood to some extent.

Table 2
Healthy urban planning characteristics

No	What	PA[A]	CI[B]	HN[C]	PSW[D]	Brief explanation
1	Accessibility of destinations and distance to destinations, connectivity	X				The perceived and actual distance to destinations, considering how easy it is to reach destinations, influences active mobility like walking and cycling.
2	Mixed land-use	X	X			Mixed land-use positively influences the number of destinations on walking or cycling distance, resulting in more active mobility and more opportunities to meet on the street.
3	Safety of the built environment	X			X	The built environment influences how safe people feel, both physical and social safety, which influences active mobility and wellbeing.
4	Aesthetics and quality of the built environment	X			X	A built environment that allows people to enjoy their surroundings, by e.g. good-looking buildings and streetscapes, increases comfort and people's propensity to walk.
5	Contextuality and diversity of the community		X			Every social group has different interests and needs, e.g. based on age, leading to the important aspect of adaptability of space to the heterogeneity of the neighborhood's community to facilitate social interaction and cohesion over the full scope of the neighborhood.

#		PA[A]	CI[B]	HN[C]	PWS[D]	
6	Green open spaces	X	X		X	Green space helps to reduce stress, provides a climate to be active in and encourages participation in the community through the instinctive bonding mechanism between people and nature.
7	Community gardens and farms, farmers markets	X	X	X	X	Community gardens and farms, and farmers markets foster social engagement, which improves wellbeing, because it is an easy opportunity to gather. Also, gardening leads to an increase in physical activity and awareness of healthy nutrition.
8	Interaction in neighborhood and public space		X		X	Seeing random interaction on streets increases the likeliness of interaction in a neighborhood, resulting in less unwanted isolation and an increased collective identity.
9	Availability of Third Places, meaning other places than those dedicated to "home" and "work".		X		X	Third Places are locations that are not for "work", "home" or "school", e.g. a playground or a bench, and they are positively influencing (un-)organized social interaction. A place usually works for certain groups only (e.g. parents) and these places can also be privately owned.
10	Comprehensibility of space and ownership		X		X	Community ownership within urban planning leads to feelings of being in charge and empowerment, which may result in increased social interaction. Also, it decreases feelings of unfamiliarity and increases understanding of the appropriate spatial etiquette.
11	Food accessibility and affordability			X		The proximity and affordability of healthy to unhealthy food influences healthy nutrition choices.
12	Food landscapes around schools			X		Vicinity of unhealthy food options close to schools influences children's healthy nutrition choices.

[A] PA = Physical Activity
[B] CI = Community interaction
[C] HN = Healthy Nutrition
[D] PWS = Psychosocial Wellbeing

The literature reviews by Kent & Thompson (2014), McCay et al. (2017), and Frumkin, Frank & Jackson (2004) provide for a conceptual overview of core variables involved in explaining the people-health relation through spatial variables, arranged in the four categories of Physical Activity, Community Interaction, Healthy Nutrition and Psychosocial Wellbeing. Both the actual state and the perception of these characteristics can be a predictor of health outcomes. Ultimately, this results in a complex, non-linear relation between urban form and residents' behavior and their health outcome. At this point poly-rationality can offer more insights. The overview provides a base to deductively code and systematically analyze the perspectives of different actors in healthy city planning from a variety of urban planning opportunities. Hence, a deeper understanding of the situation as a whole can be achieved.

2.2.4. Operationalization of health pathways in spatial interventions

The relationship between the public health domains and health outcomes can be explained through three pathways: Reducing harm, restoring capacities and building capacities. Although the pathways are posed from a perspective of beneficial influence, adverse effects on health can also occur through the same pathways, namely when a certain place discourages physical activity, community interaction, healthy nutrition or psychosocial wellbeing. All in all, the three pathways offer a way to organize the various health effects of spatial functions, while keeping in mind that the pathways intertwine in practice (Markevych et al., 2017).

The three pathways are explained as follows: Reducing harm means the mitigative effects that space can have on health, e.g. reducing heat or air pollution. Restoring capacities means the recovery effects that space can have on health, e.g. stress reduction and increased positive emotions. Lastly, building capacities means the installing effects that space can have on health, e.g. increasing health conditions through physical activity. This conceptual model was produced by Markevych et al. (2017) based on the analysis of green space. Since the conceptual model is applied in a broader sense for this master's thesis, the potential adverse effects on health through the three pathways must be defined as well. The opposite of reducing harm of a certain environment would be increasing harm, e.g. through increased noise nuisance and pollution. The opposite of restoring capacities would be degrading capacities, e.g. limiting positive emotions and declining neurocognitive skills through boring landscapes. The opposite of building capacities would be reducing capacities, e.g. decreasing physical activity or community interaction.

3. METHODOLOGY

Reader's guide – This methodology chapter is composed of two sections. The first part of this chapter dives into the methodological nature of this research. The choices for methodological design, approach and strategy are discussed. Also, the case study choice is explained. The second part explicitly translates these choices to the choices made for data collection and analysis, and their implications for the reliability and validity of this research.

3.1. Research design, approach & strategy

3.1.1. Pragmatism, abduction and case study research

The fundamental backbone for this master's thesis is pragmatism. Health-supportive city planning is an interdisciplinary research field including social and health science, and to create meaningful research in the intersection of both fields of science a pragmatic research approach fits best. This approach leaves room for the questions "how to" and "why to" organize the research in a specific way, rather than having a pre-defined fundamental approach to knowledge – its ontology, epistemology and methodology – that leaves little room for interdisciplinary work. This way, both quantitative and qualitative knowledge can complement each other as equal partners to support the conclusions of this master's thesis. This creates the opportunity to grasp the various modes of knowledge in the social context of health-supportive city planning, instead of only being able to focus on the partial knowledge mode related to either post-positivism or constructivism (Thompson, Paine, Judd & Randolph, 2018, Shah, Shah & Khaskhelly, 2018, Morgan, 2013).

Figure 3

Pragmatic research design (Morgan, 2013)

In everyday life, we often find pragmatic inquiry. For example, when in everyday life the light in the kitchen does not want to turn on anymore, one examines this problem by asking oneself multiple questions about what the issue is most likely. Is the light bulb broken? Is the electricity down? Followed by defining the nature of the issue, a solution is proposed that is most likely solving the problem. Following a definition of the nature of the issue, we posit a solution that is most likely to solve the problem. Finally, action is taken to overcome the problem. The principles of pragmatic research originate from these pragmatic everyday life aspects. An academic pragmatic research is a careful, reflective version of encountering problems in everyday life, based on five steps as shown in Figure 3 (Morgan, 2013).
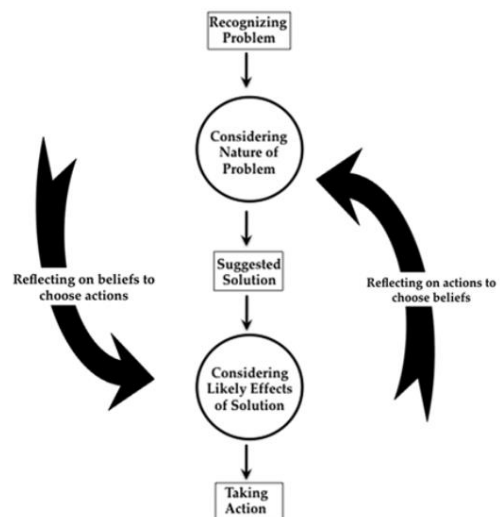
In the final step of pragmatism, the action(s) that will most likely address the problematic situation are taken. Since pragmatism advocates for a contextual understanding of the situation from various modes of knowledge, it is possible to articulate action(s) that are likely working in the complex and unpredictable nature of social life. This part of pragmatism is particularly relevant for this master's thesis, because it focuses on healthy city planning interventions for health, meaning action(s) in the complex socio-spatial context take up substantive space of the concluding chapter of this master's thesis (Shah, Shah, & Khaskhelly, 2018, Morgan, 2013).

Following the pragmatic paradigm, abductive reasoning is used to approach this master's thesis. Abductive reasoning starts with a puzzle based on surprising facts and theoretical shortcomings. In health-supportive city planning, this puzzle consists of the inconsistently successful interventions and the shortcomings in explaining health-supportive city planning relations. Abductive thinking has been found the most adequate approach, which provides the best answer possible for these types of research puzzles compared to inductive or deductive thinking (Mitchell, 2018).

Abductive reasoning works as follows: prior theoretical knowledge on the research topic is identified; empirical data is explored; matching between the data and the existing theory is done multiple times until new or adjusted theoretical premises can be proposed; ultimately plausible hypotheses are created. The abductive approach in this master's thesis enables building on the existing knowledge in the conclusion, whereas the inductive approach would only generalize from the empirical data to build a conceptual framework with little regard to existing theory. Deductive reasoning would lead to falsification or verification of hypotheses based on existing knowledge and would not leave room for theory modification and generation. Especially the ability to apply both cognitive and numerical reasoning to draw conclusions is a big advantage over the other approaches in creating sophisticated research (Mitchell, 2018, Thompson, Paine, Judd & Randolph, 2018).

Compared to deductive and inductive approaches, this approach requires moving back and forth between the empirical evidence and the existing theory in order to create results. Also, the body of empirical data required to use abductive reasoning, usually both quantitative and qualitative, can become extensive (Mitchell, 2018). Therefore, a single case study is chosen as research strategy to maintain a reasonable amount of data in conducting this research. Especially a case study strategy means a rich body of empirical information can be studied, while keeping focus, to answer the research question (Thiel, 2014).

The second reason for applying a case study strategy is the number of urban planning interventions in which health plays a role. The amount of these interventions is limited, meaning many other research strategies are not feasible. A case study is a great alternative if only a rare number of cases exist on a certain topic to be able to draw conclusions (Thiel, 2014).

The case study strategy provides for some additional advantages, besides maintaining focus and the number of interventions to research. Case study research acknowledges, in line with the pragmatic fundaments, contextuality. It is the best strategy when it is desired to zoom in on a phenomenon, in this case, health-supportive planning projects. Additionally, it allows for contrasting various perspectives at stake in the case (Thiel, 2014), which is particularly relevant to the research question.

3.1.2. Case study selection
Several selection criteria have been of importance to select the renewal and transformation of the Topaasstraat and Van Peltlaan as the case study for this master's thesis. The Topaasstraat and Van Peltlaan are two streets in the city of Nijmegen and they require major reconstruction to replace many utility services such as the sewage and storm drain. This means these streets will completely be redesigned, which is an opportunity to drastically change their design. An important factor in choosing this case study has been the open approach in this project of redesigning the street. For this project, no predefined street design was established (D. Kooij, personal communication, April 22, 2021). This leads to the beneficial situation that it was possible to have an open discussion about perspective, desires and ideas with all of the involved actors.

Besides this open approach to redesigning the street, residents were involved from an early stage. The tender for this project was organized according to a new way of working: Rapid Circular

Contracting. In this way of working, the vision of the municipality, the contractors and the residents are the central starting point in the redevelopment of both streets. Through an inquiry in the municipality, a so-called "ambition web" was developed to define a broad scope of goals concerning their interests in the renewal and transformation of the streets. From this stage onwards, residents were consulted to contribute to the trajectory of defining a new streetscape. The consultation with residents happened at a much earlier stage than is common in these types of trajectories (D. Kooij, personal communication, April 22, 2021).

Additionally, in this spatial intervention, a broad spectrum of objectives that overlap with the SDOH was involved. The important SDOH aspects are a combination of general socio-economic, cultural, and environmental factors; living and working conditions; and social and community networks. Involvement of such aspects was a prerequisite for studying the role of different health-related aspects in the streets' design. Through the ambition web, there was much room for these factors to be involved in the project (D. Kooij, personal communication, April 22, 2021).

Although both streets are not situated in the same neighborhood, they are approached as one project, because of the similar goals and visions defined by the municipality and contractors (D. Kooij, personal communication, April 22, 2021). From an early stage, I was involved in this trajectory as a researcher, which enabled me to cocreate the data collection tool together with the municipal officers and contractors. As a result, the participatory process could be incorporated with the data collection – which had the advantage of questioning residents in the natural setting of the participatory process and higher respondent rates due to the relevance of taking part in the participation process for the residents.

3.2. Research methods, data collection and data analysis

3.2.1. Research methods: mixed methods
A mix of quantitative and qualitative methods are used to conduct this research. The quantitative methods allow for describing and synthesizing group-based perspectives and desires of residents for their street and the subject experience of the living environment. Also, average trends on specific health-supportive planning intervention options in the neighborhood can be identified. The qualitative methods allow for an adequate in-depth reflection on the participating residents' perceptions and the perceptions of the professional stakeholders and policy officers (Thiel, 2014). The qualitative information in the research enables gaining understanding of "the interplay of social paradoxes" within a community, which is seen as crucially relevant for health-supportive city planning (Jareño-Ruiz, De-Gracia-Soriano & Jiménez-Delgado, 2019, 66).

3.2.2. Data collection
A mix of quantitative and qualitative data is collected through the Place Standard Tool (PST). This is a dialogic survey instrument that collects the ideas of participants on 14 urban planning characteristics that are related to the SDOH (Dahlgren & Whitehead, 1991, US Department of Health and Human Services, n.d.). This questionnaire provides for many advantages, like completeness, broadness, and being tested, making it a perfect instrument for the purposes of this master's thesis (Hasler & Howie, 2020, Pharos Gezond In…, n.d.). The 14 themes within the PST are:

1. Active mobility
2. Public transport
3. Traffic and parking

4. Streets and public space
5. Natural spaces
6. Play and recreation
7. Facilities and amenities
8. Work and local economy
9. Housing and living conditions
10. Social interaction
11. Identity and belonging
12. Feeling safe
13. Cleanliness, care and maintenance
14. Influence and sense of control

The Place Standard Tool (PST) is adjusted to the context of the case study in consultation with the municipal officers and contractors involved in the project. Reasons for adjustment or removal of themes were: 1) this theme is not applicable in this area, e.g. there is no public transport, employment, or facilities in the case study project area; or 2) this theme can be submerged with another theme, e.g. only the aspect of gardens was relevant within the housing theme and this is submerged with the natural spaces themes. Main reasons for removing specific questions specific questions were: 1) the issue raised in this question is far beyond the scope of this intervention; or 2) this question is not relevant in this cases study area. The main reason for elaborating on questions was that more questions are needed to obtain an idea of the situational conditions of residents, e.g. age, household composition, car, and dog ownership etc. Also, additional questions were needed on green space and parking, because increasing green space while keeping parking spaces are a key issue in the Topaasstraat and Van Peltlaan (see Appendix A for theme-specific explanations on the choices made). Altogether, this resulted in the following themes in the survey of the Topaasstraat and the Van Peltlaan;

1. Active mobility
2. Traffic and parking
3. Public space in the street
4. Natural public spaces and private gardens
5. Play and recreation
6. Social interaction
7. Identity and belonging
8. Feeling safe
9. Cleanliness, care, and maintenance
10. Influence and sense of control

The PST survey was conducted cross-sectionally during the months of January and February 2021 by several trained surveyors. The survey took place in a face-to-face setting. Every address within the scope of the project was visited to hold the survey. When nobody was home, the house was visited a second time. If still nobody was home during the second visit, an invitation was left for the residents to fill out the survey online. In total, 48 respondents filled out the survey. In the Van Peltlaan, 18 out of 30 possible respondents participated, and in the Topaasstraat, 30 out of 50 possible respondents were collected. An overview of the PST questionnaire used for this master's thesis can be found in Appendix B.

Additional qualitative information of the residents was collected through interviews. Residents were invited for an in-depth interview during the PST survey. 26 Residents agreed to be approached for an interview. Every 4th resident on the list was invited for an interview ensuring randomized

sampling, which led to sending out 7 interview invitations. This resulted in four positive replies, which means that two interviews per street took place.

Also, interviews with policy officers and contractors were conducted to gain insight in their perspectives on the healthy city project. Three interviews were held with officers of the municipality of Nijmegen. These were the civil engineering project coordinator of the renewal and transformation project, the policy consultant for sports and exercise, and the policy consultant for "playing, moving, and meeting each other" of the social health domain. Multiple policy officers were spoken to, to ensure all relevant domains of the municipality were involved. Additionally, two interviews were held with contractors of the spatial transformation. One interview was held with the responsible for contracting & engineering and a second interview was held with the responsible for participatory process.

All interviews took place in April and May 2021 and all interviews took between 30 to 60 minutes. Due to the COVID-19 pandemic, all interviews were held by means of online videocall software. A topic guide was used to provide direction in the semi-structured interviews, see Appendix C. The topic guide is based on the theoretical framework, ensuring a conversation about which goals are important in the project, the perspective on different aspects of environment relevant for health and the desirable actions for the respondent. All interviews were held with the same topic guide, to safeguard receiving complete information from all stakeholders involved. Table 3 shows an overview of all qualitative interviews and survey information used for this master's thesis.

