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NATURE 4 DEM.

STUDENT INFORMATION

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Date: 2016, 29 July
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MASTER THESIS RESEARCH ABOUT THE SPATIAL SELECTION CRITERIA OF PERSONS WITH DEMENTIA DURING A PERSONALLY CHOSEN NATURE ACTIVITY

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SPECIAL THANKS TO

PREFACE

“

STUDYING THIS
EXPERIENCES I W

Dear reader,

Here it is, the final version of my master thesis about the spatial use of persons with dementia during nature activities. It was interesting to carry out this research in these times of social unrest in Dutch health care. Health care institutions are under a lot of pressure, the main focus lies on the quality of life of their patients. Doing this research has been really rewarding as we had a lot of fun during fulfilling the activities. Therefore, I am really proud to present the final version.

Writing a thesis is a process, so I would like to thank a few people. Firstly I would like to thank my supervisor from the Radboud University, Rianne van Melik. Her critic view towards my progress, combined with the almost therapeutic conversations we had about my personal development, helped me taking this thesis to a next level. Her advice motivated me to be critical and reflective of my own work. Secondly I would like to thank NAHF and especially Debby Gerittsen, my daily supervisor at Radboud

University Medical Center. Although I did not have any experience in working with persons with dementia, they allowed me to become a member of this research team. Their confidence and trust in both my working and research skills helped me to succeed, independently and ready to take responsibilities but supported and guided by an experienced researcher. Lastly, I also would like to thank my parents, who supported me always. Their trust really gave me self-confidence that made me able to finish this thesis.

This master thesis is the final work of my master year at the Radboud University. Studying this master brought me the knowledge and experiences I will need for my further career, and I am really looking forward to working in this interesting field of human geographies.



**MASTER BROUGHT ME THE KNOWLEDGE AND
/ILL NEED FOR MY FURTHER CAREER.**

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SUMMARY



The number of persons with dementia is increasing; currently there are 260.000 people with dementia and in 2050 this will increase up to more than half a million (Alzheimer Nederland, 2015). Dementia is the second most expensive disease in the Netherlands, estimated costs: 4,8 billion Euros a year (RIVM, 2014). Furthermore, dementia is a disease that is mostly found in elderly people, which could predict that these numbers will increase further in the near future. Although there is no cure for dementia, nature can affect people with dementia positively. Positive effects of nature are scientifically proved in health and well-being (Kaplan, 1995). Nature could play an important part in reducing the effects of dementia that can be experienced as problematic by the patients as well as by caregivers and professionals. It is stated that problematic behavior by persons with dementia can easily be caused by environmental factors (Centre of Consultation and Expertise, n.d.). The model of the Centre of consultation and Expertise about problematic behavior in dementia care shows an interaction between social and physical environments and (problematic) behavior of a person with dementia. These interactions of environmental factors towards behavior are starting point of this research.

RESEARCH QUESTION

How do persons with dementia use their environment during a personally chosen outdoor activity and how do these selection criteria influence their behavior during the activity?

THEORETICAL FRAMEWORK

The focus during this research lies on the use of outdoor spaces by persons with dementia during a personally chosen nature activity and what are their spatial selection criteria in this to prevent lost. The preparatory research by Hendriks et. Al (2016) provides important arguments for the possible impact of nature and being outdoors on the wellbeing of people with dementia, though little is known about how to translate the influences of these physical and social environmental factors into personalized activities that are optimally attuned to people's preferences, wishes, abilities and nature experiences. People with dementia are hyper sensitive to stimuli in their physical environment (Verbraeck& Van der Plaats, 2012). The key elements of Lynch help to understand the perceived physical environment. The elements Lynch(1960) uses, are paths, landmarks, edges, districts and nodes. The theoretical elements of Lynch do not take into account the different constraints dementia patients might be dealing with. The concepts of physical constraints of Hägerstrand, described as capability, coupling and authority constraints, were added to the theoretical framework. The last few years health care started to change the approach of given care into person-centered or personalized care. One of the key elements in personalized dementia care is: ' a positive social environment in which the person living with dementia can experience relative wellbeing' (Brooker, 2004, p. 216). Relationships are the key to therapeutic growth and change. As verbal communication abilities are lost or losing, the importance of warm, accepting human contact through non-verbal communication becomes even more important than before (Brooker, 2004).

METHODS

The research methods to collect the data that were used are participatory observation combined with in-depth interviews, because this collaboration creates an in-depth understanding of both physical and human phenomena (Clifford, French and Valentine, 2010) of spatial criteria of people with dementia, and not a generalized result. Five health care institutions in the Netherlands participated in this study. To create a wide range of different characteristics, a diverse group of dementia patients

in different stages of the disease was selected and so the study included one meeting center, two day cares and two long-term care institutions with closed departments. In total there are 30 participants in this research, 15 persons with dementia and 15 persons that joined the activity like professionals, caregivers or volunteers. Inductive content analysis is used as method for analyzing. This is an approach within qualitative content analysis and has been used for example in studies of the environment that support well-being of older people (Juvani et al. 2005). Therefore qualitative content analysis seems to be the best method to analyse the collected data in order to answer the research question properly while this method is more often used in environmental studies with elderly people.

RESULTS PHYSICAL ENVIRONMENT

1. Persons with dementia use organically based objects, like flowers, trees and animals as landmarks. This is remarkable while persons without a brain damage easily use the built environment for their orientation.
2. Soil influences making decisions. Changing soil during the activity caused feelings of hesitation in continuing the activity. The soil is also important for the type of experience during the activity, while asphalt creates different experiences than walking on grass.
3. Making decisions about the route and how to continue are highly dependent on the carer and the experiences in working with persons with dementia.
4. Tools that help to fulfill the activity in a pleasant way have to be considered well before starting the activity. A tool like a wheelchair can truly help people with dementia to relax but at the same time a tool can cause irritated feelings when the tool is not used in a proper way.

RESULTS SOCIAL ENVIRONMENT

1. Persons with dementia are especially looking for personal, one on one, attention, while spreading attention is difficult for persons with dementia. Although persons with dementia are looking for social contact, their social contacts are decreasing as the dementia worsens according to persons with dementia themselves in the interviews. This is mainly caused by a combination of lacking verbal communication and the lacking knowledge in other approach than verbal of the person without dementia.
2. All participants that joined the activity confirmed that the activity helped them with being in contact with the person with dementia. Some even argue that providing activities like this can support other persons to visit the patient more frequently because of the increasing ability to have contact.

CONCLUSION

This study serves as a window to an understanding of the process of how spatial elements influence the behavior of persons with dementia during a personally chosen nature activity. Persons with dementia select the outdoor environment by the physical elements of paths, nodes, and landmarks and are mostly constraint by capability and authority constraints, which are all strongly influenced by the behavior of persons that join the activity. The arguments given above prove that the physical environment is selected mostly by the elements than by persons without a brain damage, but the interpretation of these elements works out differently. Thereby the role of the social environment as part of the physical environment has to be taken very seriously as well. Dementia patients might be lacking in verbal communication, which is a named reason to not fulfill activities like this. Persons with dementia are looking for social contact and nature activities like the ones carried out during this study, activities like done in this study are able to easily stimulate communication and they might increase the frequency of fulfilling activities like this.

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EXTRA INFORMATION: DEMENTIA, THE DISEASE

To read this master thesis within a proper understanding, it is important to understand what dementia is. This chapter explains how the process of dementia expires, which symptoms are associated with this disease and what are lived experiences of persons with dementia in their daily acting. The information given in this chapter contributes to the understanding of the perception of persons with dementia and to make well considered choices that contribute to this study about the spatial selection criteria of persons with dementia.

WHAT IS DEMENTIA?

Dementia is a general term for a decline in mental ability severe enough to interfere with daily life (Alzheimer Association, 2016a).

Dementia is not a specific disease but a collective name for over fifty different diseases. 'It is an overall term that describes a wide range of symptoms associated with a decline in memory or other thinking skills severe enough to reduce a person's ability to perform everyday activities' (Alzheimer Association, 2016a). Alzheimer's disease accounts for 60 to 80 percent of cases. Vascular dementia, which occurs after a stroke, is the second most common dementia type.

Dementia is characterized by memory impairment; however, it is something else than just forgetfulness. To diagnose dementia, memory impairment should be accompanied by disorders such as the inability of cognitive skills to use language, to understand or to be understood, inability to carry out controlled activities, inability to identify objects or the inability to not quick to plan and switch between different acts. In addition to these disorders, the disease can also be associated with anxiety, confusion, depression, restlessness, hallucinations, delusions, insomnia and decreased appetite (Deelman et al., 2007).

TYPES OF DEMENTIA

In this paragraph the three most common types of dementia and their symptoms are described.

Alzheimer's disease

Alzheimer's disease is the most common form of dementia. Alzheimer's disease accounts for an estimated 60 to 80 percent of cases.

'Symptoms: Difficulty remembering recent conversations, names or events is often an early clinical symptom; apathy and depression are also often early symptoms. Later symptoms include impaired communication, poor judgment, disorientation, confusion, behavior changes and difficulty speaking, swallowing and walking.

Brain changes: Hallmark abnormalities are deposits of the protein fragment beta-amyloid (plaques) and twisted strands of the protein tau (tangles) as well as evidence of nerve cell damage and death in the brain.'

Source: (Alzheimer Association, 2016b)

Vascular dementia

Vascular dementia is the collective name for dementia that occurs as a result of a disturbance in the blood supply in the brains. This causes a damage of the brain tissue which will die off. Vascular dementia is a less common form of dementia than Alzheimer's disease, accounting for 10 percent of dementia cases.

'Symptoms: Impaired judgment or ability to make decisions, plan or organize is more likely to be the initial symptom, as opposed to the memory loss often associated with the initial symptoms of Alzheimer's. Occurs from blood vessel blockage or damage leading to infarcts (strokes) or bleeding in the brain. The location, number and size of the brain injury determine how the individual's thinking and physical functioning are affected.

Brain changes: Brain imaging can often detect blood vessel problems implicated in vascular dementia. In the past, evidence for vascular dementia was used to exclude a diagnosis of Alzheimer's disease (and vice versa). That practice is no longer considered consistent with pathologic evidence, which shows that the brain changes of several types of dementia can be present

simultaneously. When any two or more types of dementia are present at the same time, the individual is considered to have “mixed dementia” (see entry below).’

Source: (Alzheimer Association, 2016b)

Dementia with Lewy Bodies

Lewy body dementia is characterized by fluctuations associated with decline in mental functioning and presence of a number of symptoms of Parkinson’s disease. Dementia with Lewy Bodies can cause dementia itself, or it can be a combination of Alzheimer’s disease and/or Vascular dementia. When this happens it is known as a form of ‘mixed dementias’.

‘Symptoms: People with dementia with Lewy bodies often have memory loss and thinking problems common in Alzheimer’s, but are more likely than people with Alzheimer’s to have initial or early symptoms such as sleep disturbances, well-formed visual hallucinations, and slowness, gait imbalance or other parkinsonian movement features.

Brain changes: Lewy bodies are abnormal aggregations (or clumps) of the protein alpha-synuclein. When they develop in a part of the brain called the cortex, dementia can result. Alpha-synuclein also aggregates in the brains of people with Parkinson’s disease, but the aggregates may appear in a pattern that is different from dementia with Lewy bodies.’

Source: (Alzheimer Association, 2016b)

STAGES OF DEMENTIA

There is no cure for dementia and so the processes will worsen over time. Dr. Reisberg (1982) developed an often-used scale in health care to describe the different stages of dementia named the Global Deterioration Scale, also known as GDS. This model provides caregivers an overview of the stages of cognitive functioning of those suffering from dementia. Caregivers can estimate a stage and monitor decline by observing individual’s behavioral acting and compare them to the GDS. There are seven different stages. 1-3 are pre-dementia, stages 4-7 are the dementia stages. When a person shows characteristics of dementia stage 5, a person is no longer able to live without assistance.

Level	Name	Clinical characteristics
1	No cognitive decline	No subjective complaints of memory deficit. No memory deficit evident on clinical interview.
2	(Age Associated Memory Impairment)	Subjective complaints of memory deficit, most frequently in following areas: (a) forgetting where one has placed familiar objects; (b) forgetting names one formerly knew well. No objective evidence of memory deficit on clinical interview. No objective deficits in employment or social situations. Appropriate concern with respect to symptomatology.
3	Mild Cognitive Impairment	Earliest clear-cut deficits. Manifestations in more than one of the following areas: (a) patient may have gotten lost when traveling to an unfamiliar location; (b) co-workers become aware of patient’s relatively poor performance; (c) word and name finding deficit becomes evident to intimates; (d) patient may read a passage or a book and retain relatively little material; (e) patient may demonstrate decreased facility in remembering names upon introduction to new people; (f) patient may have lost or misplaced an object of value; (g) concentration deficit may be evident on clinical testing. Objective evidence of memory deficit obtained only with an intensive interview. Decreased performance in demanding employment and social settings. Denial begins to become manifest in patient. Mild to moderate anxiety accompanies

4	Mild Dementia	symptoms. Clear-cut deficit on careful clinical interview. Deficit manifest in following areas: (a) decreased knowledge of current and recent events; (b) may exhibit some deficit in memory of one's personal history; (c) concentration deficit elicited on serial subtractions; (d) decreased ability to travel, handle finances, etc. Frequently no deficit in following areas: (a) orientation to time and place; (b) recognition of familiar persons and faces; (c) ability to travel to familiar locations. Inability to perform complex tasks. Denial is dominant defense mechanism. Flattening of affect and withdrawal from challenging situations frequently occur.
5	Moderate Dementia	Patient can no longer survive without some assistance. Patient is unable during interview to recall a major relevant aspect of their current lives, e.g., an address or telephone number of many years, the names of close family members (such as grandchildren), the name of the high school or college from which they graduated. Frequently some disorientation to time (date, day of week, season, etc.) or to place. An educated person may have difficulty counting back from 40 by 4s or from 20 by 2s. Persons at this stage retain knowledge of many major facts regarding themselves and others. They invariably know their own names and generally know their spouses' and children's names. They require no assistance with toileting and eating, but may have some difficulty choosing the proper clothing to wear.
6	Moderately Severe Dementia	May occasionally forget the name of the spouse upon whom they are entirely dependent for survival. Will be largely unaware of all recent events and experiences in their lives. Retain some knowledge of their past lives but this is very sketchy. Generally unaware of their surroundings, the year, the season, etc. May have difficulty counting from 10, both backward and, sometimes, forward. Will require some assistance with activities of daily living, e.g., may become incontinent, will require travel assistance but occasionally will be able to travel to familiar locations. Diurnal rhythm frequently disturbed. Almost always recall their own name. Frequently continue to be able to distinguish familiar from unfamiliar persons in their environment. Personality and emotional changes occur. These are quite variable and include: (a) delusional behavior, e.g., patients may accuse their spouse of being an impostor, may talk to imaginary figures in the environment, or to their own reflection in the mirror; (b) obsessive symptoms, e.g., person may continually repeat simple cleaning activities; (c) anxiety symptoms, agitation, and even previously nonexistent violent behavior may occur; (d) cognitive abulia, i.e., loss of willpower because an individual cannot carry a thought long enough to determine a purposeful course of action.
7	Severe Dementia	All verbal abilities are lost over the course of this stage. Frequently there is no speech at all - only unintelligible utterances and rare emergence of seemingly forgotten words and phrases. Incontinent of urine, requires assistance toileting and feeding. Basic psychomotor skills, e.g., ability to walk, are lost with the progression of this stage. The brain appears to no longer be able to tell the body what to do. Generalized rigidity and developmental neurologic reflexes are frequently present.

Source: Reisberg et. Al, 1982, p. 1137

DEMENTIA AND ENVIRONMENTAL EXPERIENCES

Perception is the way a person experiences something based on the level of functioning of this or their brains. (Van der Plaats & Verbraek, 2012). Functioning of the brain can be divided into four levels:

1. Sensory experiences: seeing, tasting, feeling, smelling and hearing;
2. Simple emotional expressions: Angry, afraid, sad and happy feelings;
3. Emotional awareness: recognition, properly dealing with emotions;

4. Full awareness: making choices, reacting, taking responsibilities, feeling complex emotions and having sense of time.

Within an average period of seven years, the brain function from a person with dementia will decline from level four to level two. This decline is influenced by stress experiences, in particular the once experienced because of a disruption of impulse balance. Positive environmental stimulations can ensure that a person with dementia still functions normally for a long time. Thereby, there are examples of persons with dementia with a functioning level of two that lived in a proper environment, the brain functioning increased into level three. An environment with the right level of stimulation allows both the sufferer and the caregiver a pleasant lead [Van der Plaats & Verbraek, 2008]

The right environment creates a positive stimulation of the brains, a positive perception and adaptive behavior. Nillesen and Optiz (2013) provide an overview of the most important aspects of the environmental stimulations of a person with dementia that influence behavior.

Orientation and clarity

- Orientation and organization are becoming increasingly problematic.

Autonomy

- Reflection towards personal behavior or actions is not possible anymore;
- Common acts of the past are not expired more aware but more imitated, familiar patterns are unconsciously repeated;
- Reflect on 'the other' is important, also known as copying behavior.

Domesticity

- Objects of the past are sometimes recognized, modern objects are not more; also familiar objects can cause unsecure feelings.

Sensory comprehensibility

- The cognitive ability (the ability to incorporate and process knowledge) is greatly reduced;
- A demented brain cannot tickle themselves but need stimuli that are handed. This can be done by moving images, view on a busy street and noise for example;
- Multiple stimuli can not be processed simultaneously, one stimulus is sufficient;
- The awareness of 'behind me' is gone. Someone with dementia cannot place movements or sounds behind and experiences therefore often acts like this as distracting or confusing.

Movement area

- Restless behavior increases. This can have several causes: boredom or urge to move. This unrest may be disruptive for other patients.

It is remarkable that almost all aspects that have a bearing on the behavior of someone with dementia can be related to the need to be recognizable. In a familiar environment, a person with dementia experiences positive stimuli, a sense of home.

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1. INTRODUCTION

The number of persons with dementia is increasing; currently there are 260.000 people with dementia and this number will increase up to more than half a million in 2050 (Alzheimer Nederland, 2015). Dementia is the second most expensive disease in the Netherlands, estimated costs: 4,8 billion Euros a year (RIVM, 2014). Thereby dementia is a disease that is mostly found in elderly people, which could predict that these numbers will increase further in the near future. On average three people take care of each person with dementia, this would mean that almost 10% of the Dutch population are either suffering from dementia or are caring for someone with dementia (PGraad, 2015).

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1.1 PROJECTCASE

Nature can play a vital role in human well-being (Maller et al. 2005; Kaplan, 1995). Although there is no cure for dementia, nature can affect people with dementia positively. Positive effects of nature are scientifically proved in health and well-being (Kaplan, 1995). Nature could play an important part in reducing the effects of dementia that can be experienced as problematic by the patients as well as by caregivers and professionals. Those effects are aggression, agitation, forgetfulness, loneliness, depression, social isolation and overburden of carers (Alzheimer Nederland, n.d.).

"Nature and outdoor spaces may thus be important for persons with dementia and improve their wellbeing. However, nature is often not easily available for people with dementia living in a nursing home or it is underused for different reasons, such as a non-supportive organizational policy or the lack of provision of activities that are meaningful to persons with dementia."

[Hendriks, van Vliet, Gerritsen & Dröes, 2016, p. 12]

In a preparatory explorative research, executed by Hendriks et al. (2016), results confirm that nature can provide several therapeutic benefits for people with dementia. This research introduced and developed a decision tool to create an understanding in personal preferred nature activities for people with dementia. This tool is based on different benefits nature can offer.

"One of these benefits is sensory experience, as nature is an excellent source of multi-sensory stimulation. Nature activities can provide pleasant and meaningful feelings and restore or maintain a sense of self. Although the evidence base in dementia care is still quite small, a recent review of Gonzalez and Kirkevold on sensory gardens and horticultural activities is very insightful."

[in Hendriks et. Al., 2016, p.12]

As written in the additional chapter about dementia (P. VIII), the functioning of the brain decreases from full awareness to only having sensory experiences when the disease processes. Besides the above named results, nature can offer an extra opportunity to fulfill individual needs and wishes as an addition to traditional activities in dementia care. It is important to manage behavior and emotional dysregulations according to the need-driven dementia-compromised behavior model (Algase et al, 1996 in Hendriks et al, 2016). Therefore, more knowledge is needed on environmental selection and how this influences behavior during a personal chosen nature activity. Behavioral acting of persons with dementia is strongly influenced by external factors like the environment, more than internal factors like feelings (Van der Plaats & Verbraeck, 2012). The Centre of Consultation and Expertise [n.d.] developed a circle model towards problematic behavior of persons with dementia. They state that problematic behavior by persons with dementia can be easily caused by environmental factors. The model shows an interaction between social and physical environments and [problematic] behavior of a person with dementia. These interactions of environmental factors towards behavior were the starting point of this research.

This master thesis research in order of the successor research of UKON, VUmc and the Nature Health Assisted Foundation (NAHF) by Hendriks, Gerritsen, Van Vliet and Dröes is looking for an understanding of the spatial selection criteria of persons with dementia during a personal chosen nature activity to improve the decision tool and the activities. This nature activity fits with someone's individual preferences in nature and could be different for any person with dementia. Within the preparatory research, Hendriks et. Al (2016) developed a decision tree to figure out the wishes and needs in nature of persons with dementia. The contribution to this research will be the addition of geographical understandings of the spatial experiences of people with dementia during outdoor activities, while other team members have more medical/physical backgrounds.

1.2 PROBLEM

The outcomes of the previous preparatory exploring research were promising. However, Hendriks et al. (2016) mentioned the importance of a follow-up study. The focus during this research is towards the use of outdoor spaces of persons with dementia during a personal chosen nature activity and what are their spatial selection criteria in this to prevent lost. The problem with people with dementia is not so much about forgetting, but rather the inability to store new information. The characteristics of dementia are described in the additional chapter in the beginning of this master thesis. Dementia is a damage of the brain and over long-term periods, all memories will be forgotten. Firstly, events that have taken place recently will be forgotten, afterwards memories of a more distant past and also the most basic skills such as language, manners and movements will be forgotten. This forgetfulness also influences the recognition in space of persons with dementia and therefore their acting within this space. Hubbard (2006) mentions the upcoming interest of geographers in disabilism and the city. "Disabilism demonstrates that cities do not cater for the full range of human body types and capabilities" (Hubbard, 2006, p.115). From the perspective of a disabled body, including brain damages like dementia diseases, places are characterized by physical inaccessibility and exclusion, with the physical layout of cities placing disabled people at risk of both physical friction as well as social exclusion (Hubbard, 2006). The disease dementia causes a combination of problems. Experiencing places is not only physically influenced by not recognizing objects, but it is probably also influenced by social factors in outdoor spaces.

Although previously mentioned insights provide important arguments into the possible impact of nature and being outdoors on the wellbeing of people with dementia, little is known on how to translate the influences of environmental factors into personalized activities that are optimally attuned to people's preferences, wishes, abilities and nature experiences. Furthermore, little is known about the possible barriers to implementing these personalized nature activities in different care settings (Hendriks et. Al, 2016). Studies based on interviews or observations of people with dementia in residential care have shown that meaningful activities are often lacking, and evidence exists that by providing more stimuli and activities, such people's quality of life can be improved (Topo, 2009). During this master thesis research the carers are given a tool to start a conversation to figure out needs and wishes of persons with dementia that result in a meaningful activity together with the person with dementia and thereby active involvement of nature.

Project case

An app has been developed within another research in the project of the NAHF, and so the results of this master thesis research may be a valuable source for the app. While this study is part of a long-attitudinal study on personalized nature activities for persons with dementia, this study is the second study in a series of probably four studies. The first two studies are explorative studies about the needs of persons with dementia during nature activities; the following two studies will be on how to use personally chosen nature activities for persons with dementia as a treatment for problematic behavior. The app that has been developed during the overall study is the online implementation of the offline decision tool for personalized nature activity of the preparatory research.

1.3 RESEARCH QUESTIONS

How do persons with dementia use their environment during a personally chosen outdoor activity and how do these selection criteria influence their behavior during the activity?

Persons with dementia are easily lacking in recognition in indoor as well as outdoor spaces. Two types of environment, namely the physical- and social environment, influence behavioral acting within places. This research question can help to understand what persons with dementia are looking for during a nature activity combined with the insights how they fulfill this personally chosen nature activity.

Sub questions part 1: The influences of the physical environment

1. What are the selection criteria for the physical environment of persons with dementia?
2. How can behavior influenced by the physical environment of persons with dementia be described?

Sub questions part 2: The influences of the social environment

1. What are the selection criteria for the social environment of persons with dementia?
2. How can behavior influenced by the social environment of persons with dementia be described?

1.4 RESEARCH OBJECTIVE

The goal of this research is to expand knowledge on the spatial experiences of nature activities of persons with dementia. This research contributes to scientific knowledge about how the physical and social environment influences a complex system as behavioral acting of people with dementia, how they use space and what their selection criteria for space are. Therefore, the role of external factors, the environment, is used to measure behavior of the environmental experience of people with dementia. Lastly, the results of this research contribute to a physical product, the mobile app. This tool can help to caregivers and professionals to start a conversation about the needs of people with dementia in an outdoor activity.

1.5 SCIENTIFIC RELEVANCE

Over the past few years there has been an increased interest in navigational services for pedestrians. To ensure that these services are successful, it is necessary to understand the information requirements of pedestrians when navigating, and in particular, what information they need and how it is used [May et. Al, 2003]. Most of these researches are focused on pedestrian use of public space for healthy or physical disabled people, but less research is done on the requirements for pedestrians with dementia when navigating. According to the approach, used in this study as well, taken in much of the literature is the path-node-landmark based descriptions of pedestrians [May et. Al, 2003]. Especially analyses by the principles of Kevin Lynch [1960] are an often used method in these kind of studies. This thesis is scientific relevant while it offers new insights in an often used method in an often research field, but from less investigated point of view, namely the perspective of persons with dementia.

The Nature Assisted Health Foundation, one of the co-financers of the preliminary research by Hendriks et al (20016) and this research as well, has commissioned research by Fontys University of Applied Psychology and Human Resource Management whether there is scientific evidence for specific healing conditions of natural elements in their direct environment towards persons with dementia. It was concluded that little scientific research has been done, but according to the words of investigations internationally, this is a very promising area. While scientific evidence is limited for now, stakeholders as health insurers and municipalities believe financial investments in this research subject is too risky. This master thesis can be a valuable contribution to the scientific evidence that is limited at the moment, and therefore it could become a reliable source of inspiration for researches in the future.

Brittain et. Al [2010] explore how technologies mediate between the physical and social environment in which people with dementia live. The research of Brittain et. Al [2010] highlights the importance of a neglected space within dementia research, namely the outside free accessible environment. Some persons with dementia in these places could feel curtailed, for others the physical and social security of familiar environments enables them to carry on with everyday activities in this public realm. What kind of stimuli causes those kinds of feelings, and how these stimuli influence behavior did not become clear in the article. The development of technologies needs to be critically investigated, and questions about how technologies might underpin or reinforce institutional ageism need to be asked [Joyce and Mamo 2006], particularly in relation to older people with dementia. Health and place are fundamentally interrelated and mutually constitutive and in this sense the experiences of health and medicine cannot be detached from the places in which care is received [Kearns 1993].

1.6 SOCIAL RELEVANCE

"People with dementia are often viewed in light of prevailing discourses, including a focus on biomedical aspects of dementia and risk management, and policy discourses that have served to focus on enabling autonomy within home environments. Yet, people with dementia enjoy and access outdoor spaces despite challenges from within themselves and from others."

[Brittain et. Al. 2010, P 283]

People with dementia need a great deal of support and assistance, and this need increases as the disease progresses [Topo, 2009]. Therefore, it is important for caregivers to understand these needs and more importantly the person with dementia themselves, needs to be able to express their needs. When family caregivers of people with dementia were interviewed, their main concerns were safety in the home, lack of time for themselves, lack of meaningful activities for people with dementia and problems with orientation of the person with dementia themselves [Topo, 2009].

"According to the single reports, technology can be helpful in providing more freedom for the person with dementia to move around; in providing new activities, in reassuring and reminding the person, in supporting circadian rhythm and orientation in time; and in decreasing stress, anxiety, and agitation."

[Topo, 2009, P. 28]

The app that is going to be developed needs to provide solutions and helping tools for the problems that are named above. The reasons for the need of this app for people with dementia and their caregivers/ professional are clear, they are all looking for a tool that will help them in creating meaningful activities. If it can be proved how outdoor activities can be influenced by environmental factors into activities that have positive effects on the behavior of people with dementia through both a demonstrable positive effect on quality of life of vulnerable older people and their caregivers, this research can be of great social importance. The results could be directly implemented in a mobile app that is developed by the research team of NAHF as well.

Whilst legislation acknowledges the role of statutory and independent bodies in service provision, family, friends and neighbors provide most care constantly, and the government recognizes that many need help with what can become a heavy burden [Milligan, 2000]. Now more than 80% of the caregivers are in danger of being overburdened, while the national and local policy makers keep focusing on a "participatory society" with more citizen participation. Four in ten caregivers provide care to people with dementia. If these become overburdened, resulting in depression or burn out, that would have enormous social consequences. This research contributes to Prevention through green intervention for people with dementia as well carers, therefore has great social value, as proven through Swedish research on burnouts [Pálsdóttir, Grahm and Persson, 2014].

The foregoing discussion has attempted to address the relevance of this study by the growing number of persons with dementia in the near future and the lack in having useful nature activities for dem/them. This explains the characteristic choice of the title as well, as this is NATURE 4 DEM. Lastly, an approach that is often use of spatial orientation in scientific studies will be applied towards the target group of persons with dementia, to collect more knowledge and new insights about how persons with dementia use space during nature activities.

NATURE 4 DEM.

2. THEORETICAL FRAMEWORK

This research would like to explore how people with dementia select space and how this selection influences behavior. The goal of this research is to gain more knowledge on how outdoor environmental stimuli influence the behavior of people with dementia. Therefore this research starts with a literature study to create an understanding of different concepts that are used to create an in-depth understanding of how space is used and what the spatial selection criteria of the persons with dementia are. All those concepts are visualized into a theoretical framework that will be tested in a later phase of this research. To not start with a complex model, this chapter starts with a very simple framework, which becomes more and more complex as the paragraph processes.

NATURE 4 DEM.

2.1 BEHAVIOR

Sabat and Harré (1994) argue that behavior is driven by the meaning people give to a situation. So every situation has to be approached from someone's personal view; their personal background of beliefs, values and experiences, may shed a whole new light on the meaning of the behavior they exhibit (Sabat et al., 2011). Such factors that influence someone's personal view have been classified within seven domains: demographic and biological, psychological, cognitive and emotional, behavioral attributes and skills, social and cultural, physical environmental, and physical activity characteristics (perceived effort and intensity) (Humpel, Owen & Leslie, 2002). The behavioral acting from a person within space is an out coming reaction of all these internal processes of someone's personal view.

A focus on broader determination in terms of health behavior is described by Giles-Corti and Donovan (2002, p. 1973) and consists "a social ecological perspective of human behavior which suggests an interaction between the individual and the social and physical environment and the need to maximise the 'person-environment fit'. Many other researches review behavioral acting within an approach of the influences of external factors (Fleming & Purandare, 2010, Bossen, 2012, Van der Plaats & Verbraeck, 2013, Zwijsen, van der Ploeg & Hartog, 2016). Experimental evidence from several behavioral domains identifies circumstances in which direct environmental influence can be a stronger determinant of behavioral choice rather than cognitively mediated influences (Owen et. Al, 2004). This implies that the direct environment of a person has a stronger influence on making choices for behavioral acting, and so personal preferences are suggested to be less important in this. Although cognitive social theories have been predominant in literature on behavioral studies (Godin, 1994, Trost et. Al, 2002, Salis & Owen, 1999, Owen et al, 2000), the field has been created by assumptions that a persons' choices to participate active or inactive are conscious and deliberate, and other cognitive mediators of behavioral change. Social cognitive models do, however, identify a strong role for environmental influences under some circumstances (Owen et. Al, 2004). To understand behavioral acting in a general sense, it can be stated that behavioral acting is a result of individual response to external factors of the direct environment of the physical and social environment. This creates the following conceptual model:



Figure 2. 1 Starting point conceptual model.

This model shows the two types of environments that are influencing behavior in general terms. The physical environment plus the social environment of an individual result in behavior.

Behavior in the world of dementia

Current researches on cognitive and neuropsychological functioning in dementia imply that neuropsychological functioning might influence the way people with dementia recognize, interpret, and respond to the world around them. So neurological damage can have a great impact on the way people see, interpret and experience and interact with the world around them, differently from persons without a neurological damage.

Zwijssen et. Al (2016) argue that if a neuropsychological deficit leads to different behavior it is a misapprehension to suggest that if carers would try harder to adapt care to the world of experience of the person with dementia, the person with dementia would be "willing" to alter his challenging behavior. More applicable knowledge is needed on the understanding of stimuli that causes challenging behavior, rather than adapt the world of the person with dementia.

People with dementia have difficulties in dealing with high levels of stimulation. They can become more confused, anxious and agitated when over stimulated (Cleary et al., 1988 in Fleming & Purandare, 2010). While it is necessary to reduce unhelpful stimulation, care must be taken to optimize helpful stimuli. There is good evidence that increasing levels of illumination beyond that which is usually considered to be normal can improve sleep patterns and reduce behavioral disturbance (Fleming & Purandare, 2010). As a result of cognitive dysfunction, people with dementia experience more stressors in ordinary situations, which may lead to inappropriate behaviors." (Zwijssen, van der Ploeg & Hertogh, 2016. P.3). People with dementia are even to a greater extent depending on their environment and therefore different reasons can be named for orientation problems.

Firstly, as a result of feelings and thoughts originating from unsolved issues in the past, people become easily disoriented by a lack of recognition (Zwijssen et. Al., 2016). Secondly, Zwijssen et. Al (2016) also named that patients suffering from dementia find it difficult to recognize their environment and do not know how to cope with this. This easily leads to feelings of failure. Lastly, problems with spatial orientation and topographic disorientation seen at persons with Alzheimer's' dementia might also be explained by the difficulties in dividing attention, combined with the problems in global pattern and motion recognition (O'Brien et al., 2001). See figure 1. This creates the starting point of the theoretical framework of my master thesis.

"While the cause and the cure for dementia are unknown, it is clear that one's environment can offer support for cognitive impairment, hence the ongoing interest in the design of living environments." (Gibson, 2007, p. 57). Nowadays, persons with dementia living in long term care have various environmentally based interventions available, live more comfortably and without much stimuli that could cause challenging behavior (Padilla, 2011).

Since dementia is damage of the brain, the brain of persons with dementia works differently from healthy persons. The model for challenging behavior for persons with dementia of the Centre of Consultation and Expertise (N.D) showed that during problematic behavior there is a negative interaction between a person and their environment. Environment is understood as the social environment and physical environment in this model, like in the paragraph about behavior in general as well. Also Van der Plaats & Verbraeck (2012) confirm that behavioral acting of persons with dementia is strongly influenced by external factors like the physical environment and communication and treatment of other persons with dementia and others. However, they state that

behavior arises as reaction to external stimuli. This creates the following conceptual model:

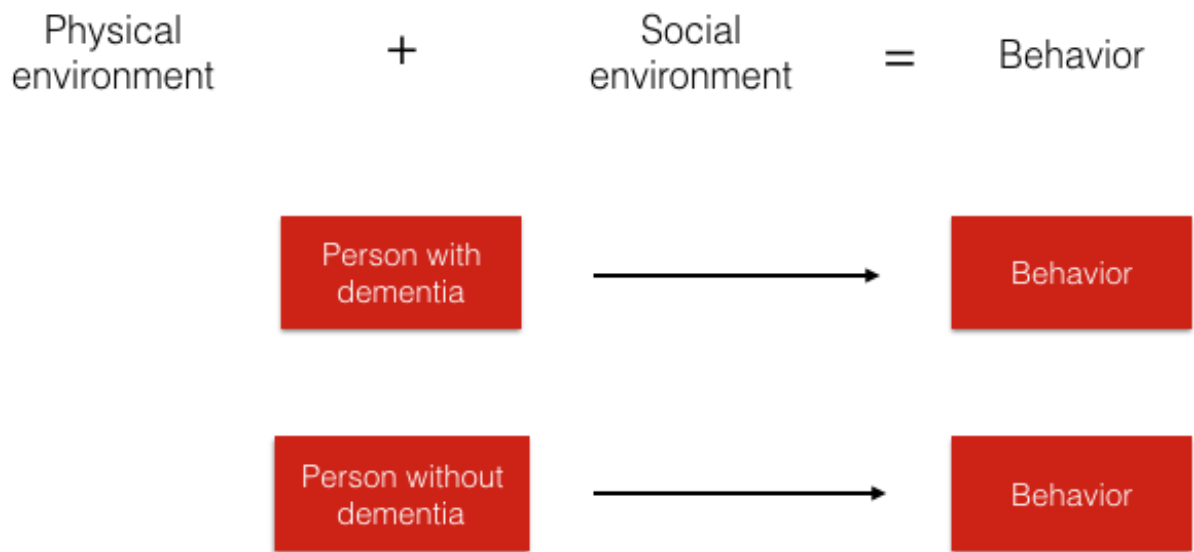


Figure 2. 2 Separation of different acting behavior of the person with dementia and the person that join the activity.

This model shows still the general process of the influences of external factors towards behavior as explained in figure 2.1, but in this model the behavior of a person with a brain damage like dementia and the behavior of a person without a brain damage are shown separately. The process of processing stimuli works differently in a damaged brain and so it is likely to expect two different kinds of behavioral acting.

These influences of external factors of the physical and social environment create the approach that is used during this master thesis. In the upcoming paragraph, physical as well as the social environmental stimuli and the interaction between those types of environments will be explained.

2.2 PHYSICAL ENVIRONMENT

This research strongly focuses on outdoor spaces, for that reason this paragraph reviews just the outdoor physical environment. Previous research (Owen et al, 2002, Saelens et. Al, 2003, Li et al, 2005 and Frank et al, 2006) has indicated that neighborhood features such as parks, sidewalks, street connectivity, residential density, retail space, and land use mix influence walking behaviors among adults in outdoor spaces. As people age, the ability to interact with the outdoors may less-en. Frailty and mobility problems create barriers to engage in outdoor activities or even experiencing the outdoors. An adequate physical functioning and ability to deal with the demands posed by the physical outdoor environment is needed, and thus many older people experience outdoor activities as a restriction because of their own mental restrictions (Rantakokko et. Al., 2014). According to previous studies Rantakokko et. Al. (2014) name that perceived participation is linked to the personal context, valuation, and needs of the individual and describes the subjective experience of having a free choice in how to live and the possibility to engage in desired activities.

"Physical features of the environment may be decisive for older people's possibility to participate in out-of-home

activities and, thus, impact their opportunities for socialization. For example, street conditions, traffic, and distance to services are important determinants of outdoor mobility, while weather conditions also affect older people's willingness and possibilities to move outdoors. Challenging outdoor environments may be a threat, particularly for those with walking difficulties, as their ability to meet the environmental challenges is lower."