Table 3
Overview of qualitative information used for this thesis

No	Document	Date
01	Interview Municipality Policy Officer 01 Civil engineering in public space	22-04-2021
02	Interview Municipality Policy Officer 02 Sports & exercise	04-05-2021
03	Interview Municipality Policy Officer 03 Playing, sports, and community interaction	21-05-2021
04	Interview Contractor Engineering	22-04-2021
05	Interview Contractor Participation Management	21-04-2021
06	Interview Topaasstraat Resident 01	28-04-2021
07	Interview Topaasstraat Resident 02	04-05-2021
08	Place Standard Tool Qualitative Survey Results Topaasstraat	Jan-Feb 2021
09	Interview Van Peltlaan Resident 01	29-04-2021
10	Interview Van Peltlaan Resident 02	30-04-2021
11	Place Standard Tool Qualitative Survey Results Van Peltlaan	Jan-Feb 2021

Note: In the results section, references are made to the respective number of the source document, together with a corresponding paragraph number in which the information can be found, e.g. 01,01 means this result is based on the information of interview 1, in paragraph 1.

In addition, municipal policy documents are included in the analysis to provide for a complete overview of the municipal perspective. The first one is the Nijmegen city budget 2021, which provides an overview of the aims and the activities per policy domain (Gemeente Nijmegen 2021a, Gemeente Nijmegen, 2021b, Gemeente Nijmegen, 2021c, Gemeente Nijmegen, 2021d). Second is the "accommodation for social infrastructure" policy framework, that explains the shifting policy attention within neighborhood interaction (Gemeente Nijmegen, 2020). Third is the Nijmegen sports and exercise policy 2017-2020, explaining a variety of policy aims and actions in the domain of physical activity (Gemeente Nijmegen 2017a). Fourth, the Health Agenda Nijmegen provides for an overview of policy tracks and actions within health prevention and health care (Gemeente Nijmegen, 2017b).

Lastly, the Coalition agreement 2018-2022 (Gemeente Nijmegen, 2018) gives a generic overview of prospective policy attention during the phase of the case study project..

3.2.3. Data analysis

The mixed method nature of this master's thesis requires performing both quantitative and qualitative data analysis. The quantitative methods are used to describe and synthesize the overall perspective of the citizens on the current situation of both streets, whereas the qualitative methods are used to gain insight in the various perspectives of the actors (municipal officers, contractors, and citizens) and in the rationalities behind their reasoning.

Analysis of the quantitative survey data

The quantitative survey questions produce categorical data. Only some personal characteristics, such as how long a respondent has been living in their street, is continuous data. The survey itself is made up of open questions (see qualitative data analysis) or statements with a Likert scale.

The statements were analyzed with the software program SPSS. Firstly, descriptive statistics were created of statements: Frequency tables and pie charts. Output is created for the Topaasstraat and Van Peltlaan separately, in order to make sure that differences between both streets will become clear. The descriptive statistics either showed a clear result or they showed a high variance on a certain topic. When the results were strongly showing a certain result, e.g. when the overall response is positive on a certain topic, no follow-up analysis was performed. When the results showed a high variance on a certain topic, follow-up analysis was performed to find out about factors that could explain this variance (Field, 2018).

Follow-up analysis was performed by means of Chi-Square tests. Due to the relatively low sample size (N = 48) an alpha of 0.90 has been adopted, to maintain a good balance between Type I and Type II errors within the statistical analysis. For the Chi-Square tests, variables were divided between positive and negative survey responses on the statements, to create 2x2 contingency tables for the analysis. This way, the assumption on a minimum of a count of 5 per cell is met. Due to the sample size, no complex models in the form of log-linear and logistic regression analysis have been performed, since this would require a significantly higher number of respondents (Field, 2018).

Analysis of qualitative data

As discussed in section 3.2, a substantial number of theoretical concepts are already present in the field of health-supportive city planning, resulting in an abductive approach to this research. This means that the qualitative analysis derives partly from the already existing concepts and theories. The abductive approach is merged with a Constant Comparative Analysis technique, which is a qualitative analysis technique based on "constant" comparison of the data: various steps of comparison are identified in order to explore and enrich the description of perspectives and experiences of respondents. Based on the purposeful approach in Constant Comparative Analysis, the analysis is performed (Jupp, 2006, Boeije, 2002).

In the first step of undertaking this analysis, each interview transcript underwent a deductive cycle of coding. These codes are based on table 2 in the theory chapter of this master's thesis. An elaborate overview of the deductive coding scheme can be found in Appendix D. Secondly, an inductive cycle of coding has been performed, to identify topics beyond the deductive codes that are exist within the data. Central questions of the phase in the analysis were: what do fragments of the same code have in common? How are fragments within interviews related to each other (Boeije, 2002)? Several reasons are found that explain the emergence of inductive codes beyond the existing deductive codes. Some codes emerged due to the need of making refinement within certain deductive code, e.g. "recreational Physical Activity/Sports" as a sub-code of "Physical Activity" to mark comments on recreational activity

and sports specifically. Other codes emerged, because they are better at explaining the socio-spatial practice, then the potential deductive codes, e.g. "street lights" in comparison with "aesthetics" or "safety". Lastly, codes emerged because they describe a topic that is not present in the deductive coding scheme, e.g. "microclimate" about the heat island effect and air quality in the street.

The next step in the analysis is to compare the statements of the identified codes within the same group of respondents, in this case municipal officers, contractors and residents, to create core ideas about the various identified categories. In the case of inductive codes, this core idea was put in a comment on the code, for deductive codes this core idea was matched with the theoretical description of the code. When patterns were found in the data, e.g. a pattern was found that multiple concepts together make up the underlying theme of attractive street design, those codes were grouped together. It was explored to see if the experience and perception on the categories of codes and themes vary and to what extent they vary within groups of respondents (Boeije, 2002).

Followed upon this phase, similarities and differences between the groups of respondents and their understanding of categories and themes are explored. Also, the connection between the codes and themes and the theory is studied, meaning the poly-rational perspectives of the various actors about the domains of Physical Activity, Community Interaction and Psychosocial Wellbeing are shaped. Through this phase, the dominant ideas of multiple actors are compared. Questions of why certain themes and statements are found in one group over the other and what possible reasons for these typical similarities and differences could be given were explored (Boeije, 2002).

Aspects on the theme of Healthy Nutrition are not analyzed in this research. Food accessibility and affordability, characteristic number 10 in table 2, and food landscapes around school, characteristic number 13 in table 2, cannot be analyzed, because those aspects do not play a role in the case study area. Only in the Van Peltlaan a cafeteria is situated, but the role of this cafeteria would be exaggerated if the total food landscape of the district would not be analyzed.

The policy documents are analyzed through reading and synthesizing parts that focus on one or more of the public health domains that are put central in this research: physical activity, community interaction and psychosocial wellbeing. The information is put together in a policy description to provide contextual understanding of the policy-setting of this case study.

3.2.4. Validity and reliability of the research

The reliability and validity of this master's thesis is positively impacted by the adoption of the Place Standard Tool. This tool has been developed thoroughly, and has already been used multiple times already for similar research. It has been proven to be highly transferable to different contexts as well. The main goal of the tool is to enable easy conversations about health and wellbeing with citizens and organizations, in order to prioritize action in the spatial domain. All in all, the Place Standard Tool is a great instrument to research the perspectives on health and the living environment of people (Hasler & Howie, 2020, Field, 2014).

Triangulation has been applied to this research, by means of collecting data from multiple sources (Place Standard Tool, policy documents, interviews) and employing multiple methods (Interview analysis, policy document analysis, statistics). In addition, the research is conducted in an interdisciplinary way, by applying theories from the fields of spatial planning and environmental health sciences. Through triangulation, conclusions rely on multiple data sources and methods, which increase reliability and validity. Especially for a case study research design, this is an essential step in conducting reliable and valid research (Field, 2014).

The reliability is also positively influenced by inter-researcher reliability. Since this is a master's thesis, this means another researcher in the field is closely involved in conducting this research. A feedback process is part of the research implementation, which acts as a form of control that enhances the internal validity (Thiel, 2014).

The Place Standard Tool requires many surveys to be taken, therefore, they were conducted by several trained interviewers. This increases internal validity too. By conducting the Place Standard Tool with several interviewers, the collected data is less dependent on a single person. Additionally, a rich body of empirical evidence could be collected for this master's thesis, which contributes to a correct description of reality. A rich body of empirical information on the other hand requires for the right skills to deal with such data. Using analytic software, Atlas.ti and SPSS, it was possible to analyze the rich amount of information systematically (Thiel, 2014).

The external validity of this master's thesis is influenced by positive and negative factors. The substantive findings of the research apply to the specific case study de Topaasstraat and Van Peltlaan, but the research is not designed for generalizability to other streets. Still, conducting this research in other streets with a similar situation may result in similar findings based on the found principles. For the residents, a random sampling method is applied to select interviewees, which increases the external validity. A selection bias can still occur, especially since people with a fatalist rationality might not see the point of participating in such interview, which results in an underrepresentation of this rationality in the research (Hartmann, 2012, Thiel, 2014).

4. CASE DESCRIPTION

Reader's guide – The case description chapter aims to provide context before presenting the case-specific analysis results in the next chapter. This chapter consists of three sections. First, the two streets of the case study, the Topaasstraat and the Van Peltlaan, are introduced. Then, an overview is provided of policy in the Municipality of Nijmegen that fits within the four promising domains of health-supportive city planning: Physical activity, community interaction, healthy nutrition, and psychosocial wellbeing. The last section provides an overview of descriptive statistics on the responses in the Place Standard Tools.

4.1 Topaasstraat and Van Peltlaan

The case study of this thesis is on the renewal and transformation of the Topaasstraat and the Van Peltlaan. Although the Topaasstraat and Van Peltlaan are both located in the southern district in the city of Nijmegen, they are not in the same neighborhood (Gemeente Nijmegen, n.d.). Only segments of the two streets are part of this project. The segment of the Van Peltlaan that is relevant to this study lies between the Oude Molenweg and Heidebloemstraat. The relevant segment of the Topaasstraat is located between the Weg Door Jonkerbos and Winkelsteegsweg. See Figure 4 for a map of the relevant sections and their location in Nijmegen.

Figure 4

Map of the segments of the Topaasstraat (left) and Van Peltlaan (right) (Adjusted by the author from OpenStreetMap, n.d.)
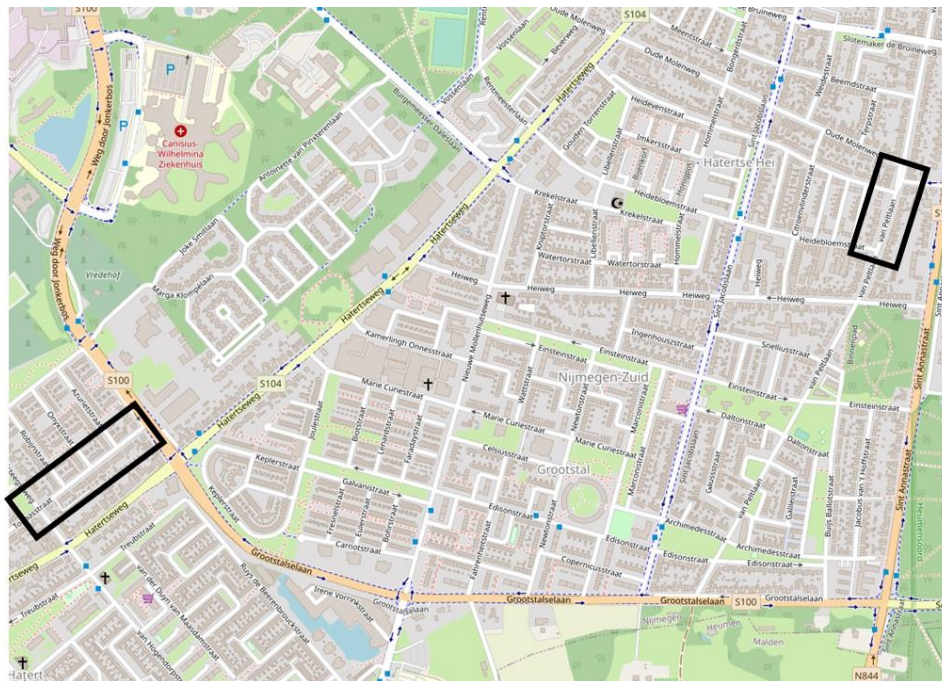
Though the streets are not connected, their renewal and transformation have still been organized as one project by the municipality of Nijmegen. The municipal maintenance department informed the civil engineering project manager that both streets needed a sewage system renewal, meaning that an opportunity arose for both streets to be renewed and transformed. The municipality decided to approach this project from a vision instead of a standard design. This vision would be the same for both streets, which enabled the municipality to approach both streets as one project[1].

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[1] *01,07-13 (See 3.2.2, Table 3 for an explanation on the referencing method to the interviews)*

The streets have some similarities: They are both residential streets with an asphalt road surface. The sidewalks are relatively wide, in some places they can reach up to three meters in width. The main difference between both streets is the type of housing. In the Van Peltlaan most houses are detached or semi-detached, while in the Topaasstraat these are terraced houses. Figure 5 gives an impression of both streets.

Figure 5
Impression of the Van Peltlaan (left) and Topaasstraat (right)

4.2 Municipal policy description on health-environment factors

4.2.1 Sports and exercise policy

Promotion of physical activity is dispersed over various policy papers and domains in the municipality of Nijmegen, in which traditionally the most important one is sports policy. This policy program is focused on facilitating sports accommodations and sport participation through associations, coaches and other organized sports activities. In the city budget, the policy program for sports is one of the main policy domains of the municipality, revealing the attention towards sports to stimulate physical activity. Within the sports and exercise policy program, four target groups are defined: Children and youth, disabled, adults and seniors, and sports operators[2] (Gemeente Nijmegen, 2021a).

Accordingly, physical activity in public space is approached mainly from a recreational and sports-oriented perspective. This is clearly demonstrated the ambition of sports policy and the ambition of public space policy; the relevance of an attractive environment to be recreationally physically active in is emphasized in both policy programs. In the sports domain the following ambition is mentioned:

> *"We maken een leven lang sporten en bewegen mogelijk voor alle inwoners met goede, toegankelijke sportaccommodaties en een beweegvriendelijke openbare ruimte" (English: We make a lifelong sports and exercises possible for all inhabitants with good accessible sports facilities and an exercise-friendly public space.) (Gemeente Nijmegen, 2021c)*

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[2] 02,01-03

In the domain of public space, the following goal is formulated:

"We hebben een groene omgeving die bijdraagt aan de gezondheid van onze inwoners en bezoekers en uitnodigt tot spelen, bewegen en ontmoeten" (English: We have a green environment that contributes to the health of our residents and visitors and invites them to play, exercise and meet.) *(Gemeente Nijmegen, 2021b)*

The attention for sports and exercise in public space and urban planning manifests itself through designing "sports spaces", such as parks with public sports facilities and recreational cycling trails. Sports consultants are not structurally involved in public space projects, but are only involved in projects that obviously have a connection with sports. Sport policy consultants are approached more often though in recent years, because a trend is recognized in the municipality of an increasing number of unorganized sports in public space.[3] This leads to increased attention for sports facilities and designated sports areas in public space (Gemeente Nijmegen, 2017a).

Although policy aims for designing an exercise-friendly environment, specific actions of what an exercise-friendly environment entails in practice is not worked out (Gemeente Nijmegen, 2017a, Gemeente Nijmegen, 2017b, Gemeente Nijmegen, 2021a, Gemeente Nijmegen, 2021b). One aspect is highlighted though: the importance of green space for physical activity. Therefore, a goal is formulated to increase green infrastructure in the city and a policy campaign "Green, healthy and active" has been launched (Gemeente Nijmegen, 2017b). The interviews with municipal officers confirm the strong belief in the importance of green space for physical activity[4].

Interventions to promote physical activity in the environment are managed through a reactive approach based on the notions of supply and demand. The municipal officers explained that first a demand for sports and exercise interventions in public space must be indicated by the residents before actions will be undertaken to facilitate this[5]. The municipality is mainly focused on people with vulnerable positions regarding physical activity (Gemeente Nijmegen, 2017a). The core belief in the municipality is that people who are not willing to be physically active cannot be persuaded to exercise, but that it is possible to stimulate people that wish to be physically active, but are unable to for financial or other reasons[6]. Hence, actions to stimulate physical activity more rigorously are not undertaken.

Exceptions on this notion are made for children; they receive the majority of attention in sports policy (Gemeente Nijmegen, 2017b, p.3-5). In the municipality, they base themselves on research that indicates that people who have done sports from childhood onwards are more likely to be active at a later stage in life. Thus, physical activity promotion is especially focused on children as an investment for later stages of life[7]. Consequently, the municipality favors facilitation of outside play areas for children, which goes beyond regular playgrounds, because sidewalks and other spaces could also be made fit for playing. In addition, school environments receive special attention so that they become more inviting to move and play (Gemeente Nijmegen, 2017b, p.3-5). A special policy program dedicated to "Playing, moving and meeting" is created to serve this intersection of policy domains between sports and public space in order to create an environment that is "inviting to move" for children. The municipal officer working on this program emphasizes that safety plays a big role when making playing in the street attractive for children. In addition, in designing streets there are many opportunities for multiple land-use functions, such as creating parking spaces with a playful pavement, so that children have more space to play in during the day[8].

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[3] 02,07;02,14
[4] 01,28;03,06
[5] 01,22-23;02,16-17
[6] 02,08
[7] 02,04-05
[8] 02,04-05;03,07;03,11

4.2.2. Policy on social infrastructure and wellbeing

The city of Nijmegen is going through a transitional phase regarding the policy domain of social infrastructure. Previous policy was built on the notion of the welfare state, but this ideology has shifted towards a participatory society. This means that, while the municipality still finds archieving social cohesion and participating in society important, the initiative for engagement is now a citizen's affair, instead of a public one. This shift has resulted in policy changes, such as the recent policy framework on social infrastructure accommodation in the city of Nijmegen and the Health Agenda Nijmegen (Gemeente Nijmegen, 2017b, Gemeente Nijmegen, 2020).

Earlier, the city of Nijmegen used to aim to achieve more social engagement by actively facilitating community centers throughout the city. This approach is viewed as outdated today and a renewed approach should offer new opportunities to reach the prospected policy aims. The new policy framework is based on citizen and community initiatives to evolve social activities in the neighborhood. In these projects, the municipality is acting as a collaborating partner, providing financial and accommodation solutions. The self-organization of citizens and communities is the main focus, because this should lead to activities that better align with the needs of citizens. As a result, social interaction and building social networks in a neighborhood has become more of an individual's responsibility. Only in neighborhoods with a low level of self-organization, the municipality actively creates social interaction by assigning a social coordinator (Gemeente Nijmegen, 2017b, Gemeente Nijmegen, 2018, Gemeente Nijmegen, 2020).

In public space specifically, the municipality aims at creating infrastructure that facilitates an inviting environment for social engagement. Various activities to achieve this have been formulated. Among others, the realization and maintenance of facilities in public space for play, recreation and meeting people. The interview with the responsible municipal officer revealed that public space should facilitate "leads" that stimulate social interaction on streets in a natural way. Moreover, facilitating play, recreation and meeting people means creating a safe environment that feels welcoming, besides providing for attributes in space like benches. The aim is to create social spaces that are greener, bigger, and more central compared to the current situation, so that it becomes a social space for both all age groups in the city[9]. In addition, the municipality supports resident initiatives to create such attractive public spaces in the city (Gemeente Nijmegen, 2021b),

Apart from social engagement, mental resilience also receives attention on the Health Agenda of the city of Nijmegen. Prevention is focused mainly on vulnerable groups in the city. These groups are identified and monitored by social workers and the municipality. Specific activities are undertaken to improve mental fitness in those groups. Also, in the policy campaign "Green, healthy and active" mental fitness is one of the key focus themes. Through physical activity, green space, recreation and meeting other citizens, a generic preventive approach is developed to create environments that foster mental wellbeing (Gemeente Nijmegen, 2017b).

4.3 General perspective of the residents

4.3.1 General view on healthy living

In the interviews, resident mention that they are aware of health effects of the environment, although it is not something that they regularly consider. They do not feel they would be able to notice those effects. Especially green space, mixed land-use, social security, and privacy is seen as something that must have a positive influence on health, because it increases wellbeing. On the other hand, noise nuisance and air pollution are viewed as main threats to a healthy living environment[10].

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[9] 03,03;03,09-10
[10] 06,17-18;07,20-26;09,24-27;10,17-26

4.3.2 Physical activity

Turning to the domain of physical activity, the majority of respondents in both streets agree to the statement that says one can easily move around the street. For the Topaasstraat 76,67% of the respondents (strongly) agree with this statement, compared to 88,89% for the Van Peltlaan. This generally positive attitude towards physical activity in the street is also found in the results of other statements that reflect the residents' experience and attitude towards physical activity, such as walking and cycling in their street. On the statement how often they are taking a stroll in the neighborhood the majority of respondents answered "always" (Topaasstraat = 26,67%, Van Peltlaan = 22,22%) and "often" (Topaasstraat = 30,00%, Van Peltlaan = 61,11%) (Appendix E).

Although the residents of both streets show their attitude towards physical activity is positive, a distinctive difference between both streets can be found when looking at the statement saying: The surroundings invite me to move around. Half of the respondents of the Topaasstraat (strongly) agree with this statement and half of them (strongly) disagree, whereas in the Van Peltlaan a much bigger share of respondents, 77,78%, (strongly) agrees. This outcome results in the hypothesis that people living in the Van Peltlaan are more likely to perceive their surroundings as "inviting to move". A Chi-Square test on this hypothesis results in a significant test (χ^2 (1, N = 44) = 3.334, p < .10), meaning that residents in the Van Peltlaan are more likely to perceive their surroundings as "inviting to move" compared to residents of the Topaasstraat. The test shows a strong relation between both factors (ϕ=-.275) (Appendix E).

Moving to indicators that might explain this difference, residents of both streets negatively perceive the quality of the street and sidewalks. Respondents were asked to consider holes in the road or loose tiles that could create discomfort while walking. In the Topaasstraat 76,67% of the respondents reported that the quality is not to their liking and in the Van Peltlaan 72,22% of the respondents reported this. However, the results show a distinct difference where attractiveness of the street is concerned. On this variable, the Topaasstraat scores much lower. Only 43,33% of the residents in the Topaasstraat (strongly) agreed to this point, compared to the Van Peltlaan where 88,89 (strongly) agreed. This finding, combined with the theory, resulted in a hypothesis that the perception on "inviting to move" is dependent on the attractiveness of the street. A Chi Square test confirmed this result (χ^2 (1, N = 44) = 9.031, p < .10). The relation is considered very strong (ϕ=.453) (Appendix E).

Lastly, on the topic of room for play for children, much variation exists in the answers given by the respondents. Also, the results show that respondents have mixed feelings on the safety for children to play in their street, especially in the Topaasstraat these perceptions are divided (Appendix E).

4.3.3 Community interaction

Nearly all residents of the Topaasstraat and Van Peltlaan claim to know their neighbors (Appendix E). However, both in the Topaasstraat and the Van Peltlaan a considerable share of residents state that they would like to know their neighbors better (26,67% and 26,33% respectively). Furthermore, the majority of the residents indicate that insufficient places exist to meet others in the street (Appendix E).

On the other hand, many respondents like to be involved closely in the participatory process to redesign the street. In the Topaasstraat 72,4% of the respondents have expressed their interest in being involved and in the Van Peltlaan 83,3% of the respondents expressed the same. This result suggests many residents feel a degree of involvement with what is going on in the street. Since the literature suggests that involvement in such processes could lead to more community interaction, the hypothesis is tested whether people that want to be involved are also more likely to desire to know their neighbors better. This resulted in a significant chi-square test (χ^2 (1, N = 42) = 6,720, p < .10) and it showed a strong relation between these factors (ϕ=.400). However, interpreting these results

require some caution, because the assumption of an expected count in every cell of 5 has been violated (Appendix E).

The extent of involvement among residents has been found dispersed by looking at the willingness to maintain greenery together with neighbors. In the Topaasstraat a small majority of 53,3% is not willing to do this, and in the Van Peltlaan this applies to 27,8% of the respondents. In addition, some respondents have no opinion on this matter or do not know how they think about this (Appendix E).

4.3.4 Psychosocial wellbeing

Turning to psychosocial wellbeing, the results show that the residents have a strongly positive attitude towards factors that apply to this domain. All residents in the Topaasstraat and the Van Peltlaan have a positive perception on their street. Furthermore, nearly all respondents express that they feel at home where they live. Also, nearly all respondents feel safe in their living environment. Only the factor about feelings safe all year through and on different times of the days shows more variety. IN the Topaasstraat 20% of the respondents feel not safe all the time and in the Van Peltlaan this applies to 11,1%. In addition, only a tiny number of respondents find that there is crime and anti-social behavior in the street (Appendix E). Due to the small amount of variance, no follow-up analysis was performed.

5. RESULTS

Reader's guide – The results chapter is composed of five sections. First, the theoretical notions of poly-rationality are applied to strategies to manage public health through spatial planning. In the second section, the empirical results of the case study on Physical Activity are presented and analyzed. The same procedure is applied to Community Interaction and Psychosocial Wellbeing in sections three and four respectively. In the final section, a new topic is introduced that was found through the analysis to be relevant for health-supportive city planning: Microclimate.

5.1 Right and wrong in health-supportive city planning

As discussed in the Theory chapter, four rationalities in the spatial planning process of health risk issues can be defined. These rationalities are individualism, egalitarianism, hierarchism, and fatalism. Applying the principles of these rationalities to health-supportive city planning leads to four expected ways to manage health risks. Since the various rationalities contradict each other in actions being "right" or "wrong", they indicate situations of conflict and difficulty (Schmitt & Hartmann, 2016, Hartmann, 2012, Davy, 2008, Hoppe, 2007, Dake, 1992).

The individualistic approach leads to ideas about self-responsibility, liberty, and innovation in health-supportive city-planning. Self-responsibility is the idea that one can best take care about the health needs of themself – every individual has different needs and priorities that cannot be grasped from external entities. Therefore, it is important that everyone has the liberty to opt for what works best for their own health, without interference from externally imposed rules or social norms. Eventually, managing health risk is best when approached as an individual matter. Providing equal opportunities to everyone is important though, so everyone can develop their health to their best potential. To a broader extent, this means that room for innovative citizen initiatives should be prioritized (Schmitt & Hartmann, 2016, Hartmann, 2012, Davy, 2008, Hoppe, 2007, Dake, 1992).

Citizen initiatives are of importance for egalitarianism too, although contrary to the individual's individualistic rationality, community-driven initiatives are the desired action. Individualistic actions result in inequality of the risk-benefit distribution, and this is remarked as an unjust approach. The egalitarian approach advocates for a collective action approach to health risk management because interventions should be weighted on the equality of the risk-benefit distribution for the total community. Only a community can prioritize communal needs and values, whereas outsiders may impose restrictions that will harm the community, which results in injustice. The right decision-making process is through consensus and cooperation in the community to improve communal health (Schmitt & Hartmann, 2016, Hartmann, 2012, Davy, 2008, Hoppe, 2007, Dake, 1992).

In comparison, the hierarchical approach dictates that health risk assessment of the environment can only be undertaken by an external entity of experts. They can weigh the right decision to pursue the best possible outcome for the common welfare, compared to the particular interest of individuals or a community. Through rules and structures, actions of individuals can be shaped to create the best health-supportive environments for society (Schmitt & Hartmann, 2016, Hartmann, 2012, Davy, 2008, Hoppe, 2007, Dake, 1992).

Lastly, the fatalistic approach is based on the idea that intervening in the environment is not useful in order to make it healthier. This approach shows us that actions cannot be shaped through intervention, since health outcomes are based on luck and faith. This results in a passive attitude towards spatial planning interventions, because health is an individual matter, but a result of external structures that cannot be interfered with. Within health-supportive city planning, arguments such as "it is impossible", "I don't see the point" or "it is useless" indicate this rationality (Schmitt & Hartmann, 2016, Hartmann, 2012, Davy, 2008, Hoppe, 2007, Dake, 1992).

Although these rationalities cannot coexist together because of their fundamentally different nature, reasoning from more than one rationality is expected to be found in practice. Every social situation can lead to a different rational approach, and social reality can be hypocritical. In the end, decision-making and actions show the dominant or prioritized rationality. That is specifically when the importance of the four rationalities come into play (Schmitt & Hartmann, 2016, Hartmann, 2012, Davy, 2008, Hoppe, 2007, Dake, 1992).

5.2 Poly-rational reasoning in the domain of Physical Activity

5.2.1 Introduction to the relevant spatial aspects

Physical activity as spatial practice can manifest itself in multiple ways, such as walking to a store, children playing, maintaining a public garden, and cycling to work. In the Theory chapter of this thesis spatial factors were identified that relate to practicing physical activity in space. These are opportunities to create a spatial intervention to increase physical activity. These spatial aspects are:

1) Accessibility of destinations, distance to destinations and connectivity
2) Mixed land-use
3) Safety of the built environment
4) Aesthetics and quality of the built environment
5) Green (open) spaces
6) Community gardens and farms

Spatial interventions for the Topaasstraat and Van Peltlaan proposed by the municipality are mainly focused on aspects three and five, while expert actors are mainly focused on aspects three, four and five and residents are focused on aspects one, three and four, and in the Van Peltlaan also six. The results show that some aspects are intertwined as well. Therefore, in total four components are analyzed. The aspects "aesthetics and quality of the built environment", "green (open) space" and "community gardens and farms" are combined into the aspect "attractive street appearance". For all aspects, the findings indicated that the municipality is strongly hierarchical, also the contractors approach it from a hierarchical perspective complemented by an egalitarian approach. The residents have been found to approach the aspects from all rationalities, which could lead to some friction with the other actors that are stronger focused on just one or two of them. In this section, an in-depth analysis is made on the actor approaches to the spatial aspects, and in the last part, an integrated analysis is performed that results in an overview presented in table 4.

5.2.2 Accessibility, distance, and connectivity

The first aspects – accessibility of destinations, distance to destinations and connectivity – are mainly approached from a hierarchical perspective: the municipality must take care of accessibility of the street. The scale of the street is not big enough for issues related to distance and connectivity, although residents are content with many destinations being relatively close[11]. The municipality trusts in the existing norms for accessibility to create an inclusive street e.g. disabled people[12]. This is a form of regulation that testifies of a hierarchical approach to this issue. The contractors have a bit broader scope on this topic; they found that the residents in the Topaasstraat are relatively aged, which is a reason to pay extra attention to accessibility in the street design. Accessibility is tried to increase through making the street safer by slowing down the traffic in the street design, because residents have asked for this[13]. This shows a strong group-thinking: the communal needs are assessed and solutions to regulate the desired or preferred behavior are proposed. This results in interventions that are hierarchical i.e. based on a belief in managing through regulations.

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[11] 07,53;10,78-80 *(See 3.2.2, Table 3 for an explanation on the referencing method to the interviews)*
[12] 01,33-34
[13] 05,24-26

For residents of the Topaasstraat and Van Peltlaan, overdue maintenance of the street is causing perceived accessibility issues. Elderly people are complaining and having small accidents due to loose and uneven tiles. In addition, some residents are experiencing health-related problems that create a difficult situation for them to be physically active outside, e.g. due to the use of a walker aid[14]. Many residents find it important that maintenance should be better organized in the new situation, and they are looking at the municipality for a better maintenance plan and a better way to notify the municipality of maintenance issues. For residents, accessibility is approached from two perspectives: A hierarchical rationality based on the desire for better maintenance plans and individualistic rationality based on providing for opportunities to take initiative in requesting maintenance in an accessible way[15].

5.2.3 Mixed land-use

The second aspect – mixed land-use – is viewed as less important by residents on street level, because interventions on land-use mix are more relevant when looking at the district level. However, residents of the Topaasstraat and Van Peltlaan are in general happy that many kinds of land-use are found nearby, such as parks and stores. It is, in fact, enabling many residents to walk or cycle to various destinations, but, in a fatalistic sense, mixed-land use for stimulating active mobility is not seen as useful on street level[16].

On the other hand, representatives of the municipality explain that for children mixed land-use on a street-level scale is perceived as an opportunity to promote playing outside i.e., physical activity. A good practice is, explained by a municipal officer, to create multifunctional space, e.g. a parking lot with the floor made for playing so children can play there during daytime and multiple interests are served at the same time[17]. In general, the municipality focuses on creating "sports spaces" to facilitate physical activity in public space. In this notion, it is perceived that in some projects it is useful to create such places, but in other projects, it is better to not be concerned with sports facilitation. It depends on how suitable certain areas are found by the municipality to have physical activity or playing children in public space[18] (Gemeente Nijmegen, 2017a, p.32-34).

Altogether, this shows that the municipality overall has a strong sense about where and how to create opportunities for children and adults to recreationally be physically active in their neighborhood. The contractors concluded that this is neither a priority in the Topaasstraat nor for the Van Peltlaan though, due to their focus on the community's values and desires. Other aims for this project have received a higher priority in this project. Contractors view aspects of the street renewal as important, when the consulted residents request attention on certain themes and, not surprisingly residents' rather fatalistic attitude towards this topic, this is not high on the priority list[19].

5.2.4 Safety of the built environment

A topic that is much higher on residents' priority list in this project is safety of the built environment. In the Topaasstraat, speeding and dangerous road use are viewed as annoying and obstructive to be able to safely cycle and play on the street. Also, space for cyclists on the street is described as too little[20]. Although not all residents declare this is problematic or limiting[21]. Residents view that it is mainly experienced as an issue by e.g. parents of little children and by children for the sake of safely reaching parks and playing grounds individually[22]. Residents are quite fatalistic on creating better norms in the community related to driving behavior and they look at the municipality to be

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[14] 06,23;06,77;08,07-08;08,12;09,04;09,09;11,02;11,09
[15] 07,06;07,85;08,159;166;09,05-07
[16] 07,53;09,47;10,78-80
[17] 03,07;03,11
[18] 02,10-11;02,22;04,37
[19] 04,30-35;05,15-18
[20] 07,31-38;08,05;08,06;08,12
[21] 06,30;08,44-74
[22] 06,09;06,32;07,32-34;08,12

more restrictive, e.g. by putting more visible road signs of the 30km/h zones, speed bumps and other measures to regulate speed better[23].