[Rantakokko. et. al, 2014, p.1562]

Several studies have investigated barriers to use of outdoor spaces;

"Barriers include difficulty with access (e.g., locked or heavy doors, distant location), lack of handicapped-accessible designs (e.g., no handrails, poor surface materials), lack of safety features, lack of resting spaces once outdoors, untrained staff, lack of cueing features or land-marks, limited or small windows, lack of weather protection (e.g., canopies, screened or glassed-in enclosures), weather-related problems (e.g., excessive heat, cold, sun, rain) "

[Bossen, 2012, p. 21].

An interesting finding within all theses researches, is that no one defined the physical environment into a concrete description beforehand specifically in definitions or terms. Therefore it is very difficult to find a proper line within the variables they used when they described the results. Researchers do most likely not want to limit research outcomes by defining terms of physical environment beforehand. The research of Hoehner et al. (2005) created environmental measures based on the results of audit groups that were questioned about the physical and social environment, but they still did not determine in specific words the exact understanding of the terms physical environment. Though this research has limitations in time, defining physical environment into environmental measures is a must.

Mental maps are real maps projecting what people feel, think or think what they know about spatial entities. Lynch focuses on how people in the city actually use and perceive their physical environment. A common exercise is for different people to draw a map of their neighborhood or area in order to develop a better understanding of the differences between the physical map and the layout of an area and how people actually perceive the same area. Therefore the principles of Lynch to understand the physical environment are very well applicable during this research. Lynch identified five key elements that influence an individual's perception of their city: paths, edges, districts, nodes, and landmarks. Those key elements enable to visualize how different participants use space, and to find out what their spatial criteria of the physical environment are.

The physical environment in words of dementia

People with dementia are hyper sensitive to stimuli in their physical environment (Verbraeck& Van der Plaats, 2012). It is important to know what those stimuli are and how they influence the perception and behavior of the person with dementia. Because the brain of persons with dementia processes stimuli differently than people without dementia, for example a blue colored carpet could be interpreted as a pond, the physical environment influences the event strongly. The key elements of Lynch help to understand the perceived physical environment, but firstly these elements have to be described clearly.

Paths consists of the "channels along which the observer customarily, occasionally, or potentially moves" (Lynch, 1960, p. 47).

These can include streets, paths, transit routes, or any other defined path of movement. It is important to note that the paths an individual identifies may not correspond to a traditional street network or fixed route. This is one of the most predominant items in an individual's mental map as this is main mechanism for how they experience space.

Edges provide "the boundaries that separate one region from another, the seams that join two regions together, or the barriers that close one region from another" (Lynch, 1960, p. 47). Edges can be physical edges such as shorelines, walls, railroad cuts, or edges of development, or edges can be less well-defined edges that the individual perceives as a barrier.

Districts are medium-to-large sections within a specific place (Lynch, 1960). The individual often enters into or passes through these districts. Districts are individually experienced, but people commonly share more or less the same districts. It is expected that persons that have a brain damage, perceive these districts different from their caregivers. According to Lynch, most people use the concept of districts to define the broader structure of a place.

Nodes are points within a place, strategically located, into which the individual enters and which is often the main focus point to which she or he is traveling to or from. (Lynch, 1960). They are often connecting – a crossing or converging of paths. They often have a physical element such as a popular hangout for the individual, a terrace or a bench for example.

Landmarks are also a point-reference (similar to nodes). Landmarks remain external features to the individual (Lynch, 1960). These landmarks or spatial signs are very important for people with dementia because they easily experience problems with their orientation. They are often physical structures such as a building, sign, or geographic features (e.g. mountain). The range of landmarks is extensive and very personal, but the commonality is that there are used by the individual to understand a place better and navigate the environment.

What is not included in the approach of the Lynch, and what was named in the introduction of this paragraph, is the presence of perceived barriers which could offer interesting additional insights. A person that includes personal experienced constraints of space in his theoretical understanding of space, is Hägerstrand. Although most of the concepts of time-space geography are not applicable during this research on personalized nature activities for persons with dementia, while most of his concepts are strongly focused on the experiences of time combined with movement. Though, his concepts of constraints could be an addition of great value to this research while persons with dementia probably experience them even more and differently from healthy persons (Bossen, 2012).

In his time-space geography, Hägerstrand uses an element that offers an additional element during this master thesis, namely constraints. Hägerstrand speaks of certain limitations or constraints faced by individuals. "A man does not live in this world, whether other people in the area as the web of cultural and legal provisions limiting his path. Both psychologically and physically, both private and public, the society can impose restrictions, often against the will of man" (Hägerstrand, 1970, p.11). Hägerstrand developed his model to create understanding of someone's mobility and how the mobility of others are linked to each other to create networks and how these networks are created and can be understood. This is not the intention when using his terms, the terms of constraints make it able to understand the spatial limits. According to Hägerstrand there exist three types of constraints. The first, the '*capability constraints*' are the limitations we experience through our ability or our physicality. The limitation of capacity or capability is a 'capability constraint' taken into account are the tools used, eg. the possession of a driving license

and a car (Hägerstrand, 1970). Within dementia care these constraints could be the absence of sight, a wheelchair etc. Some capability constraints are easily solved by having devices, but others are more difficult to solve or even unsolvable. Secondly, the 'coupling constraints' are not physical but social constraints. After all, other individuals, tools or materials that determine where, when and how long you stay somewhere to act, produce or consume something. Coupling constraints are not about social interaction between persons. The hour and the day are therefore not to be missed objects. Sometimes an appointment can be personally chosen, other times it is fixed. The schedules in care institutions are mostly fixed according to a well-defined pattern, and so this constraint has to be taken into account. A third limitation is the 'authority constraints'. These restrictions refer to defined areas that are checked and are called a domain. A domain can be accessible to individuals who belong to the large domain, but they are inaccessible to outsiders. Domains usually represent a strong constraint. For some individuals or groups such restrictions are not undesirable, from their perspective these domains can be named 'opportunities'. Some health-care institutions have great gardens especially for their patients to go outside, while others are located in the middle of a city center. Thereby, health institutions are mostly closed areas, so people are highly dependent of the outdoor facilities the institutions offers. This creates the following conceptual model:

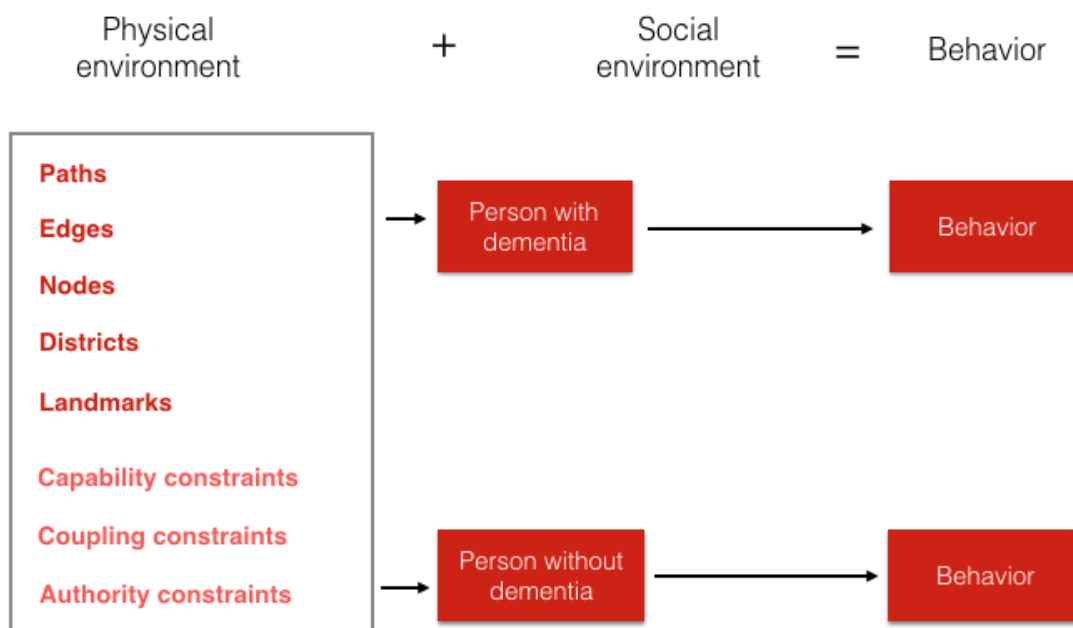


Figure 2. 3 Concepts of Lynch (1960) and Hägerstrand (1970) in physical environment.

The physical environment consists of paths, edges, nodes, districts, landmarks and capability-, coupling- and authority constraints as became clear in the previous paragraph. It can be assumed that the behavior of a person with dementia as a reaction towards these physical environment stimuli will be different from a person without dementia, and so there are still two separate arrows that lead to different behavioral acting.

2.3 SOCIAL ENVIRONMENT

'Social interaction is an important aspect of people's quality of life' (Van den Berg, Arentze and Timmermans, 2015, p.809). It has been recently studied in many researches within different contexts.

There are many different fields in which researchers of social interaction are exploring for example the social interaction in relation to social capital and social cohesion (Putnam, 2000, Forrest and Kearns, 2001, van Kempen and Bolt, 2009); the relation between face-to-face social interaction and social interaction mediated by information and communication technology (Baym et al., 2004, Boase et al. 2006, Mokhtarian et al., 2006, Tillema et al., 2010, Van den Berg et al. 2012). It is expected that people who spend more time at home or in the direct neighborhood, are more likely to interact with locals (Van den Berg et. Al., 2015). This statement suggests that elderly are more likely to interact within this social environment that is easily accessible while there is no long distance relation which might be the case with family members as children.

Secondly, the time span a person lives in the neighborhood increases neighborhood-based social contacts and social satisfaction (Van den Berg et. Al., 2015). Also the number of local facilities is expected to increase opportunities for social interaction among residents. In a study towards the importance of third places for social interaction resulted in the fact that shops, like supermarkets, are particularly valued for social interaction by all residents (Hickman, 2013). Other public facilities, such as parks and community centers were also suggested to be important, in particular for people who spend most of their time home, such as elderly or unemployed people, people with poor health and people with children at home.

"A long tradition of research has shown the important influence of social relationships in older age on the health dimensions of the quality of life including life satisfaction and emotional, subjective and psychological well- being" (Hubbard et. Al., 2003. P. 99). Identified in previous research are a wide range of factors for social isolation that pose health risks, for example living alone, feelings of loneliness, having a small social network, a perceived lack in social support and infrequent participation in social activities (Cornwell & Waite, 2009). A number of challenges are faced by elderly to remain socially connected, and recent researches point out great diversity in age-related changes in social connectedness and well being in social life. Life course changes, such as retirement and bereavement, may lead to a loss of social roles (Weiss 2005), and health problems may limit participation in social activities (Li & Ferraro 2006)

The outcomes of the research of Lee & Ishii-Kuntz (1987) about social interaction, loneliness and emotional well-being of elderly state feelings of loneliness are reduced, and morale increased, by interaction with friend and, to a lesser extent, neighbors. Lee and Ihinger-Tallman (1980) have shown, however, that interaction with relatives is also unrelated to the elderly. In their article they suggest that kinship-based relations in general, disregarding whether they are within their generation or out, this does not affect morale because of the absence of or restrictions upon mutual choice in the establishment and maintenance of these relationships. While friendship relations are based upon value consensus and affection, kinship interaction is often a consequence of sentiments such as concern and obligation according to the words of Lee & Ishii-Kuntz (1987).

Although kin often is engaged in sociable activities more or less similar to those that characterize friendship relations, the ties

that form the basis of kin relations are ascribed and are accompanied by norms of obligation (Lee & Ishii-Kuntz, 1987). The norms of kinship oblige kin to interact, at least when permitted by factors such as proximity (Lee & Ishii-Kuntz, 1987). On the other hand, friendship relations are based on collective choices. This means that individuals involved in friendship relations both choose their friend and are chosen as friends by the other person. Being chosen as a friend proves to an individual that he or she possesses desirable qualities, causing other people to choose him or her as a friend over many other alternative relations. This, in turn, may enhance emotional well-being. Therefore it might seem to be of great influence to elderly people who they are surrounded by within their social environment.

Social environment in words of dementia

The last few years health care started to change the approach of given care into person-centered or personalized care. One of the key elements in personalized dementia care is: 'a positive social environment in which the person living with dementia can experience relative wellbeing' (Brooker, 2004, p. 216). Relationships are the key to therapeutic growth and change. Brooker highlighted the importance of the relationship and therapeutic connection in person-centered care. As verbal communication abilities are lost or losing, the importance of warm, accepting human contact through non-verbal communication becomes even more important than before (Brooker, 2004). Another statement in the paper of Brooker (2004, p. 218) includes the context of relationships within his description of personhood and why social contact is this important '... individuals do not function in isolation, they also have relationships with others; all human life is interconnected and interdependent'. So the problem within social interaction within dementia is not particularly the presence of social interaction, but it is the verbal communication that can be experienced as problematic.

Communication and treatment of other people is an aspect that influences and is influenced by the activity. Often persons with dementia experience feelings of embarrassment or frustration about forgetting things or lacking in communication (Boer et. Al., 2010). Dealing with and appreciation of older people in their immediate environment was found to have both positive and negative effects on the way the participants experienced their situation. Persons with dementia said to have not (yet) experienced any problematic consequences of dementia, or they had the idea that others experienced more problems than they did themselves (Boer et. Al, 2010). Professionals have frequently stated how the perceived impacts of cognitive problems were associated with various emotional reactions persons with dementia may or may not directly express. The perception of older people with Alzheimer's disease appears to be dependent of others and so they are aware of their cognitive problems, the specific effects they encounter, and especially the way in which they deal with these consequences. Nature activities, even in therapeutic gardens, offer a focus for attention and support to start conversation (even if one-sided) with people who may have a limited ability to communicate like persons with dementia in late stadium (Chapman et. Al, 2007). The concept of a shared world between the person with dementia and caregivers is lost which causes a large part of the "difference" that can be experienced in behavior (Zwijnsen et. Al 2016).

The addition of the social environment in this model is made visible by the use of arrows. The social interaction takes place between "others" that are on the road and the person that is with the person of dementia or vice versa.

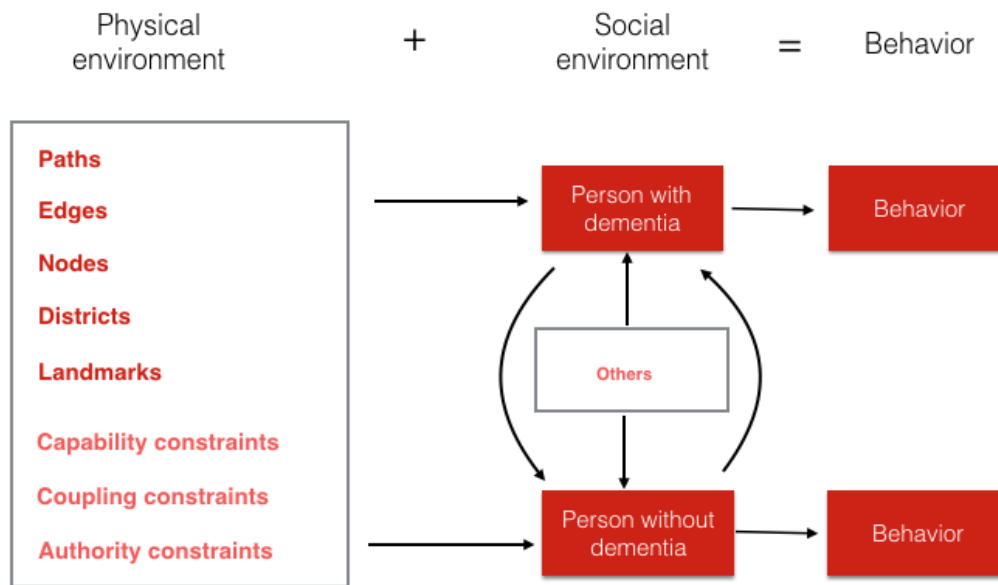


Figure 2. 4 Social environmental elements added to the model.

The emotional brain and the upper brain [cognitive brain] work together and that creates purposeful behavior [Van der Plaats & Verbraeck, 2012]. Sense and sensibility cooperate and send our responses. For people with dementia this cooperation is imbalanced, and therefore they first respond from their emotional brain, hence person-centered will be added as last module into this theoretical framework. That leads to more intuitive and impulsive reactions. People with dementia are sensitive to moods of others. And so the last relational element in this theoretical framework is the influence of the behavior of one to another.

This creates the final theoretical framework:

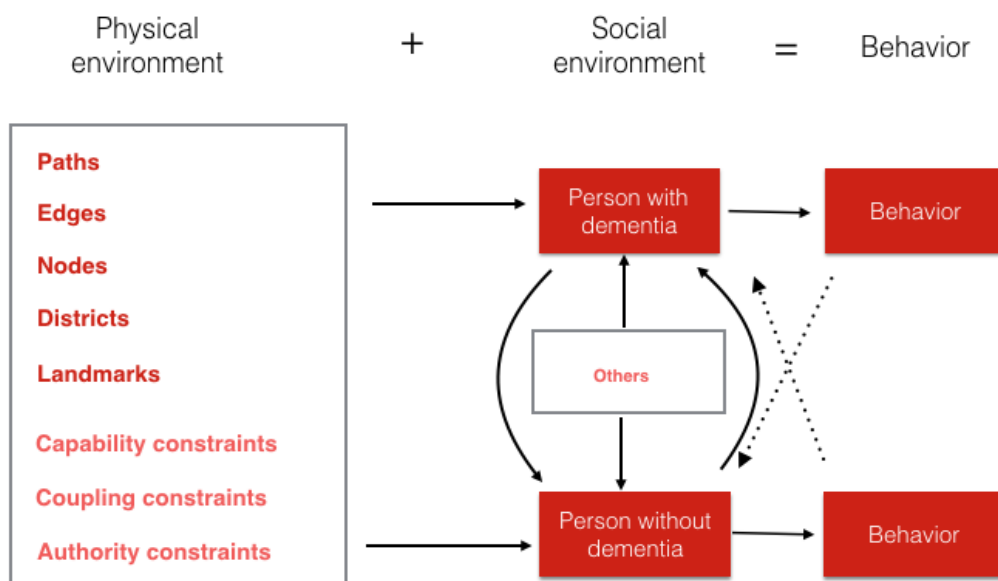


Figure 2. 5 Theoretical framework to understand how different stimuli influence behavior

This theoretical framework opened by noting that the physical and social environment influences behavior. As the paragraph processes all those three elements are explained by existing theoretical knowledge about these elements in general and what is already known about these elements in words of dementia. In summary, this theoretical framework helps to translate the research question into an empirical research model and methodology while all main theoretical concepts, which are described in this chapter, that are important during this research are included. This study enhances academic understanding of the elements within the physical and social environment that are used for spatial orientation, approached from the point of view of persons with dementia.

NATURE 4 DEM.

3. METHODS

This master thesis is based on qualitative data derived from different methods concerning how outside environments enable and disable those living with loss of memory. Thereby, if it considers the perspectives of people with dementia by the perspective of person-centered care, a qualitative research could offer a new source of information that can lead to improved person-directed care (Bossen, 2012). In this chapter the used research strategy, the advantages and disadvantages of the selected methods and lastly the ethical dilemmas of this study will be discussed.

NATURE 4 DEM.

3.1 METHOD STRATEGY

The research methods to collect the data that were used are participatory observations combined with in-depth interviews, because this collaboration creates an in-depth understanding of both physical and human phenomena (Clifford, French and Valentine, 2010) of spatial criteria of people with dementia, and not a generalized result. Another reason to choose for qualitative data collection by participatory observations is because persons with dementia can have problems expressing themselves within words, so surveying or only interviewing would not offer reliable data. Because of this, observing them is a good addition and a good source of data. While most of our participants still have quite good cognitive skills considering their illness, interviewees value and respect their own interpretation after the activity (Hendriks et al., 2016), which could be an extra insight.