This contradicts the vision of the residents of the Van Peltlaan which is more egalitarian. Similarly, in the Van Peltlaan safety issues are perceived due to fast driving and unclear road design in front of the cafeteria at the corner of the street. This side of the road is viewed as a square for children of the neighborhood to play, but it is in fact a cross-section with a cycling highway and the Van Peltlaan. However, it is at the same time viewed that the situation has already improved much over time. Residents of the Van Peltlaan would prefer to stimulate safer road behavior by creating a social norm in the road design of slower traffic, instead of hard measures such as speed bumps. Possible directions to create this norm are proposed, such as a narrower street for cars and bigger green spaces around the trees that result in a visually smaller looking street[24].

For both the municipality and the contractors, safety of the built environment is a high priority because residents have put this issue forward. Consequently, the contractors even included safe street design within the vision of creating a livable street. They favor many of the solutions proposed by residents such as a narrower and meandering street, but they are restricted by norms and regulations of the municipality[25]. For the municipality, it is mainly important that proposed solutions are in line with the advice of the municipal's traffic engineers. Therefore, a meandering street design is not an option, because traffic experts foresee disadvantages. Also, the municipality is not much in favor of narrowing streets due to similar reasons. This shows the strong hierarchical rationality in the municipality on safety and some friction that it leads to with the other involved actors. The municipality is not fully convinced of the need to put safety measures, because not all residents are finding the safety of the built environment a big issue[26].

5.2.5 Attractive street appearance

Another aspect receiving much attention apart from safety of the built environment is aesthetics and quality of the built environment. It was found that aesthetics, quality, green space, and community gardens come together within the concept of attractive street appearance. Therefore, these aspects are analyzed in an integrated manner, so that their interconnectedness is highlighted. In addition, other aspects, such as streetlights, were found to be important too for attractive street appearance. All the involved actors explain that an attractive street appearance is of major importance[27]. Attractive street appearance is traditionally approached from a hierarchical rationality – the municipality is responsible for maintaining a good-looking street appearance. Yet, a shift is recognized towards an individualistic and egalitarian approach – residents are expected to maintain their houses, gardens and, together with neighbors, take care of public (green) spaces in the street in order to make an attractive street. A difference of rationality between the municipality, expert actors and residents can lead to some friction on this aspect.

The municipality for example is both itself concerned with a better appearance of the street, e.g. the municipality desires a paved street in the new design instead of the current unattractive asphalt alternative, while at the same time the municipality views a role for residents by having e.g. attractive gardens to make the street look better. Also, the municipality expects citizens' initiatives to maintain public green space in order to facilitate more attractive green space. Either way, attractive streets are viewed as a key factor to facilitate active recreational use, but the management of attractive street appearance is divided between creating an attractive base and creating attractive additional features[28].

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[23] 06,30;08,12;18,19-43
[24] 09,51-53;09,71;10,39-42
[25] 04,21-22;04,37-38;05,12;05,27
[26] 01,30
[27] 01,64-67;04,55-58;06,54-57;07,10
[28] 01,64;01,67;01,75;02,13;03,01

Contractors also view a role for residents because they see the renewal of both streets only as a short-term aesthetic improvement. They desire to create an attractive street, so they stimulate citizens to take initiatives to proactively be involved in making it more attractive. For example, the standard range of green space that the municipality offers to maintain is considered rather dull. In case residents prefer to have more attractive greening, they are obliged to help in maintaining this, due to financial reasons of more care-demand of flowering and more diverse greening options. Organizing this, depends on the willingness of residents to step in, so contractors try to spark this interest. For both streets, however, it has been found challenging to establish such interest. They expect this approach to be more successful in the Topaasstraat than the Van Peltlaan, because residents of the Van Peltlaan seem to be less interested in such a project due to having big private gardens themselves, while in the Topaasstraat more people seem to be interested in plant care[29]. This shows that, while the municipality puts the full initiative to its residents, contractors step in as initiators of such an organization. In addition, contractors even initialize greening residents' private gardens, by providing information and help with such a project[30].

Contractors recognize a distinct difference in the attractiveness of the current state of both streets: the trees in the Topaasstraat are unfortunately sick and the number of parked cars dominate the street appearance, while the Van Peltlaan has the appearance of a royal alley due to the big Linden trees and the distinctive housing. Although the Van Peltlaan genuinely needs renewal by looking at the state of the street surface itself. By the use of more green, offering help to residents to green and beautify their gardens, improving the streetlights and by implementing a better situation of the car parking lots, it is aimed to improve the aesthetical quality[31]. All in all, expert actors are approaching aesthetical management generally from a hierarchical rationality and occasionally from a individualistic rationality.

Residents themselves are also concerned with the appearance of their street. In the Topaasstraat, a majority of residents are currently unhappy with the street appearance. This is caused by a combination of an unattractive looking street surface, the dominance of parked cars, the outdated streetlights, and the sick trees. At the same time, the wide sidewalks and green gardens are marked as reasons making it an attractive street. Residents view that much will be solved by renewing the street, but still, they view some issues – such as the parked cars – as impossible to solve; there are just a lot of cars to be parked by the residents. Also, respondents are not willing to take initiative to maintain public green spaces, because they view this as a municipality's responsibility, and they expect that residents will not have the time and dedication for it. In one of the interviews, the respondent explained that he would rather see this kind of maintenance work as a day-activity for people with distance from the labor market, than as a community project. Although the street is not looking appealing to many residents, it is not a reason for people to not walk around the neighborhood. Other, bigger green spaces around facilitate this physical activity more, over the street appearance itself[32] (Appendix E).

Figure 6

Boomspiegel in the Van Peltlaan

On the other hand, the Van Peltlaan is viewed as attractive by many of its respondents. Residents enjoy the big Linden trees and the green front yards in their street; the green spaces are key in creating an attractive street appearance. Some trees have

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[29] 04,56-62;05,39-40
[30] 04,59-62;05,29;05,45
[31] 04,56-62;05,39-40
[32] 06,05-12;06,27-27;06,49-51;07,11;07,28-30;07,85-89;08,122-169

surrounding flowerbeds, a "Boomspiegel" as shown in Figure 6, that residents take care of individually. In the interviews, remarks were made that residents enjoy these flowerbeds, but they would like to see them at more trees in the street. It was viewed that these flowerbeds could increase in size to make them more visible as a project. Additionally, one respondent found that this project should be formalized more by the municipality, because many people do not know what a Boomspiegel is. The Boomspiegels are approached from an individualistic perspective, since an individual resident takes care of a single flowerbed. In that sense, a citizen's public green space project is much more welcomed in the Van Peltlaan, than in the Topaasstraat. However, some hierarchical support is desired to promote the project and spark interest by the residents even more[33] (Appendix E).

The street surface itself is viewed as annoyingly degraded over time, especially compared to the rest of the neighborhood. Residents' strongest desire is that the street will be renewed in line with the rest of the neighborhood that was renewed four years earlier. One respondent explains that the current state of the street is not doing justice to the neighborhood, and it affects the appearance of the street needlessly. It is viewed as something that the municipality should have taken better care of[34].

5.2.6 Poly-rational analysis on physical activity

The elaborate analysis above can be integrated into a comparative analysis between the aspects. The overview is presented in table 4 (see the following page). For the first aspect – accessibility – actors are generally on one line in their hierarchical approach, they trust rules and institutions to arrange this matter. However, residents are seeing this partly from an individualistic approach with respect to this topic as well. Since the municipality and contractors are strongly focused on their own assessments on accessibility, it might lead to missed out opportunities to employ the desires of residents on this topic.

For the second aspect in the table, mixed land-use, a much more diverse picture is shown and an interesting result followed upon this interplay. The municipality has a clear vision on this topic, also clear ideas for street designs itself. Using mixed land-use is viewed as an opportunity for physical activity. Meanwhile, the contractors have an egalitarian perspective on this issue, and focus on the goals for the groups of residents. The residents view this issue from a fatalistic point of view. As a result of the resident's fatalistic point of view, in the end, mixed land-use is not given attention in the project.

The third aspect shows that also a division of rationalities can lead to some friction. While the residents of the Van Peltlaan have a collective idea on how to increase safety in their street and contractors are thinking along in their proposals, the municipality approaches this from a hierarchical perspective. In that sense, they act as the gatekeepers of safe and unsafe street designs. The unusual ideas of the residents in the Van Peltlaan and the contractors are not appreciated from their perspective of safety assessment. Thus, it is not implemented, because the municipality is in power to approve or dismiss ideas, which leads to dissatisfaction among the other actors.

A pluralistic approach is shown for the aspect of attractive street design. Creating an attractive street is viewed as something that should be aimed for, and all actors have a similar vision about an attractive street. However, perspectives on how to manage an attractive street are somewhat mixed. Residents are more hierarchical in this respect, since they clearly distinguish between private and public property and they view public property as a responsibility for the municipality. In their perception, it is unlikely that public space can be maintained well by residents. The municipality sees this differently and perceives its role as facilitating an attractive street, but maintaining it is a mutual effort. This is focused on creating more attractive green spaces, because the maintenance of non-standard greening is too costly. It is difficult for the municipality to conduct plans that involve citizen or community initiatives when the citizens themselves are not in line with such policy.

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[33] 09,29;09,70-71;09,100;10,05;10,95-99;11,74-108;11,124-126
[34] 09,04;10,04;10,93

Looking at the various proposed ideas, beliefs, and interventions, the results show that municipal actors approach interventions mainly from a hierarchical rationality, and sometimes an individual and egalitarian rationality. Contractors on the other hand approach this domain from both a hierarchical rationality and an egalitarian rationality. Lastly, residents shift mainly between all four rationalities in approaching various aspects related to physical activity in their neighborhood. This results in potential tension to the question "how should the Topaasstraat and Van Peltlaan be renewed, transformed and managed in an exercise-friendly way".

Table 4

An overview of rationalities by actor for the domain of Physical Activity

Aspect	Actor	Dominant rationality	Principles
Accessibility	Municipality	Hierarchism	"Norms and regulations make sure the street is accessible"
	Contractor	Hierarchism	"We can review the accessibility needs required for the street based on demographic and other relevant data"
	Residents Topaasstraat	Hierarchism, Individualism	"The municipality should take care of an accessible environment and I should be able to notify accessibility issues"
	Residents Van Peltlaan	Hierarchism, Individualism	"The municipality should take care of an accessible environment and I should be able to notify accessibility issues"
Mixed land-use	Municipality	Hierarchism	"Through active land-use policy, we can regulate where spatial activities happen"
	Contractor	Egalitarianism	"The residents of a street know best what type of land-use they desire"
	Residents Topaasstraat	Fatalism	"Our spatial activities cannot be changed through land-use changes in our street"
	Residents Van Peltlaan	Fatalism	"Our spatial activities cannot be changed through land-use changes in our street"
Safety of the built environment	Municipality	Hierarchism	"We can make the best choice for safest street design option"
	Contractor	Egalitarianism	"The residents of a street know what safety issues exist and solutions will work well"
	Residents Topaasstraat	Hierarchism	"The municipality should make sure to create a safe street"
	Residents Van Peltlaan	Egalitarianism	"We have a vision of what the safest street design looks like"
Attractive street appearance	Municipality	Hierarchism, Individualism, Egalitarianism	"We provide the base infrastructure of an attractive street, we expect citizen's initiatives for additional activities to increase attractiveness"
	Contractor	Hierarchism, Egalitarianism	"We want to create the best possible street design and need the help of the community to realize this"
	Residents Topaasstraat	Hierarchism	"We expect that public space management and maintenance is a municipal matter"
	Residents Van Peltlaan	Hierarchism Individualism	"We expect good street design and maintenance from the municipality, but also like opportunities to take individually responsibility"

5.3 Poly-rational reasoning in the domain of Community Interaction

5.3.1 Introduction to the spatial aspects

Similarly, to physical activity, community interaction as a spatial practice can manifest in multiple ways. These are activities such as meeting neighbors on the street, coming together at a park, or organizing a street barbeque. Derived from the Theory chapter of this thesis, spatial factors were identified that relate to community interaction in space, which can be used as an opportunity to facilitate such interaction. These spatial aspects are:

1) Contextuality and diversity of the community
2) Interaction in neighborhood and public space
3) Mixed land-use
4) Availability of Third Places
5) Green (open) spaces
6) Community gardens and farms
7) Comprehensibility of space and ownership

Firstly, the aspect contextuality and diversity of the community is assessed. This aspect provides inside into how the actors perceive the role of the socio-spatial factors in their living environment, to also understand their views on physical-spatial aspects with respect to community interaction. Interaction in public space has been found to not play a role in both streets, especially because the current street does not offer room for much interaction. This is explained in the section on Third Places, which consists of aspects three until six above. All of those aspects relate to the creation of places that provide other functions than "housing" or "work". Finally, the role of "comprehensibility of space and ownership" is discussed. A strong difference is notices among actors between the studied spatial aspects and the relation they have to poly-rationality. On neither of all the points, residents feel like a hierarchical approach would work, which seems to influence the ideas and plans of the municipality and contractors.

In line with the previous section, an in-depth analysis is made on the actor approaches to the spatial aspects. In the last part, an integrated analysis is performed that results in an overview presented in table 5.

5.3.2 Contextuality and diversity of the community

Promotion of social interaction requires understanding how a community is composed and awareness of the subtleties of the community. Thus, the first aspect to analyze is the contextuality and diversity of the community and the perspectives that the actors have on this topic. Actors explain that they perceive community interaction as an individual's endeavor. In the municipality, the district director is closest involved in neighborhood aspects such as social cohesion and this person takes the lead when interventions are desired to improve social interaction. The district director acknowledges that social cohesion can still be improved for the southern district, but they do not aspire to this specifically in this project. Consequently, improving social interaction through this project is marked as a beneficiary side-effect and not as an aim by the civil engineering project manager in the municipality. Moreover, the project manager emphasized that a crucial difference exists between the Topaasstraat and Van Peltlaan that needs to be anticipated. The Van Peltlaan is a relatively expensive street with a more homogeneous population of higher educated citizens, while the Topaasstraat is populated with a broader mix of residents. They believe this results in more criticism from residents in the Van Peltlaan in shaping the transformation, compared to more enthusiasm from the residents in the Topaasstraat[35].

On the other hand, the municipal officer that specializes in "playing, moving and social interaction" emphasizes that in every residential street it is desired to create a design that invites residents to social interact with each other. Even when there are few requests made for social interaction by the

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[35] 01,17-18;01,37-38;02,16

residents, it is viewed that it is the right thing to organize a street in such a way that residents feel invited and welcome to spend time outside and meet other neighbors. The remark was made that some residents are not familiar yet with the value of social interaction with neighbors[36]. Altogether, within the municipality it depends on whom is consulted, to find out how the role of the contextuality and diversity of a community is perceived. In general, the municipality emphasizes the responsibility of individuals in managing social interaction. Finally, the district director has a leading role in incorporating this aspect in the planning process, in case of specific issues being evident in a certain neighborhood. Since this is not the case, the municipality does not prioritize intervention on social interaction, which testifies of a hierarchical – the district director assesses the priority, and an individual-egalitarian approach – it is the responsibility of community members itself to organize and initiate action in this domain.

In contrast with the municipality, the contractors started this project with a focus on creating room for social spaces in the design. However, during the process contractors got the impression that social interaction in the street is already well-developed, contradicting their expectations of a residential street in an urban setting. Many citizens involved in the participatory process seemed to know each other or recognized each other in the participatory sessions. In the experience of the contractor, this might be the result of both streets being composed of house owners, that might show more social dedication compared to rental housing tenants. In addition, many of the residents have been living in the street for years, or they expect to live long-term in the street, which might cause a higher social dedication towards the street. Moreover, for the Van Peltlaan specifically, a potential reason for the current state of social interaction, is the presence of their street in the Four Day Marches event, which is the biggest event in the City of Nijmegen. An event like this in a street is expected to result in meeting the neighbors at least every year. It is viewed that those reasons together lead to a positive attitude in the street towards community interaction. As a result, community interaction has been put at a lower priority for both streets and it was acknowledged that it is in the end mainly an individual endeavor if community interaction is achieved[37].

In the Topaasstraat, many residents are indeed happy about the current state of social interaction in the neighborhood. There used to be a place occupied by loitering that is removed. Currently, it is described as a calm residential street. Many people know their neighbors but are not in close contact with them. Contact mainly relies on convenience. Some residents (36,7%) would prefer to know their neighbors better, but people view it as a communal and individual responsibility to organize this[38] (Appendix E). Also, in the Van Peltlaan contact with neighbors is rather casual. Many people explain they know their neighbors but are not in close contact with them. Since many residents already live a long time in the street, they also know well who lives where. The houses in the Van Peltlaan are rather private, since they are detached or semi-detached. Consequently, many residents enjoy their privacy and do not feel much desire for more contact; Only 22,22% of the residents would prefer to know their residents better. Residents of the Van Peltlaan explain this is an individual's responsibility[39] (Appendix E).

5.3.3 Interaction in neighborhood and public space

In both streets, social interaction does not happen often in public space. People either meet each other in Third Places (see point: Third Places) or in their private houses and gardens. As a result, the streets are both not considered a living space[40]. Creating the street based on the notion of a living space is viewed as nice, but not pursued. Residents do not find this an important asset of a street, they view that this should still be a place for "general use". This means a facility to go from one place to

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[36] 03,03;03,08-09
[37] 04,10;04,44;04,47;05;30-37;05,56
[38] 06,36-40;07,41;07,45;08,243-261
[39] 09,54-56;09,81;10,12-14;10,43-44;11,181-184
[40] 08,223-242;11,145-158

another. All in all, currently interaction in the neighborhood and public space does not play a role in both streets, causing this aspect to be absent in the project[41].