The input of this research is based on the results of a previous study. The NAHF asked to implement these findings into a mobile app (see appendix A and B) that offers new inspiration for personalized nature activities. In this previous study people with dementia were asked what they are looking for during a nature activity. To answer these questions, focus groups were organized in different care institutions within the Netherlands. While the previous research of Hendriks et al. (2016) was an explorative study to figure out what persons with dementia are looking for during an nature activity, this research focuses on how these preferences of persons with dementia of the previous study influences behavioral acting during personalized outdoor activities in dementia care. The research involves doing an outdoor activity and speaking both to people with dementia and caregivers of people with dementia about their views of accessing and experiencing outside spaces. This activity is the outcome of the developed mobile app research done by a colleague, and is based on their personal preferences in nature. A nature activity is an outdoor exercise which really involves nature when being outside, for example to pick flowers during a walk, walk and touch trees and leaves, cycle and view natural panoramas etc. This version of the app contains 100 activities in which every activity is linked to one or more themes of preferences in nature. These themes are the outcome of the preparatory research by Hendriks et. Al (2016) and are described as rest, health, freedom, feel useful, social contact and sensory experiences.

The activity suggested by the outcome of the app is very unsure for any participant, as well as for the researchers. This highly depends on persons with dementia and their caregivers being able to understand and react on information that is given in the app. An important aspect of the app is that it could help to find out what kind of activity a person prefers to do. There were two intervention periods, one in March and one in May. The word intervention is used in many different contexts and within the context of this study an intervention means a experimental quality research that focuses on the question 'what is the quality of the intervention' without comparison with another client or group who have not participated in an intervention (Nederlands Jeugdinstituut, n.d). In March the activity was done in three care institutions with different characteristics of the given care, in May two extra care institutions were added to the project case. The reason for this was that we subscribed five care institutions to participate within the research in February, but some institutions needed more time to decide whether or not they wanted to participate in the research. In figure 3.1 the activities within every phase of the study are described. The first two phases of the study were focused on working with the target group of persons with dementia, the second two phases were focused on data collection and analyzing the results.

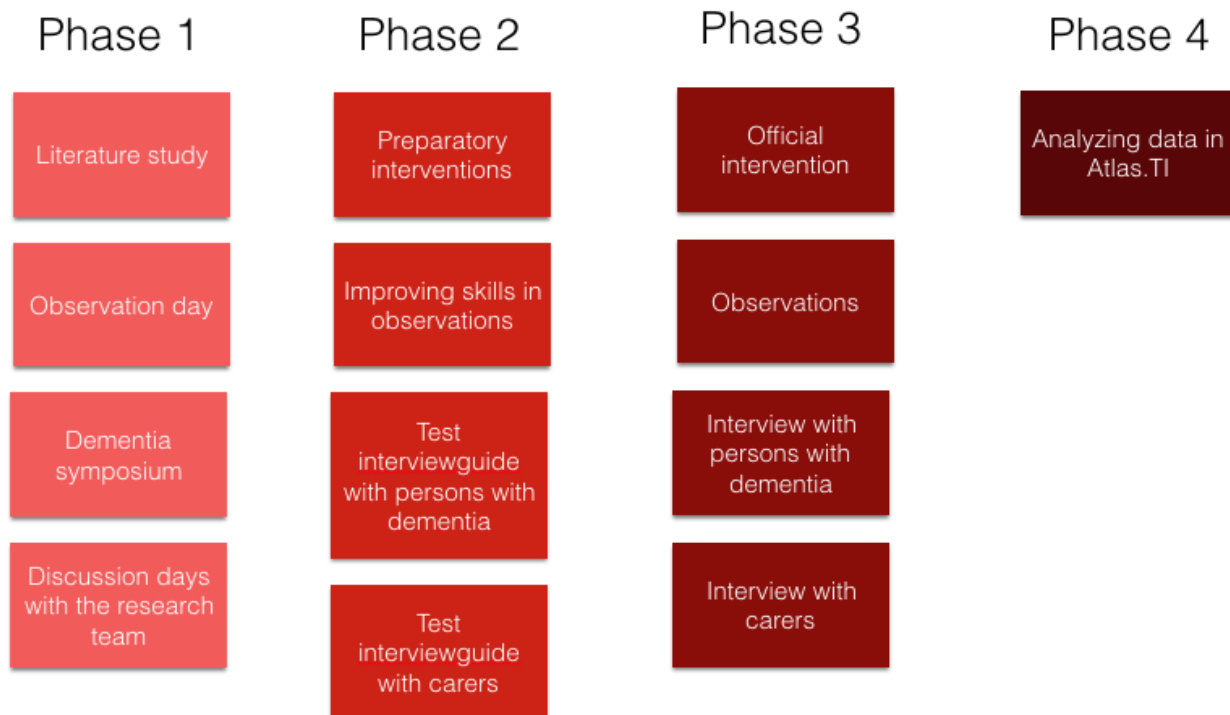


Figure 3.1 Overview per phase of the data strategy

3.2 DATA COLLECTION

3.2.1 Literature study

A literature study on personalized nature activities for people with dementia was done in the preparatory research of Hendriks et al., [2016]. In the literature study in this master thesis research I added a geographical view on the outdoor experiences of people with dementia, their perception of space and how this influences behavior of lost orientation. I firstly reviewed existing literature on how persons with dementia use space and how they express incoming stimuli in behavioral changes. By gaining this knowledge important notions can be found on which can be focused during the interventions.

3.2.2 Selection of participants

This research is done within four care institutions in Noord-Brabant and one in Gelderland, all in the Netherlands. Because this research is based on the recommendations of the previous research named "nature and dementia: Development of a person-centered approach", care institutions that would like to participate in this research were easily found, but also some new care institutions were questioned to participate in this research. The only criterion for selecting care institutions was that they must have a special department for persons with dementia. To create a wide range of different characteristics, a diverse group of persons with dementia in different stages of the disease was selected, the study includes one meeting center, two day cares and two long-term care institutions with closed departments, see table 3.1.

Name care institution	Place	Type	Number of participants first intervention	Number of participants second observation	Total number of participants
De Wever Dennenheuvel	Tilburg	Meeting center	4	4	8
De Wever Matisse	Tilburg	Daycare	2	4	6
De Wever Renoir	Tilburg	Daycare for young persons with dementia	0	4	4
Thebe de Vloet	Oisterwijk	Closed department	4	4	8
Attent Tertzio	Elst	Closed department	0	4	4
Total			10	20	30

Table 3. 1 Overview of the involved care institutions

Description of different types of given care according to Alzheimer Nederland (2016).

Meeting center:

In several regions, meeting centers have been set up in the Netherlands where people with dementia and their caregivers' support is provided. The meeting centers focus on both the person with dementia and the immediate caregivers. The centers are often in a neighborhood, elderly center or community center. An important difference with a day care is that the day-care community center focuses on both the person with dementia and the immediate caregiver. Also, all activities are offered in one location, and the accessible location is nearby, making it easier to accept this help. In addition, other provided activities allowing more contact with residents is also possible. The community center consists of a solid professional coaching team, a program coordinator, a supervisor and a nurse. The team works with other care and welfare in the district or region, such as general practitioners, home care, care support center, institution for mental health care and nursing homes.

Day care:

For people living at home with (starting) dementia it is possible to move to the daycare one or more days a week. The outpatient treatment is aimed at relieving the spouse / caregiver and to support the domestic situation so that the person with dementia can continue living at home as long as possible. In addition, the patient is treated optimally at the daycare with (if necessary) the deployment of nursing, psychologists and physiotherapists. For younger people with dementia, there are many nursing homes with separate departments. These departments take into account the active lifestyle of young people.

Closed department:

A psycho-geriatric nursing home provides long-term care for people with dementia. Each department has living rooms and bedrooms for one or more persons. In the shared living room residents can stay during the day and use meals. The space in most nursing homes is adapted to the special needs of the residents. For example, with walking tracks where residents can walk around, or shielded courtyards to sit quietly. Everywhere in the Netherlands are also small-scale housing projects for people with dementia. Residents here have professional care in a home environment and have a private room. The living room and kitchen are common for six to eight residents who jointly run the household, supported by permanent staff.

5 departments at 4 different health care institutions were involved in this study. In table 3.2 the nature in the direct environment of the institution is described.

Care institution	Description of the nature in the direct environment of the institution
Daycare 1	A closed sensory garden available for patients at the back of the building, the garden is not used very intensively or stimulated by the institution to use. Only other patients and their carers can enter this zone. Leaving the institution offers a possibility to walk along a canal with a cycling path. The other side of the canal is an industrial area. At the entrance of the institution there a terrace and a big parking plot of the hospital. This offers not many possibilities to fulfill any kind of nature activity. The garden offers a sport route when people have to exercise, a small pet zoo, different herbs and a bughouse.
Care institution 1	A closed sensory garden for patients in the backyard of the building. The garden has different entrances from inside, and one from outside. Also there are some parts that can be entered by patients as well residents. The garden offers many different possibilities to enjoy the garden. Patients can enter the closed garden by themselves because the garden is locked, but that big those patients do not notice that they are locked. So patients can go outside by their selves and decide at every moment of the day to go outside for some fresh air and to enjoy the garden. The garden offers within different zones places to sit down, a pet zoo with many different animals, different trees and bushes, fruit and vegetables gardens, herb gardens and a pond.
Care institution 2	A closed sensory garden that is free accessible by patients. The care institution is located within a residential area, and so the direct environment offers not so much natural stimuli. Though, the institution has private therapeutic tandem bikes, so it is really easy to fulfill a one-by-one activity and go into nature. By cycling 5 minutes you already leave the town and enter nature views.
Meeting center 1	Located in a the living zone with just care institutions that offer different types of care (elderly, but also physical or mental young) at the edge of a big city. This place is located really close to a wood. The living zone offers different possibilities for natural enjoyment. There is huge pet zoo, a glass house for plants and flowers and all the buildings are surrounded by trees, big grass plots and wide streets.

Table 3. 2 Description of the nature in the direct environment of the institution

During every intervention four people in one care institution were included in testing the app, doing the outdoor activity and an evaluation. This group of four people consists of two persons with dementia, one (family) carer and one professional. These last persons can be professionals, family caregivers or volunteers. In total there are 30 participants in this research, 15 persons with dementia (Pseudonym D) and 15 professionals (Pseudonym P), carers (Pseudonym C) or volunteers (Pseudonym V). Participants with dementia were selected by a professional of the department to fulfill a nature activity, participants without dementia just had to be willing to participate in this study to be involved. None of the participants with dementia that were involved within the first intervention period were involved in the second one as well. One professional was involved in the first as well as the second intervention. For this study it did not matter if persons were involved two times to fulfill the activity, but for the research of my colleague it was important to have participants that had never seen the mobile app before to make sure they could not be influenced by knowledge or expectations.

3.2.3 Interventions

Two periods of intervention have been included in this study. The first intervention was an explorative intervention to test and improve the tools to collect data for the second intervention period.

Observations

Because of a lack of experience in working with persons with dementia, firstly an explorative intervention week was held to gain more experience in how people with dementia behave and how to do interviews within this special target group. During the observation an observation guide has not been used, however, a blank sheet was used to write down everything that happened to

Part.	Care institution	Type participant	Age	Gender	Intervention date	Pseudonym
1	Meeting Centre 1	Person with dementia	86	F	2016/03/30	D1
2	Meeting Centre 1	Professional	52	F	2016/03/30	P1
3	Meeting Centre 1	Person with dementia	unknown	F	2016/03/30	D2
4	Meeting Centre 1	Professional	58	F	2016/03/30	P2
5	Closed department 1	Person with dementia	unknown	F	2016/03/31	D3
6	Closed department 1	Professional	59	F	2016/03/31	P3
7	Closed department 1	Person with dementia	90	M	2016/03/31	D4
8	Closed department 1	Carer	54	F	2016/03/31	C1
9	Daycare 1	Person with dementia	71	F	2016/04/06	D5
10	Daycare 1	Professional	46	F	2016/04/06	P4
11	Daycare 1	Person with dementia	84	F	2016/05/09	D6
12	Daycare 1	Professional	46	F	2016/05/09	P5
13	Daycare 1	Person with dementia	86	F	2016/05/09	D7
14	Daycare 1	Carer	58	F	2016/05/09	C2
15	Closed department 2	Person with dementia	89	F	2016/05/12	D8
16	Closed department 2	Professional	54	F	2016/05/12	P6
17	Closed department 2	Person with dementia	83	F	2016/05/12	D9
18	Closed department 2	Carer	54	F	2016/05/12	C3
19	Meeting Centre 1	Person with dementia	76	F	2016/05/17	D10
20	Meeting Centre 1	Volunteer	23	F	2016/05/17	V1
21	Meeting Centre 1	Person with dementia	66	F	2016/05/17	D11
22	Meeting Centre 1	Carer	66	M	2016/05/17	C4
23	Closed department 1	Person with dementia	Unknown	F	2016/05/19	D12
24	Closed department 1	Professional	59	F	2016/05/19	P3
25	Closed department 1	Person with dementia	90	F	2016/05/19	D13
26	Closed department 1	Carer	54	F	2016/05/19	C5
27	Daycare 2	Person with dementia	66	M	2016/05/20	D14
28	Daycare 2	Professional	52	F	2016/05/20	P7
29	Daycare 2	Person with dementia	65	F	2016/05/20	D15
30	Daycare 2	Volunteer	43	F	2016/05/20	V2

Table 3.3 Overview of the participants and their characteristics

the person with dementia, the caregiver, everything that happened between them and the interaction with the environment. The reason for not using an observation guide but field notes instead, was because it is really difficult to predict behavior within this target group, and by focusing on a numbered list of topics too much, other insights could easily be missed. Persons with dementia used the mobile app, and went outside to carry out the nature activity that fits with their personal interests. In the second intervention period, like in the explorative intervention, persons with dementia answered questions within a mobile app. The answers led to a list containing different activities that should accord their personal interest in nature. The person with dementia would then choose an activity, and together with a caregiver they would go outside to carry out the activity. An impression of the screens of the app of the first intervention can be found in Appendix A, the screens from the app during the second intervention

can be found in Appendix B. During the activity, the interaction with the environment, the interaction between the person with dementia and the caregiver, and their conversation about the spoken topics was observed. Two researchers did the observations and my colleague confirmed and corrected the raw data if there was any information missing.

Interviews

During the first intervention period, the interview guide consisted of 22 questions for caregivers and professionals and 17 questions for persons with dementia. The questions were developed in a manner they could easily be compared to the answers by the principles of Lynch and Hägerstrand. Within the evaluation of this first explorative intervention we had to conclude that the questions and the themes were too difficult to answer and that there was less space for personal story telling. The interview guide used during the first intervention period can be found in Appendix C. The interview guide of the second intervention period was based on the insights and evaluation of the first intervention period and included 21 questions for caregivers and professionals and 17 questions for persons with dementia. The order of questioning and the formulation of the questions were changed. The questions were designed in a way that respondents were better able to formulate their own opinion on the themes during the interview. This last change was an important one, as this was an important reason to choose for qualitative research instead of quantitative. The interview guide of the second intervention period can be found in Appendix D.

11 people with dementia were interviewed instead of the total of 15 persons. Some persons with dementia were in a late stage of dementia which made it impossible to interview them afterwards.

3.3 DATA ANALYSIS

After the observations and interviews had taken place, the data had to be analyzed to answer the main and the sub questions. The analysis consisted of 5 steps. First the voice records of all interviews and the observations were transcribed as text documents. This is necessary to be able to analyze the collected data using the computer program Atlas TI. In this program codes can be added to the research data. The text documents were coded by the principles of qualitative content analysis (see section 3.3.1). After coding the transcripts the environmental spatial selection criteria of persons with dementia could be analyzed. By doing this, my personal observations, the words of the person with dementia themselves and the words of the caregiver are taken into account. After this comes the third step of analyzing: the translation of behavior based on the physical as well as the social environment of people with dementia into selection criteria. Most important here is to find out what kind of spatial criteria are used for orientation and in the end compare them with the criteria as described in the theoretical framework in chapter 2. Finally, in the conclusion I will reflect on the findings as mentioned above, in order to answer the research questions.

3.3.1 Qualitative content analysis

Content analysis is a method of analyzing written, verbal or visual communication messages (Cole 1988). "Content analysis is extremely well-suited to analyzing the multifaceted, sensitive phenomena characteristic of nursing" (Elo & Kyngas, 2008, p. 113). While this study operates within different fields of study, it could be interesting to learn from methods that are more common in other fields rather than the one that is used the most within geographical studies. Inductive content analysis, an approach within qualitative content analysis, has been used for example in studies of the environment that supports well-being in older

people (Juvani et al. 2005). Based on these first notions qualitative content analysis seems to be the best method to analyze the collected data in order to answer the research question properly while this method is more often used in environmental studies with elderly.

Qualitative content analysis allows the researcher to test a theoretical framework to intensify the understanding of the transcribed data. Through content analysis, it is possible to extract words into fewer content related categories. Assumed is that when data is classified into the same categories; words and phrases share the same meaning (Elo & Kyngas, 2008). Content analysis does not progress into a linear pattern and it is therefore more complex and difficult than quantitative analysis because it is less standardized and conventional (Polit & Beck 2004). There are no simple guidelines for data analysis by qualitative content analysis: each inquiry is peculiar, and the results are highly dependent of the skills, insights and analytic abilities of the researcher (Hoskins & Mariano 2004).

"Content analysis is a research method for making replicable and valid inferences from data to their context, with the purpose of providing knowledge, new insights, a representation of facts and a practical guide to action. The aim is to attain a condensed and broad description of the phenomenon, and the outcome of the analysis is concepts or categories describing the phenomenon. Usually the purpose of those concepts or categories is to build up a model, conceptual system, conceptual map or categories."

Source: (Elo & Kyngas, 2008, p. 108)

Clearly written above are the arguments why specifically this method of analyzing fits well into this study, better than for example phenomenology. "Phenomenology contributes to deeper understanding of lived experiences by exposing taken-for-granted assumptions about these ways of knowing" (Starks & Trinidad, 2007, p. 1373). By outlining personal narratives of lived experiences, the patterns of meaning of someone's experiences are also possible experiences of others and might be recognized by them, according to the words of phenomenologists (Adams & van Manen, 2008). But while this study is not focused on the lived experiences, but on behavior, acting qualitative content analysis seems to be the right method to analyze data in order to answer the research question. Lastly, phenomenology did not seem to be the right method because the participants, explicitly the persons with dementia, were not able to express and explain their lived experiences in detail. According to the reasons of doing ethically responsible research in paragraph 3.2, interviewing with the idea to use phenomenology as an analyzing method would lead to feelings of failing for the participants because often they would not remember many details of the activity. For the same reason narrative interviewing also was not an option as method for analyzing during this research.

Content analysis is a method that may be used with either qualitative or quantitative data; furthermore, it may be used in an inductive or deductive way. Which of these is used is determined by the purpose of the study. If there is not enough former knowledge on the phenomenon or if this knowledge is fragmented, the inductive approach is recommended (Lauri & Kyngas 2005). An approach based on inductive data moves from the specific to the general, so that particular instances are observed and then combined into a larger whole or a general statement (Chinn & Kramer 1999). The reasons mentioned earlier confirm the choice of working with the inductive approach, which fits the best in order to answer the research question.

Both inductive and deductive analysis processes are represented as three main phases: preparation, organizing and reporting (figure 3.2). Despite this, there are no systematic rules for analyzing data; the key feature of all content analysis is that any words of the text are classified into much smaller content categories [Weber 1990, Burnard 1996]. The preparation phase starts with selecting the unit of analysis [McCain 1988, Cavanagh 1997, Guthrie et al. 2004]. This can be a word or a theme [Polit & Beck 2004]. Deciding on what to analyze in what detail and sampling considerations are important factors before electing the unit of analysis [Cavanagh 1997]. The sample must be representative of the universe from which it is drawn [Duncan 1989].