5.3.4 Third Places: mixed land-use, green (open) spaces, community gardens

Third Places play an important role in social interaction. For this analysis, Third Places are combined with mixed land-use, green (open) spaces and community gardens. It was found that mixed land-use ultimately results in more Third Places, because a move is made away from monofunctional residential use to mixed-use. The other two aspects, green (open) space and community gardens can be considered as a Third Place themselves. Residents have been found especially fatalistic about Third Places, they neither perceive much room for them in the street, such as a community garden, a bench, or a playing ground, nor do they view this as necessary. Contractors combine the rationalities of egalitarianism and hierarchism, while the municipality approaches this theme in this project from an egalitarian perspective.

Attention in the municipality for Third Places manifests itself in multiple ways. First of all, they desire to create big social spaces for multiple uses: from children to elderly. In the street itself, for social interaction, wide pedestrian areas with much green space, possibly taken care of by the community, is viewed as the best way to create an environment that is inviting for social interaction. Furthermore, facilities for children to play in the street are also viewed as important by the municipality, however, they noticed that this idea is not embraced by the residents due to fear of loitering. Residents stated that they are giving much priority to facilitate car parking in their street, then to create wider sidewalks, benches, a playing facility, or additional green space. Accordingly, the municipality follows up on these statements and room for Third Places is given little priority. So, whereas the municipality, in general, has a hierarchical attitude towards creating Third Places, in this project specifically they follow an egalitarian approach[42].

In the Topaasstraat itself, indeed residents reckon there is no space for Third Places. Respondents in the interviews indicate that they do not see how to facilitate such places in a residential street like theirs. It is considered their street is unsuitable for these kinds of places and space for car parking and green is viewed as more important. Specifically for children, respondents mention that in the neighboring streets there are many opportunities to play. The park at the Opaalstraat is a popular place for playing and meeting, and residents would rather see this place being upgraded[43]. Similarly, the residents of the Van Peltlaan reason that they do not see the purpose of creating such places in their street. At the corner of their street, they have a cafeteria that serves as a hotspot for social interaction and something additional is not viewed as necessary[44].

The contractors still look for opportunities to create the street as a living place with social places. They see that instead of focusing on creating Third Places themselves, it is more important to make sure the street and those potential places are perceived as safe in order to make it easier to socialize in public space. Looking at Third Places, they concentrate on the existing places, park at the Opaalstraat for the Topaasstraat and the cafeteria in the Van Peltlaan, and how these areas could be improved. From consulting the residents, they are aware of the importance of car parking spaces and green space. Thus, they combine their vision on making the street also a social living space together with the desires of the residents, which combines the hierarchical and egalitarian perspective[45].

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[41] 05,26-27;07,32
[42] 01,24;03,01;03,03;03,07;03,12;03,15
[43] 04,24;07,32-34;07,45-47;08,215-216;08,224-242
[44] 09,64-66;10,53-55
[45] 04,23-24;04,52;05,34-36;05,58

5.3.5 Comprehensibility of space and ownership

This last aspect – comprehensibility of space and ownership – is about how well people appreciate what happens in their environment and how much influence they can exert on it.

The participatory process itself is viewed by the municipality as a stimulator for community interaction[46]. Their new method of contracting – Rapid Circular Contracting – involves citizens from the beginning of the planning phase. Creating plans with citizens is viewed as an innovative approach in the planning process, that will provide for much more opportunities for citizens to create plans. The municipality sees that it works better in the Topaasstraat, because more ideas are proposed by the residents, compared to the Van Peltlaan, in which residents remain rather critical attitude. In the end, the municipality can still decide over what is going to be done and what not[47].

This leads to a bit of friction with the contractors in the participatory planning process. The current project is framed as an innovation in which contractors and residents are viewed as partners, i.e. they are more on a similar level with the municipality. However, in contrast to their expectation, many ideas of theirs and the residents have been rejected by the municipality due to the pioneering character. Moreover, by only consulting the residents, the best level of participation is not met. Residents do not gain any power over the planning process, not even over a particular aspect; they are only consulted. These findings indicate that the contractors are using an individualistic and egalitarian perspective[48].

Turning to the residents, they view the participatory process as an opportunity to get to know neighbors better. Overall, participating residents are in favor of the process and they enjoy seeing that they are on the same line with many of their neighbors, although some critical remarks are made. One respondent mentions that the established contact will inevitably decline again after the process is over. Also, the online and digital character of the process due to the corona pandemic does not provide for as many opportunities for social interaction as another respondent had desired. Additional critique is expressed about the low number of residents participating actively, which influences the representation of the street in the process negatively. Lastly, some residents are not happy about the "wild ideas" that some of the participating residents propose, because they view managing these ideas as a waste of energy. Similar critique is found in both streets. In the end, residents do not expect the process to increase their social relations in the neighborhood, because the process comes to an end at some point when relations are not yet sustainable. Yet a minority of the respondents hope that it might turn out differently[49]. Given the positive and negative remarks that have been made, residents express ideas based on many rationalities, of which egalitarianism and fatalism are the dominant ones.

5.3.6 Poly-rational analysis on community interaction

To analyze the domain of community interaction, first, an analysis of the context of the community is performed. All of the actors view cohesion in the community mainly or partly from an individualistic perspective. This leads to little to no issue in how this is approached in the project.

For the aspect of Third Places, a similar construct of rational perspectives is found, like seen for the aspect of mixed land-use. Both the municipality and the contractors have a vision of creating Third Places to enhance social interaction. However, residents approach this aspect from a fatalistic point, and they are not viewing it as useful or valuable to have such social places in the street. In the long run, through the mechanisms of the egalitarian rationality of the municipality and the contractors, Third Places are receiving only little attention in the street renewal and transformation.

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[46] 01,18
[47] 01,13;01;48-53;01,99-100
[48] 04,66;05,60
[49] 06,42;07,43;09,259;10,46

For the third aspect – ownership – all actors are to some extent on the same level. The municipality and the contractors value the ownership of residents a lot in order to involve them more in their street. However, the municipality prefers to keep in control, which results in some friction with the contractors on how it should be organized – not with the residents in interestingly. Residents enjoy the ownership that has been given to them and they enjoy the collaborative values that have been established for this project together with their neighbors, but for sustainable social interaction in the street, they reveal to be somewhat fatalistic.

Altogether the results show that the municipality and contractors both have a vision on contextual factors of the community; they assess whether social marginalization and isolation are playing a role, in that case, they would like to intervene. However, in areas with less vulnerable residents, like the Topaasstraat and Van Peltlaan, the aspect of context and diversity of the community led to the conclusion that it is an individual and egalitarian responsibility. Also, residents of the Topaasstraat and Van Peltlaan have this perception of their community. Turning to the physical-spatial aspects, they also do not see a point in creating social places in their street, since they view their street as unfit for such purpose. This resulted in the interesting situation where the municipality got along in the fatalistic perspective of the residents, due to their egalitarian approach on this aspect. Similarly, this applies to the contractors. Finally, the role of ownership in community interaction is emphasized, however, it is unclear for the residents whether this results in social relations due to the convenience that these relations are built on in the first place.

Table 5

An overview of rationalities by actor for the domain of Community Interaction

Aspect	Actor	Dominant rationality	Principles
Contextuality	Municipality	Hierarchism, Individualism, Egalitarianism	"We monitor the social vulnerability of a neighborhood and depend interfering on this - socially strong neighborhoods are good at taking care themselves"
	Contractor	Egalitarianism, Individualism	"In cities, social interaction might be less present, but residents can express best what their community needs"
	Residents Topaasstraat	Individualism	"Establishing good contact in your neighborhood is your personal responsibility"
	Residents Van Peltlaan	Individualism	"Establishing good contact in your neighborhood is your personal responsibility"
Third Places	Municipality	Hierarchism, Egalitarianism	"We have a vision on social street design, but residents will decide whether they find this interesting"
	Contractor	Hierarchism, Egalitarianism	"We would like to create a social street, when residents want to go along with us in creating such plans"
	Residents Topaasstraat	Fatalism	"In our residential street there's no space for Third Places for social purpose, this is not going to work here"
	Residents Van Peltlaan	Fatalism	"In our residential street there's no space for Third Places for social purpose, this is not going to work here"

Ownership	Municipality	Hierarchism, Egalitarianism	"We want an earlier engagement of residents, so residents feel more connected to the plans by giving their ideas"
	Contractor	Egalitarianism, Individualism	"We believe the voice of residents is key in developing spatial plans"
	Residents Topaasstraat	Fatalism, Egalitarianism	"On the one hand, the participatory process is good for the community feeling, but it will not last"
	Residents Van Peltlaan	Fatalism, Egalitarianism	"On the one hand, the participatory process is good for the community feeling, but it will not last"

5.4 Poly-rational reasoning in the domain of Psychosocial Wellbeing

5.4.1 Introduction to the relevant spatial aspects

The last aspect studied is psychosocial wellbeing in the relation to spatial aspects. Several spatial aspects have been found to be potentially relevant for people's cognitive functioning and wellbeing. This can be influenced by concepts such as a welcoming environment, a green environment, a social environment, and a safe environment.

The relevant spatial aspects found in the theory are (see chapter 2.2):

1) Safety of the built environment
2) Aesthetics and quality of the built environment
3) Green open spaces
4) Community gardens and farms, farmers markets
5) Interaction in neighborhood and public space
6) Availability of Third Places, meaning other places than those dedicated to "home" and "work".
7) Comprehensibility of space and ownership

In the analysis showed that these aspects can be grouped in three dimensions: "Green spaces", "Pleasurable living" and "connection and belonging". In general, actors put a lot of emphasis on the aspect of "green spaces". Pleasurable living is composed of the following aspects: Safety, aesthetics, and community gardens. In addition, housing and nuisance also make out an important part of pleasurable living. Connection and belonging entail both interactions in the neighborhood and comprehensibility. While the aspect of green space is under much attention, the other two are less present in the case study. This might partly be caused by the fact that the municipality addresses this issue on its own from a hierarchical perspective, whereas the residents see this as an individual's issue. Therefore, neither one of them involves the other actor in managing these aspects.

5.4.2 Green spaces

A remarkable emphasis on green space has been found in the interviews in relation to psychosocial wellbeing. The code to mark statements on green space has been found to occur most often in the data analysis (Appendix D). Hierarchical management is viewed as the best way to approach this, including aspects such as creating room for trees, managing flowerbeds and creating green gardens. Especially interesting is the uptake of private space within the project by the municipality and contractors, and the positive perception that residents have of this approach. This seems to be a result of all actors having a similar agenda on this topic or it is a result of a social norm to have favorable perceptions of green space. In addition, the implementation of green space has a facilitating, non-opposing character.

Green spaces are viewed by the municipality as a vital land function that contributes a lot to the wellbeing experience of residents. Together with the effects of green space on the microclimate of the street, it is viewed as one of the key aspects in the renewal of the Topaasstraat and Van Peltlaan – and

in many other projects besides this specific project. Not only green space is given attention in public space, but private space is incorporated as well. Residents are given information and support in greening their gardens during this project – making use of this option is voluntary. Since green space is such an important aspect for the municipality, it is included from a strong hierarchical perspective[50].

Residents of the Topaasstraat and Van Peltlaan both highlight the value of green spaces for their enjoyment too. Thus, green space is considered as important. Quality of greening is considered important, because at the same time residents perceive their street has little space for elaborate green spaces, taking into account room for parking and the street itself: so they prefer some good-looking, big trees over bigger beds of green. A distinct difference between the Topaasstraat and Van Peltlaan can be found in greening. Residents in the Topaasstraat desire to change the current greenings due to ill trees, whereas residents of the Van Peltlaan are generally happy with the Linden trees and they desire to keep it this way. Residents of the Van Peltlaan prefer to manage the flowerbeds around the trees "Boomspiegels" as a more official project, because they enjoy them a lot[51].

Some residents also like the option given by the contractors to green their garden during this project[52]. With respect to green space, the contractors acknowledge that in the Topaasstraat much must change. The current trees have been ill for decades, which results in minor, poorly looking trees. The streetscape of the Topaasstraat is given a rather miserable appearance due to this situation. On the other hand, the Van Peltlaan is considered attractive due to the good-looking Linden trees. In essence, green space is considered a highly important asset for a street, but it should not come at the cost of convenience for residents, i.e. room for car parking is even more important[53].

5.4.3 Pleasant living

Whereas greenspace itself is considered as a source for good psychosocial wellbeing, other aspects together are found to be important too. They are put together within the integrated concept of "pleasant living". In the analysis, it was found that some factors improve feelings of pleasurable living, e.g. social security, aesthetics and good housing conditions, while other factors have been found to decrease this experience, e.g. nuisance and criminality. Many of those factors are either not receiving attention, because they are not forming an issue currently, Aspects such as litter and animal waste are viewed as individual's responsibility by many of the residents. Other aspects, such as noise nuisance perceived from a fatalistic and hierarchical perspective. Contractors view this issue from an egalitarian perspective – when needed the community will ask for attention on these aspects. The municipality takes it from a different view, by executing street assessments, the prominent issues related to pleasant living will come forward.

Overall residents of the Topaasstraat and Van Peltlaan do not view nuisance aspects as a priority, because for many of them these aspects are playing a rather little role of importance. Residents of the Topaasstraat experience litter and animal waste as not a big issue. In the Topaasstraat, some residents experience noise nuisance, but it is perceived as something beyond their control. Due to the transit route along the Hatertseweg (behind the Topaasstraat), traffic causes most of the noise nuisance in the Topaasstraat. They explain this could only be solved to some extent through mobility policy[54]. Before, the Van Peltlaan had issues with significant noise nuisance from traffic as well due to cut-through freight traffic, but this problem has been solved by implementing a 30km/h zone in the street and arranging one-way street policies in some of the adjacent streets. Litter does not play a big role in the Van Peltlaan, but animal waste is perceived by a majority of residents as an issue[55] (Appendix E) Residents indicate that much of the nuisance aspects are viewed as individual issues, since some people

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[50] 01,64;01,67-71;03,06
[51] 06,13-14;06,18;06,54;07,11-17;07,38;07,52;09,29;09,70-71;09,100;10,05;10,95-99;11,74-108;11,124-126
[52] 10,96-99
[53] 04,52;04,56;04,59-62;05,44-45;05,52
[54] 06,58-60;07,24-26;08,44-74;08,126;08,112;08,205;08,262-274
[55] 09,24-27;10,09-10;11,186-199

might be annoyed by a certain situation while the other person is not. Cleaning up litter is also an individual's endeavor, because residents do this themselves in their yards and doorsteps and expect their neighbors to do so too[56].

The positive aspects are also represented in the street. Residents in the Topaasstraat enjoy their house, their garden and they feel safe. As discussed in the previous part 5.1.2, improving the street appearance is important to them. Residents of the Topaasstraat in general like their privacy, causing some desire to move from their semi-detached to a fully detached house among the interviewees. Social security and aesthetics are both positively perceived[57]. Contractors follow the experience of residents on the negative and positive aspects related to pleasant living. Since they have not heard issues relating to this topic, it is not under attention in the street renewal[58].

For the municipality, the improvement of pleasant living – apart from creating more green space – is sought in changing the pavement of the street. Nuisance and other negative aspects to pleasant living are not in the picture. Instead, an emphasis is put on environmental and green factors in the street as core aspects, for the main reason to improve the microclimate of the street, but in a way also to improve wellbeing. Through street assessment, such aspects are put on the agenda[59].

5.4.4 Connection and belonging

A welcome feeling, feelings of connection and belonging are an important socio-spatial aspect in relation to psychosocial wellbeing. By residents, this topic is approached from an individual's rationality, while the municipality approaches this from a hierarchical rationality. Contractors leave this issue to the initiatives of residents, since they found that this aspect was already very positively awarded by the residents[60].

All residents have indeed a strong positive opinion on the street. Many interviewees and respondents also indicate that they feel at home in their street. Reasons that contribute to these feelings are the long time that residents have lived in their street. Housing conditions are also viewed as a factor in this topic, people live in well-maintained dwellings with respectable gardens. This is also felt like an investment for the future, which is why residents are expecting to live long-term in their street (Appendix E)[61].

While the residents relate aspects of connection and belonging mainly to individual aspects, like the housing conditions, the municipality views this point from a public space perspective. They aim to have a street design that provides for a cozy feeling of being welcome. Greener and multifunctional street designs are viewed as the main factors to successfully implement this[62].

5.4.5 Poly-rational analysis on psychosocial wellbeing

For the domain of psychosocial wellbeing, it was found that on the aspect of green space, all actors have a (strong) hierarchical perception. The approach of the municipality is dispersed between a strong sense of increasing green space and providing for many opportunities in public and private-owned land to accomplish this. It results in successful implementation of their vision, because the contractors and residents can relate to the various managerial strategies to increase green space. It is not in question among the actors whether this is useful.