Based on the theoretical framework the interview guide has changed during the process. During the first intervention persons were asked to tell about the concepts named in the theoretical framework, but these concepts were too complex to understand for some of the participants. During the second intervention persons were asked to tell about their experiences during the activity, without being guided towards specific topics by the questions. This change in the interviewing approach created more possibilities for sharing personal experiences, rather than telling about the concepts of the framework.

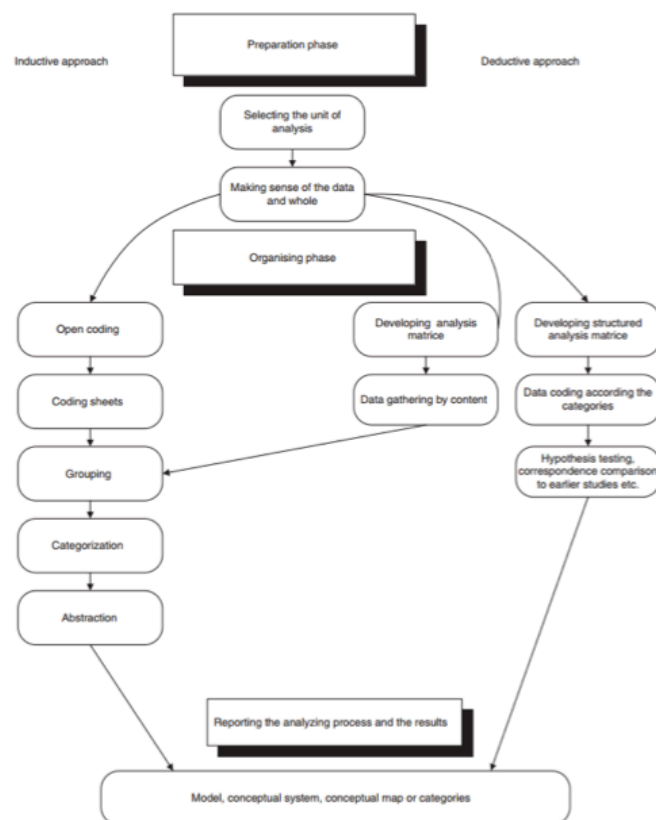


Figure 3. 2 Analysing model by Qualitative Content Analysis [Elo & Kyngas, 2008, p.110]

The next step is to organize the qualitative data. This process includes open coding, creating categories and abstraction. Open coding means that notes and headings are written in the text while reading it. Categories are freely generated at this stage [Elo & Kyngas, 2008]. To avoid problems with understanding the context of the code in a later phase, codes occurred by doubling the name of the coding by describing the context and a particular characteristic. Disadvantages of coding by this scheme are that the research is already grouping or categorizing while coding, and the names of the codes could become extensive. The list of used codes can be found in Appendix E. While the spoken language during the observations and interviews was Dutch, the used codes are also in Dutch.

After open coding, the lists of categories are grouped under higher order headings. This step exists is to reduce the number of categories by assembling those categories that are similar or dissimilar into broader higher order categories.

'However, Dey (1993) points out that creating categories is not simply bringing together observations that are similar or related; instead, data are being classified as 'belonging' to a particular group and this implies a comparison between these data and other observations that do not belong to the same category.'

[Elo & Kyngas, 2008, p.111]

The idea of creating categories is to give meaning and to describe the phenomenon, to increase understanding and to generate knowledge (Cavanagh, 1997).

'Abstraction means formulating a general description of the research topic through generating categories' (Elo & Kyngas, 2008, p. 111). Each category is based on content-characteristic words. Subcategories with identical events and contexts are organized together as categories and categories are organized as main categories. The abstraction process progresses as far as is reasonable and possible. An example of the abstraction process as meant by Elo & Kyngas (2008) is shown in figure 3.3

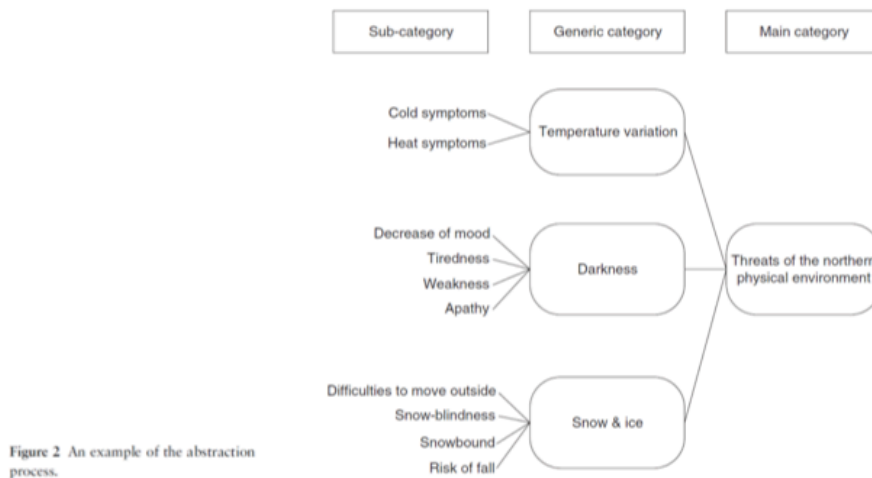


Figure 2 An example of the abstraction process.

Figure 3. 3 Abstraction process (Elo & Kyngas, 2008, p. 111)

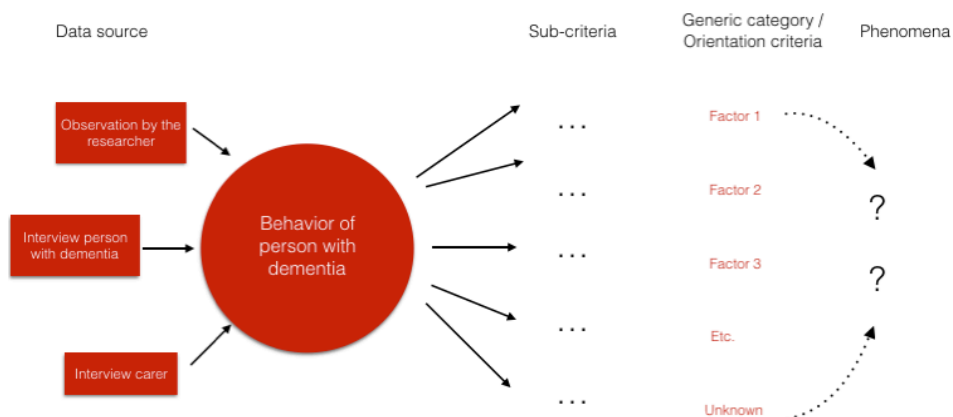


Figure 3. 4 Abstraction process of the study based on the abstraction model of Elo & Kyngas (2008)

3.4 ETHICAL DILEMMAS

To behave ethically while doing research, it is required that you act in accordance with notions of right and wrong – that we conduct ourselves morally (Mitchell and Draper, 1982). The reason ethical dilemmas have to be discussed is because the focus in this research lies on the person with dementia. These vulnerable elderly, with a brain damage, are not always able to understand the consequences of being involved within an scientific study. There are three main categories why considering the ethical dilemmas are highly recommended during this research.

'First, ethical behaviour protects the rights of individuals, communities and environments involved in, or affected by, our research' (Clifford, French & Valentine, 2010, p.36). The results of this research may help to create and improve the outdoor living experiences of persons with dementia. By participating in this study we should avoid that participants experience less pleasure, or at least try to minimize the risk. This ethical dilemma is considered well beforehand and as a result participants must choose their own, personal preferred, outdoor activity to fulfill instead of a pre-selected activity by the research team that participants probably dislike.

'Second, an perhaps a little more self-interestedly, ethical behaviour helps assure a favourable climate for the continued conduct of scientific inquiry.' (Clifford, French & Valentine, 2010, p.36). Because working with persons with dementia, their caregivers and professionals and their environments was new to me and asks for a special set of communication and behavioral skills, the research started with an observation day within a day-care for persons with dementia. Apart from this, literature on the disease dementia and a symposium contributed to my knowledge to work and talk with all the different types of participants. Lastly, to review if the interview- and observation guides would lead to the right set of data, we organized five preparatory interventions. All these experiences offered the right set of skills, such as how to talk to persons and experience how persons with dementia react in different situation, to fulfill the final interventions and collect the data we needed in order to answer the research question. Lastly, participants and their relatives from all different moments of observation and interviewing were able to contact us if they have additional questions or if they wanted to remove their data from the data set if they changed mind after participation, but no one did.

'Third, growing public demands for accountability and the sentiment that institutions such as universities must protect themselves legally from the unethical or immoral actions of a student or employee mean there is greater emphasis on acting ethically than ever before.' (Clifford, French & Valentine, 2010, p.37). All the data is saved at highly protected data servers of the Radboud UMC as well as the permission forms of all participants that are saved in a/the locker at the Radboud UMC. In these times in which personal data is easily leaked when saved in a cloud on the Internet, I was not allowed to save data on my personal laptop.

The arguments given in this chapter prove that the research strategy of participatory observation combined with in-depth interviews with persons with dementia and their relatives are able to offer valuable data. Having discussed the ethical dilemmas this study deals with, analyzing by the principles of qualitative-content analyses values the vulnerability of persons with dementia as well their relatives within the collected data.

NATURE 4 DEM.

4. PHYSICAL ENVIRONMENT

In the theoretical framework, two main variables are named as influencing behavior, the physical environment and the social environment. In this chapter the selection criteria of the physical environment of persons with dementia are reviewed. These criteria were the five elements of Kevin Lynch (1960) (4.2 Paths, 4.3 Nodes, 4.4 Landmarks and 4.5 Edges & Districts) and the elements of Hägerstrand in paragraph 4.6 about constraints of capability, coupling and authority. Within two interventions 15 persons with dementia and 15 supervisors were observed during carrying out the activity and they were interviewed about their experiences afterwards. Once the analyzing was completed, the different aspects that drive people to behave in a particular way were taken in account. Some of the elements of the physical environment were expected because of theoretical concepts, and had stress on them during the observations and interview, other elements became visible during analyzing. All the findings that are related to the physical environment will be discussed in this chapter.

4.1 NATURE ACTIVITIES

All participants went outside to perform a nature activity that fits with their personal preferences in nature. Activities that the participants have carried out in couples are presented in table 4.1. The choices of the activities were quite divergent and just 4 activities have been repeated. In the preparing phase of the intervention the care institutions were given a list of 100 activities and they had to fill in the list by checking boxes on which activities could be carried out and which activities could not. For this reason the person with dementia was always able to carry out the chosen activity. This was done to avoid feelings of disappointment for the patient.

Name of the activity	Frequency	Person
Drinking coffee or tea outside	3	D5, D6, D13
Forest walk	2	D1, D15
Visiting a flower shop	2	D2, D10
Picking flowers	2	D12, D14
Feeding ducks	1	D4
Walking and breath fresh air	1	D3
To the chapel	1	D7
Seeing sights	1	D8
Riding a tandem bike	1	D9
To the pet zoo	1	D11
Total	15	

Table 4. 1 List of fulfilled activities and the frequency

During the nature activities persons with dementia prefer to fulfill the activity outside and being surrounded by people. Participant D7 told: "We have been on the camping side for 17 years. I really liked that we all sat down together on that little square where we were. With all those people there sitting at a table. All these people. Yeah that was fun." But some participants answered more like participant D9 "I always have been an outdoorsman." or like participant D7 "Outdoorsman, yeah. Always have been a farmer".

The social aspect of fulfilling an activity together also seems to be important according to the persons with dementia. D5: "With the other people in the daycare. Like this afternoon we go to the plaza, there a performance by someone. So that is really nice. Such things are things I really like." The caregivers and professionals also mention changing preferences in being surrounded by others as the dementia progresses. C2: "Previously, she would have nothing to do with the church, but now she is starting to like it. This is because they are going to church together with other daycare visitors. When she has to go by herself, she probably still would not go."

When being outside, persons with dementia mainly enjoy watching and picking flowers (D2, D7, D8, D15), animals (D9, D11, D13) and carrying out healthy activities (D3, D14). The most important reason for not going outside to perform an activity is by far bad weather, said by 10 out of 15 participants with dementia.

Because of lacking personal knowledge of the researcher towards the experiences of fulfilling activities whether a person has dementia or not, the question is raised if this really differs in feelings in experiencing the activity. Therefore, we asked our participants if they believe there is a difference in the way they experience the activity at the moment of carrying it out.

According to the words of participants:

C2: *"I don't think so. We both enjoy it, talking about the weather or chat in the area. We both enjoyed it."*

P7: *"I do not know if there was a big difference in the way we experienced the activity. Yes. I think we both enjoyed it, I talked to myself. I think we both liked it and got to relax ha-ha. I think there are more similarities than differences between our experiences. To enjoy nature and being outside."*

P4: *"It does not really matter whether you have dementia or not"*

Four other participants had similar experiences as the ones mentioned above. In the first intervention period this question was not asked, so only 10 participants answered this question. Among these ten persons, six argued that they both enjoyed the activity and four stated that there are no differences between their experiences while carrying out the activity at that specific moment. Most given argument is that they both enjoyed being outside and being together, and they believe either suffering from dementia or being healthy has got nothing to do with that. Remarkable is the difference in the chosen words to express themselves, one

		Name					Comment
◇	○	Verschil ervaring activiteit: Andere levensvisie		3		0	1
◇	○	Verschil ervaring activiteit: Andere geschiedenis		1		0	1
◇	○	Verschil ervaring activiteit: Begeleider bezig met apparaat en veilige omgevin...		1		0	1
◇	○	Verschil ervaring activiteit: Gezondheid		1		0	1
◇	○	Verschil ervaring activiteit: Leeftijd		1		0	1
◇	○	Verschil ervaring activiteit: Weinig herinnering		1		0	1

Figure 4. 1 Named codes for differences in experiencing the activity

Therefore, when the interviews continued, participants were able to argue this similarity or difference in experience. The reasons named in the context of the codes for experiencing the activity different where utterly divergent. this made it impossible to discover a structure within the given answers. Codes about the differences in experiences are shown in figure 4.1. A reason for not being able to discover a structure within these codes could be that the answers of the participants are highly dependent on the relationship with the dementia patient, the environment, the chosen activity and the personal mindset of the participant.

4.2 PATHS

The first element that appeared to drive people in a particular way during the study was paths. Paths consist of the "channels along which the observer customarily, occasionally, or potentially moves" as described in paragraph 2.2 (Lynch, 1960, p. 47). Within the observation different characteristics of paths were observed. The first thing that was noticed was the acting of persons with dementia around changing soils.

4.2.1 Soils

Five persons that were accompanying the activity mentioned soils, and changing soils, in the description of the environment during the activity. Interesting is that they mentioned the soil but no one mentioned the change in behavioral acting of the person with dementia at those moments of changing soils. For example, participant C2 said: *"We walked along the asphalted walking path"* and the words of participant V1: *"We mainly walked on stones and cobblestones"*. A change in behavioral acting when soil changes is observed in five of the fifteen cases, while the change in soil was named five times by the caregivers. People stopped walking or walked more slowly. This could predict that this change in behavior is noticed by the carer, but not in a very explicit way.

During the observation it became clear, when the activity was interrupted the changing soil led to feelings of hesitation. A characteristic of dementia is that persons are not able to respond properly in changing situations, and they prefer regularity (Van der Plaats & Verbraeck, 2012). A changing soil can disturb this regularity, and so feelings of hesitation and fear can easily take

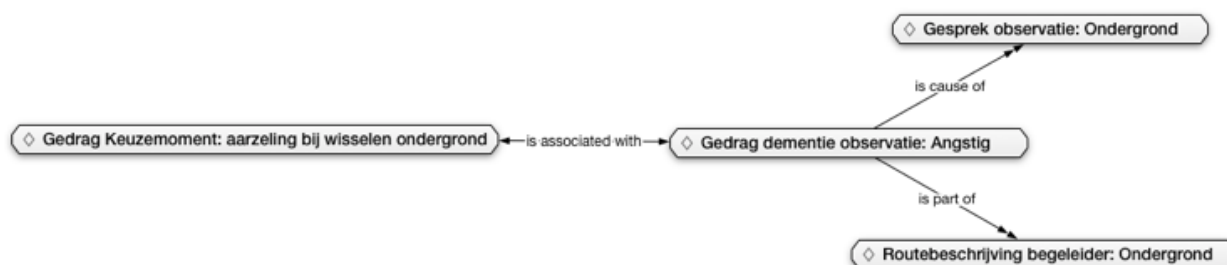


Figure 4. 2 Code of scared behavior relational to codes of [changing] soils

Although changing soils could lead to feelings of hesitation and fear, it also offers new experiences in executing the activity. Participants D14 and P7 walk the same route almost every day and they both argue that the environment of the walks is not very special or interesting. It is close to city center and surrounded by industrial activities. During participation in the chosen activity, they walked along a path in the green strip next to the asphalted road they usually walk. What happened was extremely interesting. Instead of just walking the daily route, they started to slow down the pace of the walk to look around. In the interview they said that they saw things they had never seen before, even though they had already been walking the same route for over a year. When the green strip ended and they started walking on the asphalted road again, the pace increased immediately. See figure 4.3 for a schematic representation of how soil influenced the behavior of the participant during this activity. During the activity, some professionals said that it is doubtful whether breaking the regular patterns could also influence this change in behavior instead of the changing soils. This might be associated with another characteristic of dementia that is about the number of environmental stimulations. Persons with dementia need exactly the right amount of environmental stimulations, if not, they are looking for more stimulation or they are over-stimulated, which might lead to problematic behavior and negative feelings.

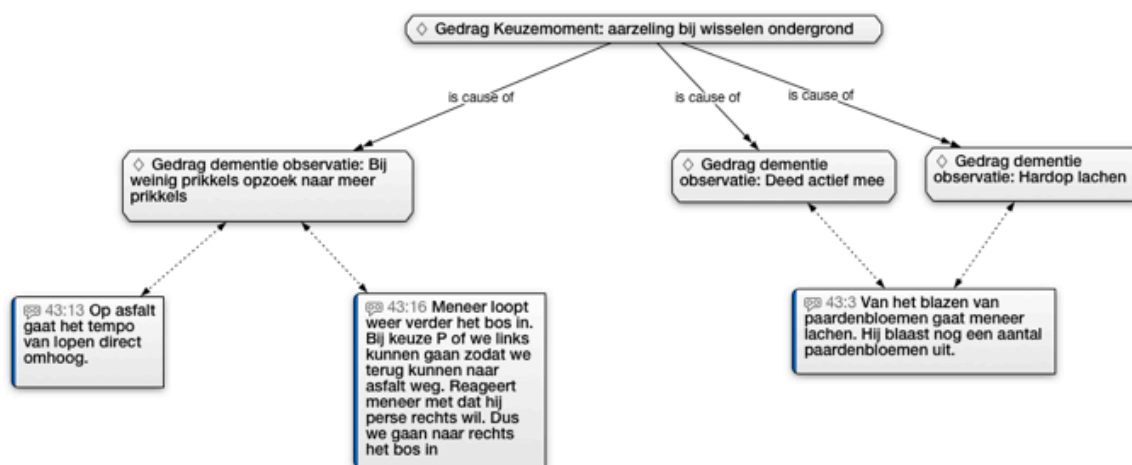


Figure 4. 3 Example of positive influence of changing soil

4.3 LANDMARKS

Landmarks are point-references. Landmarks remain external features to the individual (Lynch, 1960). Landmarks played a predominated role in the orientation of persons with dementia during the activity. This variable was expected to be important

because of the often lacking ability of dementia patients to divide attention. To clearly understand what the role of landmarks are in the behavior of persons with dementia three different variables to test the role of landmarks were created.

1. Description of the route by the person with dementia;
2. First thing that is mentioned as soon as the person enters the outdoor space;
3. Themes of discussion during the activity.

These three variables are reviewed by how they influenced behavior that is observed during the activity.

What is said by the dementia patients about the route is shown in figure 4.4.

		Name				Comment
◇	○	Routebeschrijving dementia: Dieren	4	0	1	
◇	○	Routebeschrijving dementia: Bloemen	3	0	1	
◇	○	Routebeschrijving dementia: Bebouwing	2	0	1	
◇	○	Routebeschrijving dementia: Buitenlucht	2	0	1	
◇	○	Routebeschrijving dementia: Voorbijga...	2	0	1	
◇	○	Routebeschrijving dementia: Bomen	1	0	1	

Figure 4. 4 Codes of the words that persons with dementia named when describing the route

Some of the participants named more landmarks than one, while others named zero. Ten persons named one or more landmark. Persons with dementia did not name one object far more than other objects in the description to express landmarks during the activity. Participants D11, D12, D14, D4 named animals when they described the route of the activity, but this also could be caused by the fact that two of the five institutions have their own petting zoos, and so for eight persons out of fifteen it was easier to spot animals during the activity. Unfortunately, just four participants were able to give an interview, and they all mentioned animals. Thus the strength of the results' influence towards the orientation of persons with dementia based on animals is difficult to indicate based on this data.

What might be more remarkable is that most participants with dementia mentioned living and organically objects, like strangers, animals, flowers and trees as landmarks. People without a brain damage, like caregivers, professionals and volunteers, use mainly the built environment for orientation (Lynch, 1960). Lynch (1960, p.49): 'Landmarks are another type of point-reference, but in this case the observer does not enter within them, they are external. They are usually a rather simply defined physical object: building, sign, store or a mountain'. The fixed objects of the built environment seem to be less important rather than natural objects according to the respondents with dementia within this research.

The second variable in landmarks is the object that was named first as soon as a person with dementia went outside, shown in figure 4.5. Again, not all the participants' citations were included, because some participants dealt with high cognitive impairment, which made it difficult to understand the first object they mean when they went outside.

		Name				Comment
◇	○	Eerste wat opvalt: Bloemen	4	0	2	
◇	○	Eerste wat opvalt: Bebouwing	3	0	2	
◇	○	Eerste wat opvalt: Voorbijgangers	3	0	2	
◇	○	Eerste wat opvalt: Blaadjes	1	0	2	
◇	○	Eerste wat opvalt: Dieren	1	0	2	

Figure 4. 5 Codes about the first thing persons with dementia mentioned as soon as they went outside

Though, during the activity of D2 and P2 something remarkable happened. P2: *"As soon as we arrived at the glass house, her eye fell on a flowerpot filled with daffodil. She was instantly in love with a small flowerpot with daffodils, which we bought for her and took home. She had no more attention or interest for anything else than the daffodils"*

The entire activity she held the flowerpot with the daffodils in her hands and kept asking if we could buy her the flowers and if we could call her husband to bring some money. She did not dare to look at any other flower, and it seemed that she was afraid to forget or lose the daffodil she liked so much. Other daffodils were not interesting anymore either, she only liked this one in this special pot. Lastly, the most remarkable thing happened afterwards. When the professional and the person with dementia walked back to the day care, she still had a strong focus for daffodils and followed the wild daffodils in the grass strips to guide her. It is difficult to determine what this behavior in the end drives, but the consequences of this behavioral acting and being guided by for example a wild flower are dangerous for persons with dementia. Persons with dementia could become completely lost, so it is important to always guide persons with dementia when doing outside activities in public space so they do not have to worry about getting home safely.

Words that were used most by the persons with dementia themselves as a reference-point corresponded with the first things they mentioned when they went outside, except from fresh air. This might confirm the idea that persons with dementia select landmarks on lived objects rather than the built environment, although this last one was also observed but less often. The second variable is the word that is named at the beginning of the activity and the first variable is what they remind after finishing the activity during the evaluation of the activity, a different time slot. For persons with dementia it is especially interesting to see what they do, and do not, remember from the activity directly after finishing it. It appears persons with dementia link living objects as landmarks.

The last variable that could confirm findings in landmarks are the topics of the physical environment the participants talk about during the activity. The subjects the participants talked about during the activity and the topics that were heard during the observation were compared during the analysis.

Also within the last variable that measures landmarks, most discussed themes on the physical environment during the activity appear to be living objects according to the participants themselves. This was confirmed during the observations. The three variables all had the same output when it came to the point of references to outdoor spaces, namely they all suggested that they mostly refer their being to living objects like passengers, animals, flowers and trees.

4.4 NODES

The third variable that is observed during the activities was nodes. According to paragraph 2.2 Nodes: 'The strategic spots in a city into which an observer can enter, and which are the intensive foci and from which the person is travelling' (Lynch, 1960, p.49). Nodes are crossing points where a person has to decide to continue the route, and therefore to enter new zones. Nodes are important to measure spatial selection criteria because once you have entered a node, you have made a decision to continue your route. Interesting about nodes is to figure out what the factors within the physical environment are that influence the choice to go either left or right. Especially for people with dementia it can be hard to make decisions, because they often focus on one object. When talking with persons with dementia, it is required to talk very suggestive, for example: 'Do you want a cup of coffee? No. Maybe tea?' instead of 'what would you like to drink? And 'Do you like coffee or tea?'. Making choices can be very confusing and difficult for persons with dementia, so what helps them making a choice within the physical environment?

While observing participants making a choice, three main behavioral actions were perceived:

1. A person with dementia makes a fast and clear decision about continuing the activity
2. A person with dementia struggles to make a decision about continuing the activity
3. The person that joins the activity makes all the choices when it comes down to continuing the activity.

Firstly, the context of persons that made fast and clear decisions is reviewed. In two of the three cases in which persons were able to make fast independent choices about the route, the same person joined the activity. This person was P3, a professional creative therapist in a care institution with a closed department for dementia care. She takes people outside almost every day, so this result is probably related to her professional experiences in doing nature activities with persons with dementia. In her role as a professional her personal preferences are not important when going outside, but the person with dementia is the one that creates the focus during the activity. This attitude is different from the attitude seen with family carers, who also keep in mind their own pleasure in fulfilling the activity.

Secondly, the context of persons that struggled to make decisions about continuing the activity is reviewed. In the first situation D8 had to decide in a split second if the driver of the car should make a left turn or a right turn, this choice was impossible to make for her and so the driver decided which way to continue. In another situation, D1 and P1 were walking through the forest. As soon as the path split into two paths, D1 stopped walking and started to look around. She ended up choosing the path with the same soil every single time. In a third situation the participant asked which way to go very frequently, even though she walks this route very often. Although there seem to be difficulties in making decisions in choosing paths during the activity, none of my observations showed that this was caused by physical elements. As described in the results of the first variable in this category, it seems to be highly dependent on approach and skills of the persons that joins the activity in working with persons with dementia.

The third and last behavioral acting that was observed is strongly linked to the previous statement. When persons with dementia have problems with making choices in continuing the activity, the other participant easily takes the lead. In all cases this type of acting was observed within the collaboration between the person with dementia and his or her personal caregiver. In the context of the codes it becomes clear that the caregiver always tried to make a decision to increase the pleasure of the activity when deciding which way to go. For example: D9 and her daughter C3 went cycling on a bike to view nature. When we passed a factory, the first option C3 had to turn to the right, she did. Her reasons: *"a factory is not so pretty to see, there is plenty of beautiful nature around"*. In another example, the carer C1 decided which way to go by the knowledge of the preferences of her mother during the route. The mother likes feeding ducks and goats, and so the daughter brought some old bread and they walked straight to the petting zoo.

At the first variable it is stated that choosing which way to go when a path splits could be highly dependent on the skills in working with people with dementia of the participant joining the activity and the relation to the person with dementia. Although professional caregivers are probably able to give better person-centered care during the activity, family carers know preferences in nature beforehand and are able to make the pleasurable choices that are in line with preferences of the person with dementia.

4.5 EDGES & DISTRICTS

Based on the data that has been collected during the intervention period, it was not possible to figure out the role of these two elements in the spatial orientation of persons with dementia. In the first intervention period we asked participants specifically about these aspects, but no one understood the question and because of limited interviewing skills of the researcher, the interview continued without having an answer to the question about these elements. Within the second intervention more open questions were used, and participants told about many aspects of the environment but still no one talked about edges of districts of the environment that they may have experienced during the activity. On balance this could be a result of lacking interview skills of the researcher or this means that these elements do not play an important role in the orientation of persons with dementia during outdoor activities, but this is difficult to determine based on this data.

4.6 CONSTRAINTS

4.6.1 Capability constraints

The 'capability constraints' are the limitations we experience through our ability or our physicality. The limitation of capacity or capability is a 'capability constraint' taken into account are the tools used, eg. the possession of a driver's license and a car [Hägerstrand, 1970]. Although it could be suggested that dementia can be a capability constraint with big influences, maybe there are no massive differences in the experience of the activity at that specific moment.

Capability constraints are dependent of the physical conditions of the participants. See figure 4.6.

		Name		
◇	○	Fysieke gezondheid: Slecht ter been	<div><div></div></div>	5
◇	○	Fysieke gezondheid: Slecht zicht	<div><div></div></div>	5
◇	○	Fysieke gezondheid: Goed ter been	<div><div></div></div>	5

Figure 4. 6 Physical conditions of the participants with dementia

10 out of 15 participants dealt with poor physical conditions, mostly problems with vision or walking. The physical problems were co-incidentally evenly spread, by 5 persons with walking problems, 5 persons with visional problems and 5 persons without any physical constraints.

In this category two variables show results on the capability constraints during an outdoor activity. The first one is focused on the ability of the participants and the second variable tells more about the physicality.



Figure 4. 7 Codes about the tools to increase a positive fulfillment of the activity and the experiences in this

Figure 4.7 shows the codes about tools that help decreasing the experiences of physical constraints and their relations to each other. A tool that was used the most during the activities was a wheelchair. For participants D9 and D10 this provided feelings of pleasure, while for D7 and D11 the wheelchair caused feelings of frustration rather than pleasure. In cases where the wheelchair

disturbed the experiences of the participants, this mainly had to do with the wheelchair shaking too much when rolling or the persons that pushed the wheelchair handled it really roughly at pavements etc. The person in the wheelchair, and in this case the person with dementia, got irritated because he cannot pay attention to the natural stimuli when he pays too much attention to other stimuli. Because persons with dementia have problems spreading attention, they can easily remain annoyed because of this negative experience.

This code is indirect associated to another code, namely the code: the caregiver is able to use the tool in a proper way. When the wheelchair helped in fulfilling the activity in a pleasant way, in most cases this was because the caregiver knew how to use the wheelchair or any other tool properly. This means they knew how to, for example, push and pull at pavements, and they were aware of the shaking that is caused by the soil etc. There is no direct relation, because it would not be true to state that if a caregiver does not know how to use the tool, this always disturbs the experience.

Although tools as a wheelchair can cause feelings of irritation, especially for persons with dementia a tool like this could be extremely helpful during activities. A characteristic of dementia is unrestrained behavior. For example when a dementia patient starts walking, they cannot stop walking for the rest of the day, or if they went out for a bike ride, they can cycle 50 kilometers, come home and cycle the same road again. This behavioral acting is extremely exhausting to a human body. Participant D12 showed this characteristic of dementia and although she wished to walk and watch flowers, the professional brought a wheelchair to fulfill the activity. In the beginning of the activity she was extremely restless, scared and confused. During the nature activity she became more and more relaxed. This was visible in her sitting attitude and the way she spoke. Her body was able to rest for a moment, while her mind was able to enjoy the flowers. When the activity ended and they went back to the department, the person with dementia turned into an entirely different person in behavioral acting. Interesting side note within this case, they fulfilled the activity in the morning and her behavior stayed relaxed and happy for the entire day. The argument in this story is that a person should compare the characteristics of dementia that a person is dealing with, with the wishes of the person and decide what the benefits the most for the person with dementia.

4.6.2 Authority constraints

The 'authority constraints' are restrictions that refer to defined areas that are checked and are called a domain. A domain can be accessible to individuals who belong to the large domain, but they are inaccessible to outsiders. The activities took place mostly in the direct surrounding of the care institution, sometimes this could be sensory garden that belongs to the institution other times this was a forest near the department but also in the middle of a living area close to industrial activities. Many different researches proved the positive impact of nature on peoples well being, and so many care institutions have started to improve their outdoor possibilities over the past few years. The outdoor situation of every institution is described in table 3.2 to understand the way in which the institutions actively involve nature into the activity.

The differences between available nature to the different institutions was massive as described in table 3.2, but still every location offered enough possibilities to actively involve nature. Sometimes participants had to try a bit harder to find the nature element

in the activity, but as soon as they started to involve nature actively into the activity, the fulfillment of the activity caused pleasant behavior. Although it seems that some locations make it much easier to involve nature, by being willing to see what nature can offer you during the activity, nature always could be found.

At three care institutions there is a therapeutic or sensory garden available for patients, but all these gardens are closed for public. This makes a lot of sense, while persons with dementia easily run away and it is very likely they would get lost because they cannot remember the way back to the institution. This asks for closing doors from the inside out, but within the current situation, closing the doors from outside in is not possible.

According to P3: "The fact that they are closed from inside out creates a save bubble which they live in, but from the view of outside in this strongly decreases the possibilities for being involved or to observe regular residential activities that take place in public spaces". But it does not seems to make much difference to this research, because during the activity most caregivers took the person with dementia outside of the closed garden into free accessible public space.

4.6.3 coupling constraints

Based on the data that has been collected during the intervention period, it was not possible to figure out the role of coupling constraints, like edges and districts in the spatial orientation of persons with dementia. Paragraph 2.2 explains coupling constraints are:

"Other individuals, tools or materials that determine where, when and how long you stay somewhere to act, produce or consume something. Coupling constraints are not about social interaction between persons. The hour and the day are therefore not to be missed objects. Sometimes an appointment can be personally chosen, other times it is fixed. The schedules in care institutions are mostly fixed according to a well-defined pattern, and so this constraint has to be taken into account." (Hägerstrand, 1970)

Importantly, a characteristic of dementia is losing sense of days and time (Alzheimer Nederland, n.d.). This strongly weakens the sense of this element for the spatial orientation of persons with dementia. Therefore, the days and times of the intervention were fixed to be able to make appointments with professionals, caregivers and volunteers to schedule free time for the nature activity. Persons with dementia were at the care institution anyway, and should have done another activity had they not been involved in this study.

4.7 CONCLUSION

Sub questions about the influences of the physical environment can be answered now. Sub questions such as:

1. What are the selection criteria for the physical environment of persons with dementia?
2. How can behavior influenced by the physical environment of persons with dementia be described?

According to literature of Lynch (1960) and Hägerstrand (1970), as described in the theoretical framework, the physical environment is selected by a combination of eight environmental elements. During this study persons with dementia were observed and interviewed to figure out if they use the same criteria for orientation as people without a brain damage. Within this chapter the elements of the physical environment are reviewed.

Most remarkable within these results is the way they use landmarks as organically based objects instead of the built environment.

Other findings were;

1. Soil influences decision making. Changing soil during the activity caused feelings of hesitation in continuing the activity. The soil also has a big influence on the way the activity is experienced, while asphalt creates different experiences from walking on grass.
2. Making decisions about the route and how to continue are highly dependent on the caregiver and the experiences in working with persons with dementia.
3. Tools that help to fulfill the activity in a pleasant way have to be considered well before starting the activity. A tool like a wheelchair can truly help people with dementia to relax but at the same time a tool can cause irritated feelings when the tool is not used in a proper way.

NATURE 4 DEM.

5. SOCIAL ENVIRONMENT



In the theoretical framework, two main variables are named as influencing behavior, the physical environment and the social environment. In this chapter the selection criteria of the social environment of persons with dementia are reviewed. These criteria for the social environment are social contact (5.1), others (5.2), personal attention given by the carer (5.3) and behavior of the person with dementia (5.4). Within two interventions 15 persons with dementia and 15 persons that supervised the activity where observed during fulfilling the activity and interviewed afterwards about their experiences. All the findings that are related to the social environment will be discussed in this chapter.

NATURE 4 DEM.

5.1 SOCIAL CONTACT

11 out of 15 persons with dementia mentioned the need to be surrounded by other persons, rather than being alone. Participants D4, D5, D6 and D12 were not able to give an interview. What seems likely is the notion that dementia changed persons into this kind of behavior, while in the past they did not have any problems with being alone. Like the words of caregiver:

C2: *"before, she had nothing to do with the church, but now she is starting to like it. This is because they are going together with other daycare visitors to church. When she has to go by herself, she probably still would not go."*

A professional at the same care institution within the first participation period also named this argument.

P4: *"Because I work with these people, these clients, the personal attention is very important. They really do like that. They have to talk about their feelings. That might work out left or right. In activities like this you really have some personal time with someone, and talk about it on a deeper level. I am in favor of that. No matter how, it could also be done through a walk".*

Arguments to fulfill an activity that repeatedly were mentioned by the persons with dementia themselves are:

D4: *"I love to have personal attention."*

D7: *"If we go outside together with other day care visitors I do like it."*

D7: *"Days last much longer when I am alone. I have nobody in the flat just someone who is doing groceries once a week."*

D14: *"The people in here are nice, actually that is most important."*

The hardest part in this section is the dementia itself. Dementia changes the characteristics of a person (Alzheimer Nederland, n.d.) and so the relation that the caregiver had with the dementia patient in the past is not there anymore and a new relation has to be built. This process could be very painful and sad for direct caregivers such as partners and other family members. Because of this we heard that many persons with dementia have been living more and more isolated over the years. D5 tells:

"My two sons are living in the North of the Netherlands, and if I do not go there by shared-taxi (a elderly service in the Netherlands) I never see them or my grandchildren because they never make time to come to Tilburg. Even for my birthday, almost no one is coming over to visit me and celebrate my birthday. It makes me very sad, because for many years everyone has been planning holidays or trips on my birthday."

Stories like this were very sad to hear, and unfortunately this was not the only story we heard about losing social contacts because of dementia during this study. Strangely enough this phenomenon of losing social contacts is in contrast with the needs of persons with dementia. As described in the beginning of this paragraph, dementia changes most people into persons that are more sensitive and more in need for social contact.

To the question if participants that joined the activity could argue why they would not fulfill a nature activity, participants V1 and V2 answered that they would not fulfill an activity because of the lacking knowledge in how to communicate with persons with dementia. Like stated in the previous lines, this seems to be in contrast with the needs of persons with dementia.

5.1.1 Spoken topics

Persons with dementia can have problems with expressing themselves through language [Alzheimer Nederland, n.d.]. Although they have problems with speaking, all our participants were still able to have small talk.

Most of the topics that were mentioned in the interviews right after fulfilling the activity were also heard during the activity. So in this way, it might seem likely that these were topics that were most important during the activity. The number of times a code is named differed immensely. Nature and the past were mentioned very often as topic to talk about, while all other topics were personal preferences of the participants to talk about as became visible in figure 5.1.

		Name		
◇	○	Gesprek Interview: natuur	<div><div></div></div>	9
◇	○	Gesprek Interview: Vroeger	<div><div></div></div>	8
◇	○	Gesprek Interview: Dieren	<div><div></div></div>	2
◇	○	Gesprek Interview: Familieleden	<div><div></div></div>	2
◇	○	Gesprek Interview: Bloemen	<div><div></div></div>	1
◇	○	Gesprek Interview: gezondheid	<div><div></div></div>	1
◇	○	Gesprek Interview: Kaarsje aansteken	<div><div></div></div>	1
◇	○	Gesprek Interview: Kapel	<div><div></div></div>	1
◇	○	Gesprek Interview: Ongeremde onderwerpen	<div><div></div></div>	1
◇	○	Gesprek Interview: Veel herhaling van dezelfde onderwerpen	<div><div></div></div>	1
◇	○	Gesprek Interview: Voorbijganger	<div><div></div></div>	1
◇	○	Gesprek Interview: Weer	<div><div></div></div>	1
◇	○	Gesprek Interview: Zingen	<div><div></div></div>	1

Figure 5. 1 Overview of the code list of topics that persons spoke about during fulfilling the activity according to persons with dementia.