The issue of pleasant living is approached from many different rationalities, but for all the actors it is not high on the priority list. The municipality assesses pleasant living through a street assessment

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[56] 07,59-60;10,76
[57] 09,81;10,78
[58] 04,55-56;05,48-49
[59] 01,63-65
[60] 05,08;05,16
[61] 06,64;07,55-58;09,80-82;10,71
[62] 01,64;03,03-04

performed by experts, whereas the contractors focus on the voice of residents to determine the needs for the streets and how to manage those needs. Some sub-aspects of pleasant living are viewed by the residents as an individual's endeavor, thus they are not involving the other actors in those issues. Some other aspects are viewed as beyond the scope of this project and beyond their control, so they are again not putting those forward to the municipality or the contractors. Thus, the municipality determines through the street assessment for itself what should be done to improve on pleasant living, while the contractors are not giving this attention due to their egalitarian approach.

The mechanisms in the process of the issue of connection and belonging can be described similarly as those of pleasant living. The municipality has their own hierarchical vision on this topic, while residents view this from an individual's point of view, and the contractors are taking an egalitarian stance on this. Residents are not initiating attention to this topic as a community into the project, so contractors do not give this aspect attention. At the same time, the municipality has their own image on this topic and acts accordingly in line their own ideas.

Table 6

An overview of rationalities by actor for the domain of Psychosocial Wellbeing

Aspect	Actor	Dominant rationality	Principles
Green space	Municipality	Hierarchism Individualism	"We take the lead in creating green public and private space by providing many opportunities"
	Contractor	Hierarchism, Egalitarianism	"Green space is a high concern, but it has to be implemented in line with residents desires"
	Residents Topaasstraat	Hierarchism	"It's good the municipality arranges green space with much effort to increase our wellbeing"
	Residents Van Peltlaan	Hierarchism	"It's good the municipality arranges green space with much effort to increase our wellbeing"
Pleasant living	Municipality	Hierarchism	"Through street assessments, we can find out how this issue needs to be managed"
	Contractor	Egalitarianism	"Residents will highlight issues related to pleasant living when they feel the need to this"
	Residents Topaasstraat	Individualism, Fatalism, Hierarchism	"Keeping the street tidy is an individualistic endeavor, but some types of nuisance are inevitable or beyond our control"
	Residents Van Peltlaan	Individualism, Fatalism, Hierarchism	"Keeping the street tidy is an individualistic endeavor, but some types of nuisance are inevitable or beyond our control"
Connection and belonging	Municipality	Hierarchism	"We create a street that will make residents feel comfortable and welcome"
	Contractor	Egalitarianism	"Residents will bring aspects on connection and belonging forward, in case this is an issue"
	Residents Topaasstraat	Individualism	"Through our well-maintained houses and gardens, we feel at home and want to live here long term"
	Residents Van Peltlaan	Individualism	"Through our well-maintained houses and gardens, we feel at home and want to live here long term"

5.5 Other aspects

5.5.1 Poly-rationality in relation to microclimate

To create a healthy living environment, much emphasis is put on the microclimate of the street by all actors. In relation to the other domains discussed in the results, which are mainly approached from their beneficiary impact on health, this issue is addressed mainly as a health stressor. One of the main aims of the municipality and the contractors is to improve the microclimate of both the streets, especially in the Topaasstraat. This focuses on increasing the infiltration of the street and greening the environment to adverse the urban heat island effect. Firstly, a climate assessment is performed on the street and through this assessment opportunities to improve the situation are proposed. Only when necessary, residents are involved in this aspect, because it is viewed merely as a technical problem. Involvement happens when it concerns the private property of residents, such as detaching water drainage of the sewage system and creating green gardens for an improved microclimate[63].

Although the residents are not involved in all aspects, some residents view this aspect also as important. Especially urban heat is viewed as annoying and preferably is acted on, but it is viewed as difficult to pursue other residents to have less paved areas in their gardens that would lead to an improvement. In addition, also air quality is mentioned as an opportunity for improving the health stressors in the street, but this is viewed as something beyond the control of residents[64].

Table 7

Poly-rationality by actor in relation to microclimate

Aspect	Actor	Dominant rationality	Principles
Microclimate	Municipality	Hierarchical	"We can create an adaptive microclimate through applying technical measures and we'll approach citizens whenever we find necessary"
	Contractor	Hierarchical	"We can create an adaptive microclimate through applying technical measures and we'll approach citizens whenever we find necessary"
	Residents Topaasstraat	Fatalism	"The microclimate in our street is influenced heavily by external forces, such as the city's infrastructure and the lack of time and skills to maintain green gardens"
	Residents Van Peltlaan	Fatalism	"The microclimate in our street is influenced heavily by external forces, such as the city's infrastructure and the lack of time and skills to maintain green gardens"

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[63] 01,06;01,64;01,70;01,85;03,06;03,09;04,08;05,28;05,45
[64] 06,05;06,14;06,78;07,21-22;08,139;11,124

6. CONCLUSION

Reader's guide – The conclusion focuses on the main question in this research:

What is the role of poly-rationality in relation to the perspectives of involved actors in designing a health-supportive urban planning transformation, such as the renewal and transformation of the Topaasstraat and Van Peltlaan?

The general role of poly-rationality is explained in the first part of the conclusion. Then, the role of poly-rationality in the various spatial-health domains is presented. Finally, a conclusion is drafted on the role of poly-rationality for the actors involved in health-supportive planning.

The promising approach of poly-rationality management in health-supportive city planning

Healthy urban living is gaining political attention. In Western-European countries, such as the Netherlands, a major part of the national health burden is caused by so-called "lifestyle diseases" that are considered a by-product of how developed societies are arranged. For that reason, increased attention is given to the role of spatial planning on the health outcomes of people. In the new environmental law of the Netherlands, an official role has been added for "health" within the process of spatial planning. However, little is still known about the interaction between urban form and health outcomes.

This knowledge gap is highlighted in the academic debate too. It is suggested that a move should be made away from topic-specific studies to an integrated health perspective. Moreover, it is emphasized that issues of non-linearity and complexity in the place-health relation should be overcome. To do so, the Cultural Theory of Risk is used as a framework to manage complex spatial issues. This theory explains that risk-perception is influenced by four rationalities, which helps to understand situations in a poly-rational way. The four rationalities distinguished are Individualism, Egalitarianism, Hierarchism and Fatalism.

This thesis showed that these poly-rational perspectives can be found in the mechanisms of reasoning among actors on the different promising spatial-health domains studied. The central domains for this master's thesis were Physical Activity, Community Interaction and Psychosocial Wellbeing. These rationalities were empirically studied in a city planning process, through a case study on the street renewal and transformation of the Topaasstraat and Van Peltlaan in Nijmegen, the Netherlands. Using a combination of the constant comparative analysis method, policy analysis and statistical analysis, enabled systematically analyzing mechanisms of reasoning among the involved actors in the case study.

Every rationality employs distinctly different core values in its reasoning in order to identify those in practice. The findings show that this leads to different ways of formulating solutions to health-supportive city planning issues. Awareness of the four rationalities shows a new way of understanding debates on health-supportive planning issues. The rationalities reveal structures that would otherwise remain hidden, which is especially interesting when certain frictions in the planning process are at play.

The interplay of rationalities has been demonstrated to be crucial in directing certain choices in health-supportive planning. In case all actors employ the same rationality, little friction is found in the process. However, it also results in a tendency to mono-rational management of the specific health-supportive aspect. A whole different situation is when all actors employ a different kind of rationality. In this situation, misunderstandings and friction may occur due to differences in reviewing what actions are considered "right" and "wrong". In this case, generally, the strategy of the most dominant actor is

leading. Finally, the situation of poly-rational management is found in the findings as well. This management strategy is composed of different rational strategies and this led to positive feelings among the other actors.

Moreover, the results revealed opportunities for health-supportive city planning through the use of the four rationalities. Poly-rational management is showed as promising in health-supportive city planning, because it appeals to multiple people and actors Thus, **poly-rationality offers ways to move forward in health-supportive city planning.** It is expected that poly-rational interventions lead to better implementation of health-supportive city planning interventions, which may ultimately lead to better health outcomes in a neighborhood.

A challenge that remains is when the fatalistic rationality is dominant among residents on a certain aspect. Even when this aspect was marked as important by the municipality or the contractors, it became difficult to give it a significant position in the implementation of the project. Dealing with fatalism among residents has to be studied more to understand how to cope with this perspective.

Poly-rationality in the spatial-health domains

As revealed in tables 4, 5 and 6 in the findings, the different spatial aspects are all approached differently by each actor. No clear differences can be seen between the approaches to the domains of Physical Activity, Community Interaction and Psychosocial Wellbeing, every spatial aspect is primarily relevant. On the other hand, the policy analysis demonstrated that physical activity is under much more attention in the municipality, compared to the other domains. The quantitative results showed that certain spatial aspects are especially promising in making a difference for the spatial-health domains in the Topaasstraat and Van Peltlaan, namely attractive street design for physical activity and ownership for community interaction. Despite the diffused picture that the aspects show in tables 4, 5 and 6, these quantitative results indicate points that could be focused on.

Apart from the domains that were studied in this thesis, physical activity, community interaction and psychosocial wellbeing, another domain was found to be relevant in this case study. This is the domain "microclimate". Microclimate is under much attention in order to improve local livability, and is composed of local factors such as temperature, air quality, rainwater flooding etc. The issue is viewed as a technical one by the experts in the municipality and the contractors, resulting in little attention for this matter in the participatory trajectory.

Poly-rational residents in contrast with mono-rational experts

Looking at the different actors, residents have been found to perceive situations from all different kinds of rationality. Interestingly, no exception is made for the rationality of fatalism. This rationality is also represented within the perceptions of residents that were involved in the participatory process, which contradicts the expectation put in the theory. Residents are expected to non-participate when they view an intervention from the fatalistic approach. However, every situation shows different rationalities can be employed. Residents that view active involvement in participation processes can be useful, may have a fatalistic perception of specific spatial aspects. Likewise, it may be likely that residents, who view participation from a fatalistic point of view, might view spatial matters from other rational perspectives. Although all rationalities are found, especially the egalitarian approach is underrepresented.

In contrast to the residents, contractors in the project of the Topaasstraat and Van Peltlaan have a tendency to focus on the egalitarian approach. For nearly all spatial aspects, they approach the issue at least partly from an egalitarian point of view. This shows that for contractors it is important to work with community values, social norms and social justice. Given the fact that the participation process is their responsibility, this might be the reason for their focus on the residents' community's identity.

Also, the municipality strongly focuses on a single rationality, in their case the hierarchical approach. This derives from a strong focus on policy and regulation on the one hand, and assessment procedures and expert involvement on the other hand. It does not mean that no room is made for other approaches in managing health-supportive city aspects, for many aspects a variety of management strategies are used. Nonetheless, hierarchical structures and taking charge are core ideas within the municipality.

7. DISCUSSION

Reader's guide – The discussion of the research is composed of several elements. First, the broader meaning of the findings is discussed. Subsequently, the theoretical implications of the findings are explained. This is followed by the methodological limitations of the research. Lastly, the recommendation for follow-up research and the recommendations for practice are presented.

Discussion of the findings

The potential of the Cultural Theory of Risk applied to health-supportive city planning has been found to be highly relevant. It provides for insides in the mechanisms of health-supportive city planning that otherwise would remain hidden. This results in certain process outcomes that can be understood more when they are revealed through the four rationalities. For example, when a certain rationality is strong among all the actors, it is more likely that those actors agree with each other, while dispersed rationalities may result in misunderstanding and friction in planning.

It does not mean that all actors require to perceive everything from the same rationality to successfully plan healthier landscapes. The findings provide insights into how the interplay of certain rationalities leads to certain outcomes of the process. Trying to make a move away from undesired outcomes could be accomplished by understanding the process through poly-rationality. Poly-rational management has been found the most promising way to deal with this.

Discussion of the theoretical implications

Poly-rational management can be found in the literature as well. An emphasis is put on the application of poly-rationality to design solutions for wicked problems. Poly-rational solutions are identified as "clumsy solutions" in literature (Schmitt & Hartmann, 2016, Hartmann 2012). In this master's thesis, however, an emphasis is put on the process of spatial planning. In the process of designing an intervention in spatial planning, a poly-rational approach has been found most favorable. Therefore, beyond clumsy solutions, clumsy processes are equally important in addressing wickedness in spatial issues.

Moving to the rationalities themselves, some unexpected differences with the theory have been found about the manifestation of the rationalities in practice. The analysis showed that the approach of an individualistic rationality relates much to the ideas of self-responsibility in practice, whereas the components about innovation and opportunities of this rationality that can be found in literature are overlooked in the ideas and perspectives of all actors (Schmitt & Hartmann, 2016, Hartmann, 2012, Davy, 2008, Hoppe, 2007, Dake, 1992). It is unclear why these components of the individualistic rationality have not come forward in this case study. Likewise, the rationality of fatalism manifested itself mainly through ideas of unimportance and neglect of the issue, and through powerlessness on the issue. Ideas of luck and faith (Schmitt & Hartmann, 2016, Hartmann, 2012, Davy, 2008, Hoppe, 2007, Dake, 1992) are less central. It is viewed that external forces can be understood but remain beyond control due to financial reasons, political choices or else.

Lastly, a potential addition was found as a promising health domain in spatial planning, namely microclimate. For residents, this was an important factor in their experience of the healthy living conditions of their environment. This domain is composed of, but not limited to, the following factors: thermal comfort/heat, air pollution and rainfall flooding.

Methodological limitations

This thesis is constrained by the small size of the case study area. Therefore, the Place Standard Tool is only filled out by 48 residents. A greater sample size of the survey's respondents would lead to more analytical possibilities, such as creating a logistical regression model. Statistical analysis on the various spatial aspects that relate to public health domains would help to determine the priority for residents of those aspects. Combined with the poly-rational analysis, it could improve pointing out crucial aspects in a health-supportive city planning process.

In general, the case study research design results in issues related to generalizability for the substantive research results. It is not likely that the same poly-rational outcomes will come forward in another spatial planning process. However, the theoretical results, pointing at the importance of poly-rationality to understand the spatial planning process better, can in fact be applied to a broader scope. The case study serves as an instrument to demonstrate its relevance.

For the data collection in the research process, it was found that the Place Standard Tool contributes much to "what" questions, but it was more difficult to obtain many answers revolving around the "why" question. In other words, people are in general good at mentioning *what* goes well, but it does not easily explain *why* this goes well. Also, when looking for suggestions to improve, it would be insightful to hear *how* this should be approached and *who* should take charge. So, it was found that some answers were more useful than others for this specific analysis. This could lead to missing out on certain relevant aspects in the analysis, because the data obtained was not always evident. The additional interviews partly make up for this issue in the data collection, but this will not completely solve the limitations mentioned above.

Recommendations

Subsequent to the conclusions, implications and limitations of this thesis, several recommendations for scientific research can be made. First, applying different research designs could potentially contribute to the body of evidence advocating for this approach. For example, studies could be performed in a multiple, comparative case-study setting to examine the effects of mono- and poly-rational management strategies on the various spatial aspects of health-supportive city planning for two or more cases. Also, a Qualitative Comparative Analysis could be performed on a bigger number of cases about the role of poly-rationality for the success of health-supportive interventions.

Moving to quantitative research, further research should focus on more advanced statistical analysis methods. This would require a greater number of respondents in the analyses than that were available in this study. These analyses might be useful to determine priority among all the different spatial aspects. This way key aspects can be addressed in an efficient manner, since the amount of spatial aspects that related to healthy living are very broad.

Regarding the practice of health-supportive spatial planning, the key recommendation based on this research is to review the process from a poly-rational perspective. This could contribute to solve friction in the process and to find more understanding of the various ideas on the right approach. Also, it could open opportunities to move to potentially new strategies in addressing health through spatial planning. In the end, most importantly is to create a process with reasonable components from various poly-rational perspectives. This may enrich the planning process.