Within the interviews, persons that joined the activity told: We talked about *"things we saw in nature"*(V2), *"How beautiful nature is"*(C3), *"named objects that crossed our path"* (P7), *"different types of flowers"*(P3) etc.

Nature is most often the topic of the conversation, which is not very surprising because participants were told beforehand that the research is about nature activities for persons with dementia. For that reason it might be likely that participants paid more attention to nature than within a regular activity.

Persons that joined the activity also said: *"especially things like names and faces and things that happened, she can always tell a lot about this. I really enjoy this, as my mother is enjoying herself and then I feel good as well."*(C2), *"We talked about where he lived and where he comes from"*(P7), *"her mom"* [C3], *"We have tried to discuss her past, what they used to do in this area, we have tried to figure out where she lived and we tried to go to the street she grew up in"*(P6).

Talking about the past is a topic that always works out well with persons with dementia because their long-term memory is much better than their memories from the recent past. The results show that persons that join the activity make good use of this knowledge about the disease dementia.

During the interviews the participants that joined the activity where asked if the nature activity helped them in having conversation. Only C4 argued that the activity did not make a difference in having conversation with his wife, all the other 14 participants

answered that the activity helped them in having conversation with the person with dementia.

All different participants used the activity differently for having conversation. Family caregiver C1 tells: *"of course we are not having in-depth conversations anymore. But, I do think she becomes a bit clearer when she is outside. And sometimes we can still talk about anything."* Professional P3: *"Yes it is easier for her. Upstairs she often remains talking about her son B., and she is seeking to go home. Outside she almost does not talk about that anymore, or at least less".* And lastly volunteer V1: *"Yes, I thought it helped me. Because after the activity I was back there again and could ask questions about what we saw, and she told the group what we all saw this morning. That creates a bond."*

Sitting inside in the shared living room creates easily fixed and uncomfortable situations according to one participant, people feel like they must talk. When participants went outside, topic of conversation easily popped up and silences were comfortable and nice instead of uncomfortable.

As written in the results of paragraph 5.1 a main problem within the social environment of persons of dementia is that other persons might have problems with talking and being with persons with dementia. This is contradicted with the needs of the persons with dementia because of their changing characters, which are highly looking for social contacts and personal attention. As stated in paragraph 5.2, a personal chosen nature activity by the person with dementia could help with having contact with persons with dementia. 2 of the 5 caregivers (C1, C3) that were included in the study, mentioned that the app and activity did not really help them in fulfilling an activity with their mothers because they are doing nature activities like this more frequently. However, caregivers C1 and C3 suggested both that when brothers, sisters, children and other persons come over, they easily go sit in the living room and start a (sometimes impossible) conversation. Which leads to feelings of an obligated boring visit to please the person with dementia, while there are enough possibilities to have a pleasant visit for both of them. Having an app that offers inspiration for a nature activity in the direct environment could facilitate in a pleasurable visit. She finally concludes that supporting nature activities like these maybe even could result in more frequent visits because of the shared pleasure. This probably could decrease the problem of losing social contacts.

5.2 OTHERS

Within 5 out of 15 activities passengers played an active role in the fulfillment of the nature activity. These passengers were a zookeeper, a candy seller, 3 fishermen, a gardener and a few nurses. Some of the passengers had conversation with the person with dementia; others really took the person with dementia by the hand and helped them fulfilling the activity. C4 tells: *"I had a little guidance available, that boy from the pet zoo helped me. That was nice, that's nice though. Additional to their own working activities, they do such things anyway. That they nevertheless make it available to be supported by them"*. P2 and V1 had the same experiences at the glasshouse of the same meeting center as C4. This personal support by strangers offered an extra experience to the activity according to persons that joined the activity. Persons with dementia did not mention the active passengers in the evaluation afterwards but during the activity they all responded positively to the support the persons offered. Another reaction by the person with dementia that was observed was the need to copy. In the activity with D12 and P3, the person with dementia noticed that a nurse was smoking in the garden and started to ask for cigarettes. The nurse was nice enough to offer her a cigarette while P3 forgot to bring the cigarettes of D12, and so the nurse and the persons with dementia

smoked a cigarette and had some small talk. The entire activity D12 did not ask for cigarettes, until she noticed another smoker. Copying behavior is something that happens more often by persons with dementia, as told the professional. This might work out positive when an action is desirable, but it could also result in unwanted behavior in case the patient is not able to copy the behavior. In this example, had they not received a cigarette, the person with dementia could have become mad, disappointed or maybe even angry.

Passengers might also cause negative and unwanted feelings. Although this example did not take place during the nature activity, this example of unwanted behavior caused by passengers happened indoors and shows the influences of the presence of others. This woman had a tough childhood and was sexually abused by men, if a male occupant passes her route or if she even heard a man talking in the morning she would become stressed, scared and panicked. As soon the man disappeared, she was able to calm down. This example happened indoors, but what might have happened if this incident happened during the fulfillment of the nature activity? This examples shows that it is extremely important to keep listening to the person with dementia and to observe how he or she responds to persons that passed by and more importantly, to observe change actions in case this happens to calm down a person. Unwanted feelings cannot always be avoided, but it is important to know what this feeling caused to be able to change the situation as quickly as possible.

5.3 PERSONAL ATTENTION

As mentioned in paragraph 5.1, persons with dementia are looking for social contacts in general, combined with another characteristic of dementia that is the difficulty with spreading attention between different objects (Alzheimer Nederland, n.d.), persons with dementia could really prefer personal attention within an activity. The activities that were done during this study were one-by-one, and so personal attention for the person with dementia was under perfect conditions. 10 participants that joined the activity named this condition as a highly positive element during the activity. The nature activity offered, especially for professionals, quality time during a comfortable activity in which there was enough room to get to know each other a little better. V2, P5 and P3 named that the activity as done during this study cannot be fulfilled within a group because this would decrease the personal attention from the caregiver to the person with dementia.

5.3.1 Behavior of the carer

During the activities, caregivers actively stimulated involvement of nature in the activity. This has been done by for example asking questions about recognizing flowers, trees or animals and also asking the patients what it reminds them of. Because of the active involvement of nature within the activity, Participants V2, C3 and C1 made a conscious choice in continuing the route to eliminate particular elements that could disturb the nature experience as explained in paragraph 4.3. Another result that has been observed was the ignorance of the behavior acting of the person with dementia during the activity. See figure 5.2.

In 3 of the 15 cases the behavioral acting of persons with dementia was ignored because of two conscious reasons and one unconscious reason. In all the cases the persons with dementia said out loud that they did not feel comfortable within the current situation. When the behavioral acting was ignored consciously, the professional (P3) and caregiver (C1) explained right after

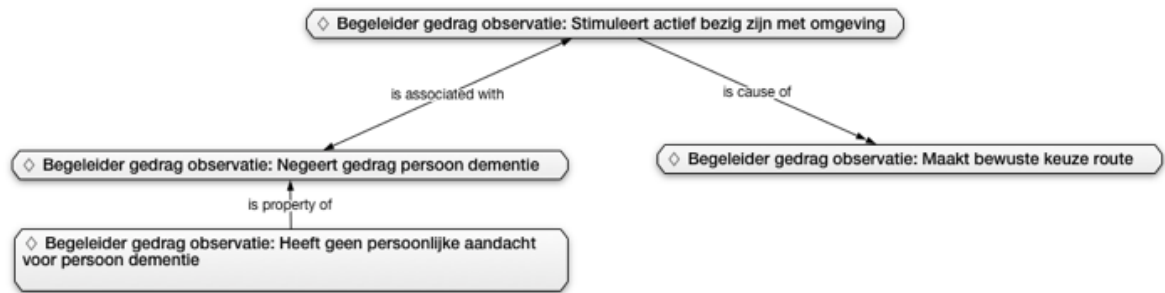


Figure 5. 2 Observed behavior of the carer during the activity

the moment of ignorance why they did so. In the first case, the person with dementia wanted to go home after she saw some dogs. She really screamed and begged to go away, and because she was in a wheelchair she was dependent on the action of the caregiver to leave the place. The professional ignored the words consciously by stopping pushing the wheelchair and waiting for the dogs to be gone to go away. She did not go back home as the person with dementia asked, but she changed the situation into a moment of rest to continue and fulfill the activity instead of interrupting this because of the passing dogs. In the second case the family caregiver [C1] went out with her mother for a walk and she brought a wheelchair in case of tiredness of the person with dementia. Shortly after the activity started, the person with dementia said to prefer fulfilling the activity in the wheelchair. The daughter ignored this by walking on until they fulfilled half of the activity. The daughter told us that walking is good for the physical health of her mother, and she knows that her mother was not really tired but she just prefers to sit down and relax in the wheelchair. The daughter argued that maybe with other family members this acting would result in letting her sit in the wheelchair, but she is pushing her mom a bit more to stay healthy and active.

The case when behavioral acting was ignored unconsciously, the context of the activity was very complex. During the activity family caregiver C4 who joined the activity, was a personal caregiver that has been through a lot in his life. Although the researchers stayed on a distance to let them fulfill the activity as a couple, the man constantly was looking for one of the researchers or other persons in the petting zoo to tell his life stories to. By acting like this, he paid a lot less attention to having a conversation with his wife. The person with dementia was not influenced by the behavior of her man while she paid most attention to different animals in the petting zoo and talked to them. The zookeeper helped the participant stroking the animals while the man still did not have much attention for his wife. This example seems to be associated with the personal attention that persons with dementia are looking for. This example suggests that the person with dementia was looking for personal attention, but it did not really matter who they would get it from, an animal or a human being.

5.4 BEHAVIOR OF THE PERSON WITH DEMENTIA

In the following network the codes that are observed in more than two activities are showed. Interesting in this category is that most codes are observed very often, far more often than within other categories. An overview of all the used codes is shown in figure 5.3.

		Name					Comment
◇	○	Gedrag dementie observatie: Hardop lachen	9	1	1		
◇	○	Gedrag dementie observatie: reageert op bewegende voorwerpen	8	0	1		
◇	○	Gedrag dementie observatie: Zoekt fysiek contact	8	0	1		
◇	○	Gedrag dementie observatie: Angstig	6	3	1		
◇	○	Gedrag dementie observatie: Bij weinig prikkels opzoek naar meer prikkels	6	2	2		
◇	○	Gedrag dementie observatie: Deed actief mee	6	1	1		
◇	○	Gedrag dementie observatie: Enthousiast om naar buiten te gaan	5	0	1		
◇	○	Gedrag dementie observatie: reageert op kleurcontrasten	5	0	1		
◇	○	Gedrag dementie observatie: sterke focus voor 1 object	5	0	1		
◇	○	Gedrag dementie observatie: Herinneringen ophalen	4	0	1		
◇	○	Gedrag dementie observatie: Maakt dierengeluiden bij zien dier	4	0	1		
◇	○	Gedrag dementie observatie: geforceerd	3	0	1		
◇	○	Gedrag dementie observatie: Hardop voorlezen van woorden	3	0	1		
◇	○	Gedrag dementie observatie: Moeite met keuzes maken over route	3	0	2		
◇	○	Gedrag dementie observatie: Veranderde positief gedurende de activiteit	3	0	1		
◇	○	Gedrag dementie observatie: Bij veel prikkels tempo omlaag	2	0	1		
◇	○	Gedrag dementie observatie: reageert op omgevingsgeluiden	2	0	1		

Figure 5. 3 Codes about the behavioral acting of persons with dementia as observed during the activity

Most seen behavioral acting during the observations of persons with dementia was laughing out loud. There is a likely chance that nature activity that is fulfilled by a pair consisting of a person with dementia and a caregiver provides happy feelings for the person with dementia. Although, sometimes laughing out loud is a result of being nervous or stressed therefore this argument seems to be likely but with a critical side note. Other behavioral acting that was observed in more than half of the activities is the reaction to moving objects and looking for physical contact with the person that joins the activity. When the codes that have nothing to do with environment are eliminated, 8 codes are left. The relation between the codes is shown in figure 5.4.

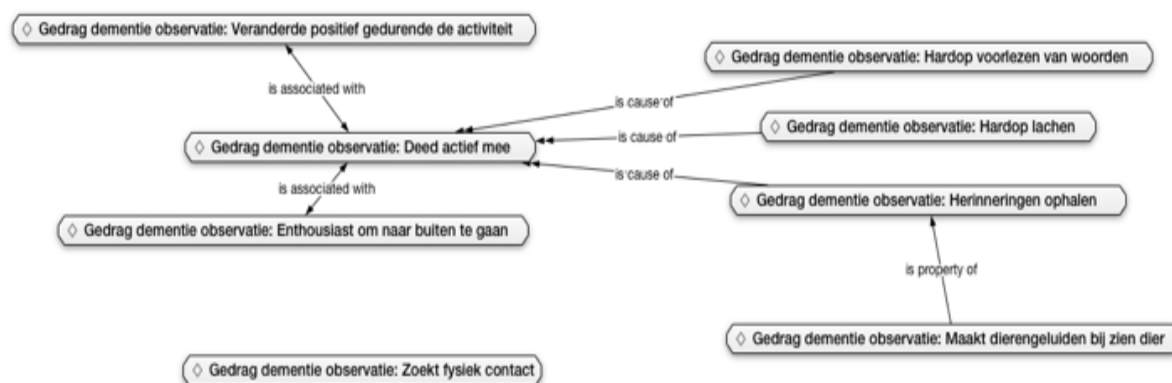


Figure 5. 4 Relations between codes of behavioral acting of the persons with dementia as observed during the activity about social contact

Codes about the behavior of the person with dementia as observed during the activity might offer an insight in how they express their experiences. When persons with dementia participated activity they laughed out loud, spoke out loud, for example words they saw on the route and they started to talk about memories from the past when seeing objects that reminded them of them. Remarkable side note at this last point is that participants D3 and D11 started to make animal sounds, so they might seems to be able to create a link between the object and the sound and even to produce it, while participant D12 was not able to tell what kind of meal you can make with some vegetables that were growing in the garden. The link between the vegetable and a meal was too difficult. These were all results of active stimulation participation by the person that joins the activity towards the person with dementia.

The causes of active participation are associated with two other codes: being enthusiastic beforehand and a positive behavioral change during the activity. The code of being enthusiastic beforehand is associated with active participation because all persons with dementia that are linked to this code had a strong interest in being outside anyway according to their own words in the interview afterwards. The other code that is associated with active participation is a positive change in behavioral acting of the person with dementia. When the person with dementia started to like fulfilling the activity, they also started to participate more actively by showing initiative.

Because the code looking for physical contact with the person that joined the activity did not cause active participation within the nature activity, there is no relation between these two.

5.5 CONCLUSION

Sub questions about the influences of the physical environment can be answered now. The questions that belong to these are:

1. What are the selection criteria for the social environment of persons with dementia?
2. How can behavior influenced by the social environment of persons with dementia be described?

Persons with dementia are looking for social contact, as this a characteristic of dementia this is not a very surprising result. They are especially looking for personal, one on one, attention, while spreading attention is difficult for persons with dementia. Although persons with dementia are looking for social contact, their social contacts are decreasing as the dementia gets worse according to persons with dementia themselves in the interviews. This is mainly caused by a combination of lacking verbal communication of the person with dementia and the lacking knowledge in approaches other than verbal approaches by the person without dementia.

This study focused on the role of nature activities within dementia care and all participants that joined the activity confirmed that the activity helped them with being in contact with the person with dementia. Some even argue that providing activities like this can support other persons to visit the person with dementia more frequently because of the increasing ability to have contact. As previously stated, persons with dementia are especially looking for personal attention during the fulfillment of an activity like done during this study. The behavioral acting of the caregiver has a different role in influencing the behavior of the person with dementia. On the one hand it stimulated active involvement of nature within the activity, but on the other hand behavioral acting of the person with dementia is also ignored in some cases. In the last named situation this does not seem to influence the behavior of the person with dementia strongly during nature activities.

In general the behavior of persons with dementia during a nature activity was very positive as 9 out of 15 participants participated actively when fulfilling the activity. This is associated with two main principles; firstly persons were enthusiastic to go outside, secondly the positive change in behavioral acting during the activity. Both these factors caused a more active participation of the person with dementia.

NATURE 4 DEM.

6. CONCLUSION

The number of persons with dementia is increasing and will increase up to more than half a million persons in the Netherlands in 2050. This will burden the caregivers, professionals and volunteers with care for persons with dementia. Within this study it is investigated how to influence the behavior of persons with dementia positively by carrying out one-on-one nature activities. To fulfill a nature activity, the patient and the caregiver have to go outside, breathe fresh air, walk around and have personal attention for each other. For that reason this study focused on the physical and social environment of the persons with dementia during fulfilling the personally chosen nature activity.

The main research question during this study was: How do persons with dementia select their environment during a personally chosen outdoor activity and how do these selection criteria influence behavior of a person with dementia during the activity?

The nature activities are observed and evaluated with every participant afterwards. This data is analyzed by the principles of qualitative content analyses. In this last chapter the meaning of the outcomes is described and discussed.

NATURE 4 DEM.

6.1 CONCLUSION

In general, the behavior of persons with dementia during a nature activity is driven by the characteristics of dementia by having focus for one object, difficulties in making choices and preferring regular patterns. Persons with dementia select the outdoor environment by the physical elements of paths, nodes, and landmarks and are mostly constraint by capability and authority constraints, which are influenced by the behavior of persons that join the activity.

As stated in the introduction in chapter one and explained in detail in the theoretical framework of chapter two; behavioral acting of persons with dementia is influenced by external factors like the environment, more than internal factors like feelings (Van der Plaats & Verbraeck, 2012). The Centre of Consultation and Expertise (n.d.) developed a circle model on problematic behavior of persons with dementia, although this research is not focused on problematic behavior this model helps to understand behavioral changes caused by external factors. They state that problematic behavior by persons with dementia can easily be caused by environmental factors. The model shows an interaction between social and physical environments and (problematic) behavior of a person with dementia. The conceptual model that is used during this study visualized the interactions of environmental factors on behavior and is shown in figure 6.1.

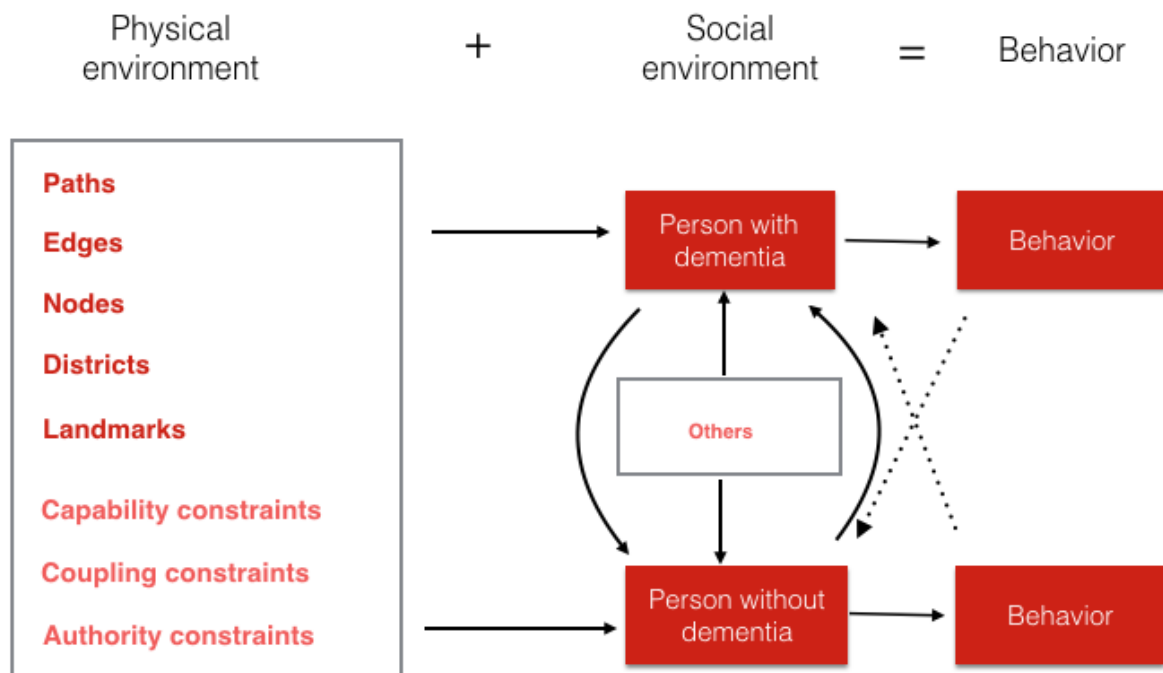


Figure 6. 1 Theoretical framework to understand how different stimuli influence behavior

Firstly, the elements of the physical environment are observed and interviewed. The theoretical concepts of Lynch and Hägerstrand helped to understand the principles that count when being somewhere. The most important results within the physical environment were:

1. The use of organical objects as landmarks.
2. Soil might to influence making decisions.
3. Making decisions about the route are highly dependent of the experiences of the caregiver in working with persons with dementia.
4. Tools that help to fulfill the activity can increase as well as decrease the experience of the activity.