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APPENDIX A: MINUTES CASE STUDY MEETING
PLACE STANDARD TOOL MEETING
With the municipality and contractors

Date: 12/16/2020

Leefplekmeter aanpassingen
- Per thema:
  - Beweging: Bankjes. Beweeggedrag uitvragen. Andere relevante aspecten naar openbare ruimte.
  - Openbaar vervoer: eruit
  - Verkeer en parkeren: Breed uitvragen, autostraat of fietstraat?, minder verkeer, maar toch parkeren voor de deur?, kiezen tussen groen en parkeren toevoegen, toevoegen deelauto's, waar ervaar je de meeste verkeersoverlast van. Bereidheid parkeerplaatsen naar groen. Verlichting voor verkeersveiligheid.
  - Openbare ruimte: Breed uitvragen, belangrijk. Bijv. bankjes, prettige wandelroutes/stoep, denk ook aan toegankelijkheid ouderen/ rolatoren/rolstoel.
  - Natuur en groen: Alleen ingaan op groen. Breed uitvragen. Terugkoppelen naar parkeren, ook koppeling met tuinen maken. Kijkgroen vanuit je huis. Toevoegen navragen dieren (vogels, vlinders, egels), bereidheid om op eigen terrein faciliteiten te doen. Bereidheid bijdragen aan onderhoud gemeentelijk groen.
  - Spelen en recreëren: Navragen of het huishouden kinderen heeft, en deze info gebruiken om later met kinderen een traject te nemen. Alleen algemeen zijn er goede mogelijkheden en de open vraag: wat is goed en niet goed. Veilige omgeving om in te spelen.
  - Voorzieningen/werk en werkgelegenheid/wonen: eruit.
  - Sociale contacten: Op de hoofdlijn uitvragen, vraag over contact buren (ook straatwhatsapp/facebookgroep/straatbbq/burendag), mogelijkheden zien voor gezamenlijke voorzieningen, open vraag over goede en verbeterpunten (wat wilt u verbeterd zien).
  - Identiteit: Burendeel is bij sociale contacten. Gedeelte positief tegen je buurt aankijken en of andere positief naar de buurt kijken (nodig je graag mensen uit)
  - Veiligheid: Op de hoofdlijn uitvragen, wel op licht ingaan.
  - Schoon en netjes: Breed uitvragen, in de huidige vorm al goede vragen, bereidheid om bij te dragen van bewoners uitvragen.
    - Later toevoegen bij de kinderlijst ook hoe kinderen dit zien en bereid om bij te dragen
  - Meedoen en meepraten: Breed uitvragen, belangrijk. Goed om in beeld te brengen hoe bewoners graag betrokken willen zijn bij de herinrichting van de straat. Hoe willen mensen participeren voor de verschillen fases (ontwerp, realisatie en beheer): informeren tot meebeslissen in werkgroep.
  - Achterkant: Telefoon en e-mail toevoegen, huishouden grootte, leeftijd, hoe lang men in de straat woont, autobezit, hondbezit, eventueel: opleiding en werkzaam of niet
- Wat mag eruit:
  - Voorzieningen(7), werk en werkgelegenheid(8)

- Openbaar vervoer (2) -> alleen deelmobiliteit, samentrekken met (3)
- wonen(9) -> eigen huis en tuin (???) – eventueel bij groen.

APPENDIX B: PLACE STANDARD TOOL (ADJUSTED)
PLACE STANDARD TOOL

Beweging

1.1 Ik kan gemakkelijk bewegen in de straat
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

1.2 De omgeving nodigt uit tot bewegen
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

1.3 Ga je op de fiets of te voet (eventueel gekoppeld aan het OV) naar het werk?
(Altijd, vaak, soms, nooit, weet niet/geen mening)

1.4 Ga je op de fiets of te voet naar het centrum of boodschappen doen?
(Altijd, vaak, soms, nooit, weet niet/geen mening)

1.5 Hoe vaak ga je een rondje wandelen in de nabije omgeving?
(Altijd, vaak, soms, nooit, weet niet/geen mening)

1.6 Hoeveel beweeg je gemiddeld per week in de nabije omgeving?
(Altijd, vaak, soms, nooit, weet niet/geen mening)

1.7 Er is genoeg ruimte om te wandelen en fietsen over de stoepen en/of straat.
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

1.8 Ik beweeg gemiddeld 30 minuten per dag
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

1.9 Waarom heb je deze scores gegeven? Toelichting score beweging? Wat gaat goed? Wat kan beter? De invloed van Covid-19 / lockdown?
(Open vraag)

Verkeer en Parkeringen

2.1 Ik ben tevreden over de verkeerssituatie en parkeervoorzieningen
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

2.2 Welke invloed heeft het verkeer op jou (je kunt hierbij denken aan veiligheid, toegankelijkheid, geluidsoverlast en luchtkwaliteit)?
(Open vraag)

2.3 Ben je in het bezit van een eigen auto?
(Ja, nee)

2.4 Er kan veilig geparkeerd worden in de straat
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

2.5 Ik zou eventueel parkeerplaatsen willen opgeven voor meer groen in de straat
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

2.6 Ik zou eventueel parkeerplaatsen willen opgeven als er een deelauto in de straat zou komen
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

2.7 Ik vind het belangrijk parkeerplekken voor de deur te hebben
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)
2.8 Waardoor ervaar je nu de meeste overlast van auto's in de straat?
(Open vraag)

2.9 Waarom heb je deze scores gegeven? Toelichting score verkeer en parkeren. Wat gaat goed? Wat kan beter? De invloed van Covid-19 / lockdown?
(Open vraag)

Openbare ruimte

3.1 Is de leefplek aantrekkelijk ingericht?
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

3.2 Hoe graag kom je in de straat?
(Open vraag)

3.3 Hoe aantrekkelijk vind je de straat 's avonds, tijdens verschillende seizoenen of bij slecht weer?
(Open vraag)

3.4 Ik vind de straat aantrekkelijk
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

3.5 Er zijn genoeg voet- en fietspaden
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

3.6 De voet- en fietspaden zijn van een goede kwaliteit (mooi, zonder gaten en losliggende tegels)
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

3.7 Er zijn voldoende bankjes en prullenbakken langs voet- en fietspaden om bijvoorbeeld even te zitten
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

3.8 Ik kan de voet- en fietspaden het hele jaar door overdag, 's avonds en 's nachts veilig gebruiken
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

3.9 Waarom heb je deze scores gegeven? Toelichting score openbare ruimte. Wat gaat goed? Wat kan beter? De invloed van Covid-19 / lockdown?
(Open vraag)

Natuur, groen, eigen huis en tuin

4.1 Kan ik genieten van voldoende natuur en groen?
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

4.2 Kun je van het groen en de natuur genieten in de straat? Zijn er dingen die dat verhinderen, zoals onveiligheid, geluidshinder of een slechte luchtkwaliteit?
(Open vraag)

4.3 Er is voldoende groen in de straat
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

4.4 Het groen in de straat is mooi en goed onderhouden
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

4.5 Meer ruimte voor groen of parkeren?
(Sterk voor ruimte voor groen, ruimte voor groen, neutraal, ruimte voor parkeren, sterk voor ruimte voor parkeren)

4.6 Ik verwacht dat ik in de toekomst meer behoefte heb aan natuur en groen
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

4.7 Ik blijf ook op deze plek wonen als mijn situatie verandert (bijvoorbeeld als je kinderen krijgt of juist alleen gaat wonen)
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

4.8 Ik wil in de toekomst meer dieren, vogels, vlinders en dergelijke in de straat zien
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

4.9 Ik sta ervoor open om in mijn tuin natuur en groen toe te voegen om het straatbeeld te vergroenen
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

4.10 Ik sta ervoor open om nestkastjes, vogelhuisjes of vleermuiskastjes bij mijn huis aan de voorgevel te hangen.
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

4.11 Ik sta ervoor open om samen met andere straatbewoners het groen in de straat te beheren.
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

4.12 Waarom heb je deze scores gegeven? Toelichting score natuur, groen, eigen huis en tuin. Wat gaat goed, Wat kan beter, De invloed Covid-19 / lockdown?
(Open vraag)

Spelen en recreatie

5.1 Zijn er goede mogelijkheden om buiten te spelen en te recreëren?
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

5.2 Er zijn genoeg mogelijkheden om te spelen of te recreëren voor jou en voor andere leeftijdsgroepen
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

5.3 De speel- en recreatieplekken zijn van een goede kwaliteit en goed onderhouden
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

5.4 Kinderen kunnen in de buurt van hun huis veilig buiten spelen
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

5.5 Waarom heb je deze scores gegeven? Toelichting score spelen en recreatie. Wat gaat goed, Wat kan beter, de invloed Covid-19 / lockdown?
(Open vraag)

Sociaal contact

6.1 Er zijn voldoende plekken en voorzieningen waar mensen elkaar kunnen ontmoeten
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

6.2 Op de volgende plekken kan ik anderen ontmoeten:
(open vraag)

6.3 Er zijn voldoende verschillende plekken om anderen kunt ontmoeten
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

6.4 Ik ken mijn buren
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

6.5 Ik wil mijn buren beter te leren kennen
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

6.6 Ik stimuleer zelf het contact tussen de bewoners van de straat
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

6.7 Wat is daarvoor nodig?
(Open vraag)

6.8 Kun je altijd gebruik maken van deze plekken (op verschillende tijdstippen en tijdens verschillende seizoenen en weersomstandigheden)?
(Open vraag)

6.9 Waarom heb je deze scores gegeven? Toelichting score sociaal contact. Wat gaat goed, Wat kan beter, de invloed Covid-19 / lockdown?
(Open vraag)

Identiteit

7.1 Ik voel me hier thuis
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

7.2 Ik heb een positief beeld van deze plek
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

7.3 Anderen denken positief over deze plek
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

7.4 Waarom heb je deze scores gegeven? Toelichting score identiteit. Wat gaat goed, Wat kan beter, de invloed Covid-19 / lockdown?
(open vraag)

Sociale veiligheid

8.1 Ik voel me hier veilig
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

8.2 De leefplek is het hele jaar door en op verschillende tijdstippen veilig
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

8.3 Ik voel me veilig omdat de straat goed verlicht is
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

8.4 Ik voel me veilig omdat de huizen en gebouwen bewoond zijn
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

8.5 Er is criminaliteit en asociaal gedrag in de straat
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

8.6 Waarom heb je deze scores gegeven? Toelichting score veiligheid. Wat gaat goed, Wat kan beter, de invloed Covid-19 / lockdown?
(Open vraag)

Schoon en netjes

9.1 De leefplek is schoon en netjes
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

9.2 De straten, pleinen, parken, voorzieningen en gebouwen worden goed onderhouden
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

9.3 Zwerfafval, vandalisme, hondenpoep zijn een probleem in de straat
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

9.4 Er zijn goede voorzieningen voor het ophalen, wegbrengen en de recycling van afval
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

9.5 Ik draag bij aan een nette en schone leefplek

(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

9.6 De buurtbewoners dragen bij aan een nette en schone leefplek
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

9.7 Ik ben bereid om te helpen bij het schoon en netjes houden van de straat
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

9.8 Waarom heb je deze scores gegeven? Toelichting score schoon en netjes. Wat gaat goed, Wat kan beter, de invloed Covid-19 / lockdown?
(Open vraag)

Meedoen en meepraten

10.1 Ik heb invloed op beslissingen en veranderingen in mijn straat
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

10.2 Is er een actieve bewonersvereniging?
(Ja, Nee)

10.3 Ik sta ervoor open om actief te worden via een bewonersverenging
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

10.4 Ik sta ervoor open om gebruik te maken van een buurtpreventieapp of een andere sociale applicatie
(Sterk mee eens, mee eens, mee oneens, zeer mee oneens, weet niet/geen mening)

10.5 Ik wil graag nauw betrokken zijn bij de herinrichting van de straat
(Ja, nee)

10.6 Ik wil deelnemen aan de volgende (online) bijeenkomst voor de herinrichting van de straat?
(Ja, nee)

10.7 Waarom heb je deze scores gegeven? Toelichting score meedoen en meepraten. Wat gaat goed, Wat kan beter, de invloed Covid-19 / lockdown?
(Open vraag)

Persoonlijke info

11.3 Grootte huishouden
(Open vraag)

11.4 Geboortejaar
(Open vraag)

11.5 Hoogst voltooide opleiding
(Open vraag)

11.6 Ik woon ..... jaar in de straat
(Open vraag)

11.7 Bezit u een auto?
(Ja, nee)

11.8 Bezit u een hond?
(Ja, nee)

11.9 Wil je betrokken blijven bij dit traject?
(Ja, nee)

11.12 Heeft u deze vragenlijst samen of alleen ingevuld?

(Alleen, samen)

11.13 Heeft u kinderen/kleinkinderen?
(Open vraag)

11.14 Wilt uw kind ook betrokken zijn bij het nadenken over de invulling van de straat?
(Ja, nee)

11.15 Ik sta open om mee te doen aan het Space2Move onderzoek (Ik stem toe met het delen van mijn contactgegevens met de onderzoekers van Space2Move ten behoeve van dit onderzoek)
(Ja, nee)

APPENDIX C: INTERVIEWGUIDE
TOPICGUIDE INTERVIEWS

- Introducerend
    - o Wie ben ik
    - o Doel onderzoek
    - o Wat gebeurt er met de gegevens/opname
    - o Tijdsduur: 45min-uur
    - o Structuur van het interview

- Startvraag:
    - o Voor profs: Hoe bent u betrokken bij dit project? Welke doelen zijn een belangrijk onderdeel van dit project?

    - o Voor bewoners:
        - ▪ Kunt u meer vertellen over hoe u nu woont: bijv. alleen of met een gezin?
        - ▪ Hoe blij bent u momenteel met de inrichting van uw straat?
        - ▪ Wat is voor u een belangrijk doel in de herinrichting van de straat?

- Leefplekmeter
    - o Ervaring leefplekmeter: compleetheid, duidelijkheid, …
    - o Welke invloed merkt u van uw/de woonomgeving op uw gezondheid?

- Situatieschets gezondheid als onderdeel van leefomgeving / gebiedsontwikkeling
    - o Ruimte voor beweging (mobiliteit, verkeer, bereikbaarheid, toegankelijkheid, groen, veiligheid)

    - o Sociaal contact & cohesie (contact in de buurt, speelplekken, voorzieningen in openbare ruimte, meebeslissen)

    - o Stress, rust en welzijn in de leefomgeving (groen, aantrekkelijke omgeving, thuis voelen, netjes)

Wat vindt u van?
Hoe ervaart u?
Hoe belangrijk vindt u?
Waarom?

- Acties
    - o Belangrijke actiepunten/ prioriteiten
    - o Verantwoordelijkheid

- Afronding

Verdiepingsvragen:
- Kunt u meer vertellen over…?
- Wat is belangrijk voor u in…?
- Waarom…?
- Wat gaat er goed…? Wat kan er beter…?
- Welke problemen komt u tegen?
- Wat vindt u van…? Wat denkt u over…?
- Hoe ziet u…?
- Wat is voor u het beste scenario…? … slechtste scenario…?
- Wat is het grootste voordeel…? Het grootste nadeel…?
- Wat was de laatste keer dat u…? Kunt u de laatste keer omschrijven dat u…?

APPENDIX D: CODE BOOKS
DEDUCTIVE CODE BOOK

Table 8

Code group	Category	Family/families	Code
Rationality	Individualism	Rationalities	RInd
	Egalitarianism	Rationalities	REga
	Hierarchism	Rationalities	RHie
	Fatalism	Rationalities	RFat
Health pathway	Reducing harm	Health pathways	PHar
	Restoring capacities	Health pathways	PRes
	Building capacities	Health pathways	PBui
Health domains	Physical activity	Health domains	PA
	Community interaction	Health domains	CI
		Third places	
	Psychosocial wellbeing	Connection and belonging	PSW
		Health domains	
		Pleasant living	
Urban characteristics	Distance and connectivity	Accessibility, distance and connectivity	Distan
	Accessibility	Accessibility, distance and connectivity	Access
	Mixed land-use	Mixed land-use – PA	MixLU
		Third Places	
	Safety	Interaction in neighborhood and public space	Safety
		Pleasant living	
		Safety of the built environment	
	Aesthetics and quality	Attractive street appearance	Aesth
		Pleasant living	
	Contextuality and diversity of the community	Contextuality and diversity of the community	Divers
	Green spaces	Attractive street appearance	Green
		Green space – PSW	
		Third places	

Community gardens	Attractive street appearance	Garden
	Green space – PSW	
	Pleasant living	
	Third Places	
Interaction in public space	Connection and belonging	IntAct
	Interaction in neighborhood and public space	
Availability of third places	Third places	3Place
Ownership	Comprehensibility and ownership	Owner
Comprehensibility	Comprehensibility and ownership	Compr
	Connection and belonging	

INDUCTIVE CODES

Code group	Category/ Code	Family/families
Urban characteristics	Alignment	Attractive street appearance
	Animal poo nuisance	Pleasant living
	Cafeteria	Third Places
	Calm street	Comprehensibility and ownership
		Safety of the built environment
	Car space	Attractive street appearance
		Green space
		Third Places
	Connection	Comprehensibility and ownership
		Connection and belonging
	Cut-through traffic	Safety of the built environment
	Degradation	Attractive street appearance
	Fast driving	Safety of the built environment
	Fauna	Green space - PSW
	Good housing	Attractive street appearance

		Pleasant living
	Litter	
	Livability	Attractive street appearance
		Connection and belonging
	Local events	Connection and belonging
		Interaction in neighborhood and public space
	Maintenance	Attractive street appearance
	Microclimate	Green Space – PSW
		Microclimate
	Multifunctional space	Mixed land-use - PA
	Noise nuisance	Pleasant living
	Odor nuisance	Pleasant living
	Pavement type	Attractive street appearance
	Playgrounds	Interaction in neighborhood and public space
		Third Places
	Satisfaction	Green space - PSW
	Streetlights	Attractive street appearance
	Sustainable innovations	Microclimate
	Waste facilities	
	Wide sidewalk	Attractive street appearance
		Interaction in neighborhood and public space
	Wide streetscape	Safety of the built environment
		Third Places
Other	"Wild Ideas"	Comprehensibility and ownership
	Awareness of the health-environment relation	Health pathways
	Determining priority	Rationalities
	Disadvantages of online participation	Comprehensibility and ownership
	Lack of technical knowledge in the public sector	
	Making a norm of the desired behavior	Rationalities
		Safety of the built environment
	Rapid impact contracting	Comprehensibility and ownership
	Reactive management	Rationalities
	Recreational Physical Activity/ Sports	

Responsibilities	Comprehensibility and ownership
Stimulating desired behavior	Rationalities
Subjective vs objective insights	Safety of the built environment
Trend to more engagement of experts/consultants	Comprehensibility and ownership
	Micro climate
Trend towards early engagement of residents	Comprehensibility and ownership
Trend towards more unorganized sports in public space	

APPENDIX E: STATISTICAL ANALYSES
STATISCAL ANALYSES

1. Active mobility

Statement: I can easily move around the street

In dutch: Ik kan gemakkelijk bewegen in de straat

Table 9

I can easily move around the street

Street		N	%
Topaasstraat	Strongly agree	5	16,7%
	Agree	18	60,0%
	Disagree	6	20,0%
	Don't know/no opinion	1	3,3%
van Peltlaan	Strongly agree	9	50,0%
	Agree	7	38,9%
	Disagree	1	5,6%
	Strongly disagree	1	5,6%

Statement: The surroundings invite me to move around

In dutch: De omgeving nodigt uit tot bewegen

Table 10

The surroundings invite me to move around

Street		N	%
Topaasstraat	Strongly agree	2	6,7%
	Agree	13	43,3%
	Disagree	12	40,0%
	Don't know/ no opinion	3	10,0%
van Peltlaan	Strongly agree	4	22,2%
	Agree	10	55,6%
	Disagree	2	11,1%
	Strongly disagree	1	5,6%
	Don't know/no opinion	1	5,6%

Cross tabulation & Chi-Square test: Inviting to move * Street

Table 11

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Street * Inviting to move	44	91,7%	4	8,3%	48	100,0%

Table 12

*Street * Inviting to move - Crosstabulation*

			Inviting to move		
			(strongly) agree	(Strongly) disagree	Total
Street	Topaasstraat	Count	15	12	27
		Expected Count	17,8	9,2	27,0
	Van Peltlaan	Count	14	3	17
		Expected Count	11,2	5,8	17,0
Total		Count	29	15	44
		Expected Count	29,0	15,0	44,0

Table 13

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3,334[a]	1	,068		
Continuity Correction[b]	2,248	1	,134		
Likelihood Ratio	3,524	1	,060		
Fisher's Exact Test				,104	,065
Linear-by-Linear Association	3,258	1	,071		
N of Valid Cases	44				

a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 5,80.

b. Computed only for a 2x2 table

Table 14

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	-,275	,068
	Cramer's V	,275	,068
N of Valid Cases		44	

Statement: How often do you take a stroll in the neighborhood
In Dutch: Hoe vaak ga je een rondje wandelen in de nabije omgeving

Table 15

How often do you take a stroll in the neighborhood

Street		N	%
Topaasstraat	Always	8	26,7%
	Often	9	30,0%
	Sometimes	11	36,7%
	Never	2	6,7%
Van Peltlaan	Always	4	22,2%
	Often	11	61,1%
	Sometimes	3	16,7%

Statement: There is enough room to walk and cycle on the sidewalks and street
In Dutch: Er is genoeg ruimte om te wandelen en om te fietsen op de stoep en/of de straat.

Table 16

There is enough room to walk and cycle on the sidewalks and street

Street		N	%
Topaasstraat	Strongly agree	4	13,3%
	Agree	21	70,0%
	Disagree	2	6,7%
	Strongly disagree	2	6,7%
	Don't know/ no opinion	1	3,3%
Van Peltlaan	Strongly agree	8	44,4%
	Agree	9	50,0%
	Disagree	1	5,6%

2. Traffic and parking

Statement: I would possibly give up parking spaces for more green space in the street
In dutch: Ik zou eventueel parkeerplaatsen willen opgeven voor meer groen in de straat

I would possibly give up parking spaces for more green space in the street

Street		Frequency	Percent	Valid Percent	Cumulative Percent
Topaasstraat	Strongly agree	2	6,7	6,7	6,7
	Agree	4	13,3	13,3	20,0
	Disagree	14	46,7	46,7	66,7
	Strongly disagree	8	26,7	26,7	93,3

	Don't know/ no opinion	2	6,7	6,7	100,0
	Total	30	100,0	100,0	
van Peltlaan	Strongly agree	3	16,7	16,7	16,7
	Agree	5	27,8	27,8	44,4
	Disagree	8	44,4	44,4	88,9
	Strongly disagree	2	11,1	11,1	100,0
	Total	18	100,0	100,0	

3. Public space in the street

Statement: The street looks attractive to me
In dutch: Ik vind de straat aantrekkelijk

Table 17

The street looks attractive to me

Street		N	%
Topaasstraat	Strongly agree	1	3,3%
	Agree	12	40,0%
	Disagree	12	40,0%
	Strongly disagree	5	16,7%
Van Peltlaan	Strongly agree	1	5,6%
	Agree	15	83,3%
	Disagree	2	11,1%

Cross tabulation & Chi Square Test: Inviting to move * Attractive street

Table 18
Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Uitnodigen tot bewegen * Aantrekkelijkheid straat	44	91,7%	4	8,3%	48	100,0%

Table 19
*Crosstabulation Inviting to Move * Attractive street*

			Attractive street		Total
			(strongly) agree	(strongly) disagree	
Inviting to move	(strongly) agree	Count	23	6	29
		Expected Count	18,5	10,5	29,0
	(strongly) disagree	Count	5	10	15

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		Expected Count	9,5	5,5	15,0
Total		Count	28	16	44
		Expected Count	28,0	16,0	44,0

Table 20

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	9,031[a]	1	,003		
Continuity Correction[b]	7,154	1	,007		
Likelihood Ratio	9,018	1	,003		
Fisher's Exact Test				,007	,004
Linear-by-Linear Association	8,826	1	,003		
N of Valid Cases	44				

a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 5,45.

b. Computed only for a 2x2 table

Table 21

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	,453	,003
	Cramer's V	,453	,003
N of Valid Cases		44	

Statement: The sidewalks and street is of good quality (aesthetically, no holes or loose tiles)

In dutch: De voet- en fietspaden zijn van een goede kwaliteit (mooi, zonder gaten en losliggende tegels)
Table 22

Table 23

The sidewalks and street are of good quality

Street		N	%
Topaasstraat	Strongly agree	1	3,3%
	Agree	6	20,0%
	Disagree	15	50,0%
	Strongly disagree	8	26,7%
van Peltlaan	Strongly agree	2	11,1%
	Agree	3	16,7%
	Disagree	11	61,1%
	Strongly disagree	2	11,1%

4. Natural public spaces and private gardens

Statement: There's enough green in the street
In Dutch: Er is voldoende groen in de straat.

Table 24

There's enough green in the street

Street		Frequency	Percent	Valid Percent	Cumulative Percent
Topaasstraat	Strongly agree	2	6,7	6,7	6,7
	Agree	14	46,7	46,7	53,3
	Disagree	10	33,3	33,3	86,7
	Strongly disagree	4	13,3	13,3	100,0
	Total	30	100,0	100,0	
van Peltlaan	Strongly agree	1	5,6	5,6	5,6
	Agree	8	44,4	44,4	50,0
	Disagree	8	44,4	44,4	94,4
	Strongly disagree	1	5,6	5,6	100,0
	Total	18	100,0	100,0	

Statement: I'm available to maintain public green space together with neighbors
In Dutch: Ik sta ervoor open om samen met andere straatbewoners het groen in de straat te beheren.

Table 25

Ik sta ervoor open om samen met andere straatbewoners het groen in de straat te beheren.

Street		Frequency	Percent	Valid Percent	Cumulative Percent
Topaasstraat	Strongly agree	3	10,0	10,0	10,0
	Agree	9	30,0	30,0	40,0
	Disagree	13	43,3	43,3	83,3
	Strongly disagree	3	10,0	10,0	93,3
	Don't know/ no opinion	2	6,7	6,7	100,0
	Total	30	100,0	100,0	
van Peltlaan	Strongly agree	1	5,6	5,6	5,6
	Agree	8	44,4	44,4	50,0
	Disagree	5	27,8	27,8	77,8
	Don't know/ no opinion	4	22,2	22,2	100,0
	Total	18	100,0	100,0	

5. Play and recreation

Statement: Children can play safely near their houses
In Dutch: Kinderen kunnen in de buurt van hun huis veilig buiten spelen

Table 26

Children can play safely near their houses

Street		N	%
Topaasstraat	Strongly agree	1	3,3%
	Agree	10	33,3%
	Disagree	11	36,7%
	Strongly disagree	5	16,7%
	Don't know/ no opinion	3	10,0%
van Peltlaan	Agree	10	55,6%
	Disagree	3	16,7%
	Strongly disagree	1	5,6%
	Don't know/ no opinion	4	22,2%

Statement: There are good options to play and recreationally use outside
In dutch: Er zijn goede mogelijkheden om buiten te spelen en te recreëren

Table 27

There are good options to play and recreationally use outside

Street		N	%
Topaasstraat	Strongly agree	1	3,3%
	Agree	9	30,0%
	Disagree	9	30,0%
	Strongly disagree	3	10,0%
	Don't know/ no opinion	8	26,7%
van Peltlaan	Agree	12	66,7%
	Disagree	5	27,8%
	Don't know/ no opinion	1	5,6%

6. Social interaction

Statement: I know my neighbors
In Dutch: Ik ken mijn buren

Table 28

I know my neighbors

Street		Frequency	Percent
Topaasstraat	Sterk mee eens	13	43,3

	Mee eens	17	56,7
	Total	30	100,0
van Peltlaan	Sterk mee eens	3	16,7
	Mee eens	14	77,8
	Sterk mee oneens	1	5,6
	Total	18	100,0

Statement: I would like to know my neighbors better
In Dutch: Ik wil mijn buren beter leren kennen

Table 29
I would like to know my neighbors better

Street		Frequency	Percent
Topaasstraat	Strongly agree	3	10,0
	Agree	8	26,7
	Disagree	14	46,7
	Strongly disagree	1	3,3
	Don't know/ no opinion	4	13,3
	Total	30	100,0
van Peltlaan	Strongly agree	2	11,1
	Agree	4	22,2
	Disagree	10	55,6
	Strongly disagree	1	5,6
	Don't know/ no opinion	1	5,6
	Total	18	100,0

Statement: There are plenty of different places to meet others
In Dutch: Er zijn voldoende verschillende plekken om anderen te ontmoeten

Table 30
There are plenty of different places to be able to meet others

Street		N	%
Topaasstraat	Strongly agree	2	6,7%
	Agree	9	30,0%
	Disagree	9	30,0%
	Strongly disagree	3	10,0%
	Don't know/ no opinion	7	23,3%
	Total	30	100,0%
van Peltlaan	Sterk mee eens	2	11,1%
	Mee eens	6	33,3%
	Mee oneens	10	55,6%

	Total	18	100,0%		

7. Identity and belonging

Statement: I'm feeling at home here
In Dutch: Ik voel me hier thuis

Table 31

I'm feeling at home here

Street		Frequency	Percent	Valid Percent	Cumulative Percent
Topaasstraat	Strongly agree	9	30,0	30,0	30,0
	Agree	21	70,0	70,0	100,0
	Total	30	100,0	100,0	
van Peltlaan	Strongly agree	8	44,4	44,4	44,4
	Agree	9	50,0	50,0	94,4
	Disagree	1	5,6	5,6	100,0
	Total	18	100,0	100,0	

Statement: I have a positive idea about this place
In Dutch: Ik heb een positief beeld van deze plek

Table 32

I have a positive idea about this place

Street		Frequency	Percent	Valid Percent	Cumulative Percent
Topaasstraat	Strongly agree	9	30,0	30,0	30,0
	Agree	20	66,7	66,7	96,7
	Don't know/ no opinion	1	3,3	3,3	100,0
	Total	30	100,0	100,0	
van Peltlaan	Strongly agree	9	50,0	50,0	50,0
	Agree	9	50,0	50,0	100,0
	Total	18	100,0	100,0	

8. Feeling safe

Statement: I'm feeling safe here
In Dutch: Ik voel me hier veilig

Table 33

I'm feeling safe here

Street		Frequency	Percent	Valid Percent	Cumulative Percent
Topaasstraat	Strongly agree	5	16,7	16,7	16,7
	Agree	22	73,3	73,3	90,0
	Disagree	3	10,0	10,0	100,0
	Total	30	100,0	100,0	
van Peltlaan	Strongly agree	5	27,8	27,8	27,8
	Agree	12	66,7	66,7	94,4
	Disagree	1	5,6	5,6	100,0
	Total	18	100,0	100,0	

Statement: This place is safe all year through and on different times of the day

In Dutch: De leefplek is het hele jaar door en op verschillende tijdstippen veilig

Table 34

This place is safe all year through and on different times of the day

Street		Frequency	Percent	Valid Percent	Cumulative Percent
Topaasstraat	Strongly agree	3	10,0	10,0	10,0
	Agree	19	63,3	63,3	73,3
	Disagree	5	16,7	16,7	90,0
	Strongly disagree	1	3,3	3,3	93,3
	Don't know/ no opinion	2	6,7	6,7	100,0
	Total	30	100,0	100,0	
van Peltlaan	Strongly agree	5	27,8	27,8	27,8
	Agree	11	61,1	61,1	88,9
	Disagree	2	11,1	11,1	100,0
	Total	18	100,0	100,0	

Statement: There is crime and anti-social behavior in the street

In Dutch: Er is criminaliteit en asociaal gedrag in de straat

Table 35

There is crime and anti-social behavior in the street

Street		Frequency	Percent	Valid Percent	Cumulative Percent
Topaasstraat	Agree	4	13,3	13,3	13,3
	Disagree	22	73,3	73,3	86,7
	Strongly disagree	2	6,7	6,7	93,3
	Don't know/ no opinion	2	6,7	6,7	100,0
	Total	30	100,0	100,0	

Street		Frequency	Percent	Valid Percent	Cumulative Percent
van Peltlaan	Agree	2	11,1	11,1	11,1
	Disagree	12	66,7	66,7	77,8
	Strongly disagree	4	22,2	22,2	100,0
	Total	18	100,0	100,0	

9. Cleanness, care and maintenance

Statement: The place is clean and tidy
In Dutch: De leefplek is schoon en netjes

Table 36

The place is clean and tidy

Street		Frequency	Percent	Valid Percent	Cumulative Percent
Topaasstraat	Strongly agree	3	10,0	10,0	10,0
	Agree	22	73,3	73,3	83,3
	Disagree	5	16,7	16,7	100,0
	Total	30	100,0	100,0	
van Peltlaan	Strongly agree	4	22,2	22,2	22,2
	Agree	13	72,2	72,2	94,4
	Disagree	1	5,6	5,6	100,0
	Total	18	100,0	100,0	

Statement: Litter, vandalism, dog shit are a problem in the street
In Dutch: Zwerfafval, vandalisme, hondenpoep zijn een probleem in de straat

Table 37

Litter, vandalism, dog shit are a problem in the street

Street		Frequency	Percent	Valid Percent	Cumulative Percent
Topaasstraat	Strongly agree	1	3,3	3,3	3,3
	Agree	7	23,3	23,3	26,7
	Disagree	19	63,3	63,3	90,0
	Strongly disagree	3	10,0	10,0	100,0
	Total	30	100,0	100,0	
van Peltlaan	Strongly agree	1	5,6	5,6	5,6
	Agree	4	22,2	22,2	27,8
	Disagree	11	61,1	61,1	88,9
	Strongly disagree	2	11,1	11,1	100,0
	Total	18	100,0	100,0	

10. Influence and sense of control

Statement: I would like to be closely involved in the redesign of the street
In Dutch: Ik wil graag nauw betrokken zijn bij de herinrichting van de straat

Table 38

I would like to be closely involved in the redesign of the street

Street			Frequency	Percent	Valid Percent	Cumulative Percent
Topaasstraat	Yes		21	70,0	72,4	72,4
	No		8	26,7	27,6	100,0
	Total		29	96,7	100,0	
	Missing	9999	1	3,3		
	Total		30	100,0		
van Peltlaan	Yes		15	83,3	83,3	83,3
	No		3	16,7	16,7	100,0
	Total		18	100,0	100,0	

Cross tabulation & Chi Square Test: Would like to know my neighbors better * Would like to be closely involved in the redesign of the street

Table 39

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Would like to know my neighbors better * Would like to be closely involved in the redesign of the street	42	87,5%	6	12,5%	48	100,0%

Table 40

*Would like to know my neighbors better * Would like to be closely involved in the redesign of the street - Crosstabulation*

			Closely involved?		Total
			Yes	No	
Would like to know my neighbors better	(strongly) agree	Count	17	0	17
		Expected Count	13,8	3,2	17,0

(strongly) disagree	Count	17	8	25	
	Expected Count	20,2	4,8	25,0	
Total	Count	34	8	42	
	Expected Count	34,0	8,0	42,0	

Table 41

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	6,720[a]	1	,010		
Continuity Correction[b]	4,805	1	,028		
Likelihood Ratio	9,557	1	,002		
Fisher's Exact Test				,013	,009
Linear-by-Linear Association	6,560	1	,010		
N of Valid Cases	42				

a. 2 cells (50,0%) have expected count less than 5. The minimum expected count is 3,24.

b. Computed only for a 2x2 table

Table 42

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	,400	,010
	Cramer's V	,400	,010
N of Valid Cases		42	