Especially the first two results seem to be remarkable, the third result in the physical environment might be discussed if this is a result of the physical or social environment, while this seems to be influenced by the person that joins the activity. Also, this third statement might be a result of the disease dementia while it is generally known that persons with dementia have difficulties making decisions and that special approaches could help them.

The use of organical objects as landmarks is a very surprising outcome of this study. According to Lynch, landmarks are often physical structures such as a building, sign, or geographic features (e.g. mountain). This is in contrast with the results of this study, where persons with dementia might seem to use small organically objects as landmark. Lynch named geographical features such as mountains as landmarks so the type of object still fits in his theoretical framework, though there is a difference in size.

Although it must be discussed if this outcome is a result of the fact that we told them to involve nature actively during the activity, it is still remarkable that so many persons with dementia mentioned these objects instead of objects of the built environment that are mostly named as examples of landmarks in the theory of Lynch. This result could be of great importance in the future development of nature activities for persons with dementia. Activities should contain the natural based object instead of the built object. A general problem for persons with dementia is the level of processing information. It is suggested to talk in concrete objects like animals, specific flower names, etc. rather than abstract objects like the pet zoo or glass house. This small change in communication could offer better understanding of the goal of the activity for the person with dementia.

It is observed that changing the soil during the activity also caused a behavioral change in the person with dementia. This change in behavior of the person with dementia could be caused by changing the soils, or might also be influenced by breaking the regular pattern of fulfilling the activity. As observed during the nature activity, persons with dementia become scared and sometimes a bit confused when changing soil, but this also offers new experiences. To choose the route before starting the activity, the numbers of changing soils are regulated and so feelings of fear and confusion can be consciously decreased.

Secondly, in the introduction it is mentioned that there is an upcoming interest of geographers in disabilism and the city (Hubbard, 2006). "Disabilism demonstrates that cities do not care? for the full range of human body types and capabilities" (Hubbard, 2006, p.115). From the perspective of a disabled body, including brain damages like dementia diseases, places are characterized by physical inaccessibility and exclusion, with the physical layout of cities placing disabled people at risk of both physical friction as well as social exclusion (Hubbard, 2006). For this reason the three different forms of constraints as named by Hägerstrand are studied within this master thesis, namely capability, coupling and authority constraints. The results showed the influence of two types of constraints, namely capability and authority constraints. Coupling constraints did not influence the behavior of the person with dementia while a characteristic of dementia is losing sense of days and time (Alzheimer Nederland, n.d.). This strongly weakens the sense of this element for the spatial orientation of persons with dementia. Therefore, the days and times of the intervention were fixed to be able to make appointments with professionals, caregivers and volunteers to schedule free time for the nature activity. Persons with dementia were at the care institution anyway, and should probably have done another activity had they not been involved in this study.

Capability constraints are constraints arising from the ability of someone's physicality. Out of 30 participants, 15 participants

had dementia, 5 participants with dementia had problems with vision, 5 persons with dementia had problems with walking, this might suggest that persons that are dealing with these kinds of problems do experience the activity differently from persons who do not have dementia, but the opposite seems to be true. Zwijsen et. Al (2016) stated that the concept of a shared world between the person with dementia and caregivers is lost which causes a large part of the “difference” that can be experienced in behavior. Persons that joined the activity told that there is actually no, or less, difference in the experiences of the activity in that particular moment, according to some of the participants: “we both enjoyed it”. In the beginning of this research this constraint had high expectations for explaining some of the results, but finally the presence of dementia as a capability constraint as meant by Hägerstrand does not seem to be an explanatory variable for different behavioral acting.

In the introduction of this master thesis is stated:

“However, nature is often not easily available for people with dementia living in a nursing home or it is underused for different reasons, such as a non-supportive organizational policy or the lack of provision of activities that are meaningful to persons with dementia.”

[Hendriks, van Vliet, Gerritsen & Dröes, 2016, p. 12]

The authority constraints, which a lot of persons with dementia are dealing with when they live at closed departments, also does not seem to make enormous differences. This is mainly caused by the simple reason that caregivers easily leave the authorized and closed garden and fulfill the activity in public space close to the institution. This offers more possibilities to family caregivers and professionals in doing a nature activity that fits into a person’s personal preferences, while they are able to respond to unexpected problematic behavior. In contrast, an authorized garden offers great possibilities for volunteers to go outside with a person they do not know well, instead of staying indoors. Because the place is authorized people are not likely to break out and in case of problematic behavior a person could be left alone in a safe environment to calm down and the volunteer can go inside and ask for help. By knowing this information going outside for a moment with a person with dementia could be stimulated much more while it is safe and offers a pleasant moment for both participants more easily. So the authority constraint as meant by Hägerstrand seems to be more of an offer when fulfilling outdoor activities for persons with dementia rather than a constraint. Thirdly, as stated in the first chapter of this master thesis: “it is important to manage behavior and emotional dysregulations according to the need-driven dementia-compromised behavior model (Algase et al, 1996 in Hendriks et al, 2016). As shown in figure 6.1, during this master thesis the social environment of a person with dementia during fulfilling a nature activity was studied as well. In this element the role of “the other” and the role of passengers were reviewed. With “others”, professionals, caregivers and volunteers were meant.

The results of this study found that caregivers and professionals argue that persons with dementia are more sensitive for social contact than in the past. This behavioral change is so strong that they fulfill activities they never did before just to be surrounded by others. It is generally known, that when processing, the dementia patients lack verbal communication and become more dependent of other types of communication such as touching. The personal attention that could be offered during nature activities help persons with dementia in positive feelings, it is especially this personal one on one attention that helps them,

because dementia patients often struggle with dividing attention. This personal attention does not have to be particularly given by the person that fulfills the activity but can also be given by a passenger that is actively involved within the activity.

“Others” are able to add an extra positive experience to the activity by having small talk with the dementia patient and by guiding the couple through for example the glass house or petting zoo and talking about the flowers and animals. This extra experience is mainly noticed by the person that joins the activity afterwards, though the person with dementia started to participate more actively when a passenger offered support in the direct moment of fulfilling the activity. Again, the personal attention that is offered to the person with dementia seems to be very important in making the experience of the activity a pleasant one.

Although persons with dementia said that they are looking for social contact, they also often mentioned that the number of social contacts they have is decreasing when the dementia progresses. Brooker (2004, p. 218) explains the context of relationships within his description of personhood and why social contact is this important ‘... individuals do not function in isolation, they also have relationships with others; all human life is interconnected and interdependent’. So the problem with social interaction within dementia is not particularly the presence of social interaction, but it is the verbal communication that can be experienced as problematic. Two participants that joined the activity mentioned that a reason to not fulfill the activity is lacking knowledge in communication with persons with dementia themselves. This seems to be in line with the experiences of the persons with dementia. Though, nature activities seem to be able to change this fear of lacking communication, while almost all participants said that the nature activity helped them in having conversation with the person with dementia. They stated that carrying out an activity is less fixed than sitting in the shared living room, silences are natural and topics pop up easily. Nature activities as done during this study help decreasing the lacking communication between a person with dementia and a caregiver and might even cause more frequent visits when both persons enjoyed it.

Six participants with dementia showed active involvement within the nature activity. Out of these 6 persons, 5 participants already were excited to go outside before the activity started and one person became more active as the activity progressed. Therefore, it is suggested that active involvement is mostly caused by a preference to be outside, more than the choice of the activity.

Last notion that was observed during the activities was a special type of behavioral acting of the caregiver. Nature activities like this offered good possibilities for person-centered care, but some carers ignored, consciously or unconsciously, the wishes of the person with dementia. This also resulted in different behavioral acting of the person with dementia. When the signals for personal attention were ignored unconsciously, the person with dementia started looking for other persons and animals to receive the attention they were looking for from and so they would be happy in the end as well. This result suggests that a person with dementia is influenced by personal attention, but this attention could be coming from any kind of source that is able to give attention, like other persons or animals. Persons with dementia showed that they are able to act independent if there is the right balance between guidance and self-exploring.

This study serves as a window to an understanding of the process of how spatial elements of the physical and social environment influence the behavior of persons with dementia during a personally chosen nature activity. The arguments given above prove

that the physical environment is selected by mostly the same elements as given in the conceptual model, but the interpretation of these elements by persons with dementia work out differently than described in theory.

6.2 DISCUSSION

Some topics have to be discussed regarding the implication of this research.

This explorative study involved professionals, personal caregivers and volunteers as participants next to the persons with dementia. Professionals and personal caregivers were included from the start of the research, and volunteers were asked to participate in the feedback of the first intervention. The reason to include them was because some personal caregiver as well as professionals felt that an app that offers nature activities might have potential, but not for them. They told that persons that do not visit the person with dementia often might profit more, while they –the professionals and caregivers- already know what a person with dementia likes to do when being outside. Afterwards, in this phase of the research it still seems to have been the right choice to include volunteers into the target group, while it offered single pleasant activities for both persons. Though I would like to stimulate further research towards the implementation of the app and nature activities as treatment to focus towards professionals and personal carers. This is important because the character of a person with dementia might be changing and the app could help professionals and caregivers to let the person with dementia speak out his or her new preferences. So this idea fits well into new approaches of person-centered care.

A second point of discussion I would like to mention is the fact that participants knew beforehand that they were involved in a study about nature activities for persons with dementia and this probably influenced the outcome of the study. It might be possible that the participants did not have such a strong focus for nature and nature objects had we observed them without giving them an activity to fulfill, but had we observed them in outside spaces during regular days and regular activities. In further research it is advised to inform participants again as done in this research. Although in some explorative studies participants are informed they were involved in a research afterwards, persons with dementia are extremely vulnerable and although they do not remember everything, it would be ethically irresponsible to not inform them beforehand.

The last discussion point is the chosen care institutions. The care institutions that were involved within this study all seem to be pioneers in the field of outdoor activities and were all located within a short distance of the built environment. Last month especially, the given care in health care institutions for elderly in the Netherlands have been under pressure, I believe that the nature conditions were good and the participants that joint the activity in the care institution were very interested in nature. It is interesting for upcoming researchers within this field to find a way to apply nature activities in built areas like big cities in the Randstad, and to find out what is needed to motivate participants to fulfill nature activities. This research showed that there is still much to find out about persons with dementia and their nature preferences as well as the personal attention that could be offered during activities like these.

NATURE 4 DEM.

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NATURE 4 DEM.

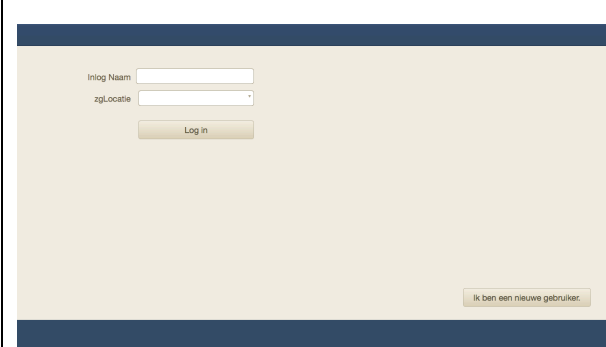
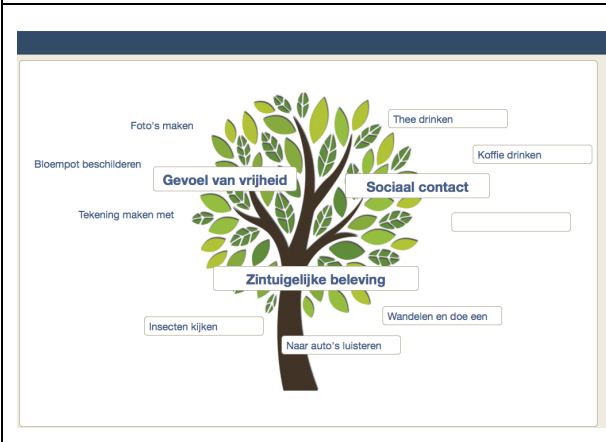

APPENDIX




- | APPENDIX A INTERVENTION 1: IMPRESSION OF THE APP
- | APPENDIX B INTERVENTION 2: IMPRESSION OF THE APP
- | APPENDIX C INTERVENTION 1: INTERVIEWGUIDE
- | APPENDIX D INTERVENTION 2: INTERVIEW GUIDE
- | APPENDIX E CODELIST ATLAS.TI

APPENDIX

Appendix A Intervention 1: Impression of the APP

 <p>Log In</p> <p>Ik ben een nieuwe gebruiker.</p>	<p>Welkom!</p> <p>U staat op het punt om buiten een activiteit te gaan doen die volledig aansluit bij uw persoonlijke wensen in de natuur. Om te weten wat dit is kunt u in het volgende scherm aangeven van welke belevingsaspecten u geniet. Op basis van deze belevingsaspecten komen er 9 activiteiten naar boven. De keuze is aan u om uit te kiezen welke u gaat doen.</p> <p>Veel plezier!</p> <p>Volgende</p>																
<p>Gebruiker: Simone Haarbosch</p> <p>Selecteer Hoofdgebruiker: Mevrouw P. Atient</p> <p>Vorige</p> <p>Volgende</p>	<p>Gebruiker: Mevrouw P. Atient</p> <p>Kies hieronder drie belevingsaspecten die het meest van toepassing zijn.</p> <table border="1"><thead><tr><th>Belevingsaspect</th><th>Waardering</th></tr></thead><tbody><tr><td>Gevoel van vrijheid</td><td>♥</td></tr><tr><td>Rust</td><td>♥</td></tr><tr><td>Gezondheid</td><td>♥</td></tr><tr><td>Sociaal contact</td><td>♥</td></tr><tr><td>Zintuiglijke beleving</td><td>♥</td></tr><tr><td>Herinneringen</td><td>♥</td></tr><tr><td>Nuttig voelen</td><td>♥</td></tr></tbody></table> <p>Vorige</p> <p>Volgende</p>	Belevingsaspect	Waardering	Gevoel van vrijheid	♥	Rust	♥	Gezondheid	♥	Sociaal contact	♥	Zintuiglijke beleving	♥	Herinneringen	♥	Nuttig voelen	♥
Belevingsaspect	Waardering																
Gevoel van vrijheid	♥																
Rust	♥																
Gezondheid	♥																
Sociaal contact	♥																
Zintuiglijke beleving	♥																
Herinneringen	♥																
Nuttig voelen	♥																
 <p>Tree diagram with activities:</p> <ul style="list-style-type: none">Foto's makenBloempot beschilderenTekening maken metInsecten kijkenNaar auto's luisterenWandelen en doe eenGevoel van vrijheidSociaal contactZintuiglijke belevingThee drinkenKoffie drinken	<p>Bloempot beschilderen</p> <p>Activiteit: Locatie Activiteit</p> <p>Met verf en een kwast een bloempot versieren</p> 																

Appendix B Intervention 2: Impression of the APP



Wat is uw inlognaam?

Op welke locatie bevindt u zich?

1 Diersthus
2 Hazelaar
5 De Vloet
6 Tertio

Ik ben een nieuwe gebruiker.

[Simone begripstunty](#)

Welkom!

U staat op het punt om buiten een activiteit te gaan doen die volledig aansluit bij uw persoonlijke wensen in de natuur. In het volgende scherm verschijnen een aantal keer 3 plaatjes in beeld, kies hier elke keer opnieuw uw favoriete beeld.

Hierna verschijnt er een boom in beeld waarop verschillende activiteiten zijn genoemd. Klik de activiteit aan om meer informatie te lezen over de activiteit. Druk op KIES bij de activiteit die u het meeste aanspreekt, trek vervolgens uw jas aan en ga naar buiten om de activiteit uit te voeren.

Veel plezier!

Volgende

Gebruiker:



Selecteer Hoofdgebruiker

deinmet2
Evens
Huisman
Janssen-Sweeren
Mennink P. Adert
wonderboom


Vorige Volgende

Met deze plaatjes kunt u uw voorkeuren aangeven.
Kies een van de onderstaande drie plaatjes door erop te drukken.

zAantal 1


Gevoel van vrijheid Gezondheid Herinneringen



Picknicken

Wandelen en doe een

Uitzichten bekijken


Naar de lucht kijken

Opzoek naar

Kruiden ruiken/plukken

Picknicken

PICKNICKEN





KIES

Met een kleed en een mandje eten / drinken naar een plek waar je rustig kan zitten.

Met een kleed en een mandje eten / drinken naar een plek waar je rustig kan zitten.

Planten kunnen inderdaad met elkaar 'praten' of communiceren. Als er voldoende overlevende grote hoeveelheden planten opeten, zullen deze bepaalde gasen naar andere planten in de buurt zenden. De planten interpreteren dit als een waarschuwing en verdedigen zichzelf door

 <p>een waarschuwing en verdedigen zichzelf door een vlieze stof af te geven die zelfs de meest hongerige dieren ontmoetert</p> <p>Wist je dat tulpen in Nederland in de vijftiende eeuw meer waard waren dan goud?</p> <p>Er zijn verschillende redenen waarom bloemen geuren hebben.</p> <ul style="list-style-type: none"> - Afvalproduct van de stofwisseling in de plant (zoals het zweten bij de mens). - Communicatiesysteem tussen planten, tussen planten en dieren, tussen planten en mensen - Afweersysteem tegen vraat. Planten hebben naast rookolie om te verspreiden <p>Voorbeelden van giftige bloemen. Mooie bloemen die in uw tuin groeien zijn soms giftig, zelfs dodelijk indien ingeslikt. De bollen van de hyacint, narcis en narcissus planten kunnen fataal zijn als je ze inslikt.</p>	 <p>Vertel over het nieuws van de dag: U kunt nieuwtjes vertellen van familie en bekenden of de plannen van de dag doornemen. Als degene met dementie moeite heeft met spreken, wordt u vaak de gangmaker van het gesprek.</p> <p>Geef ruimte voor eigen inbreng: U bent waarschijnlijk steeds vaker aan het woord dan degene met dementie. Het is dan wel belangrijk om ruimte te geven aan hem of haar. Dat kan bijvoorbeeld door een stilte te laten vallen.</p> <p>Vraag om eigen inbreng: U kunt ook op andere manieren laten merken dat u de inbreng van degene met dementie waardeert. Dat kan bijvoorbeeld door te vragen naar een onderwerp waar iemand graag iets over wil vertellen.</p>
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Appendix C Intervention 1: Interviewguide

PROFESSIONALS

Relevantie

1. Hoe verhoudt aanbod van activiteiten dat wordt aangeboden in de app zich tot het bestaande aanbod?
2. Heeft de app u nieuwe activiteiten, ondersteuning en kennis aangereikt?
 - o En waar heeft u nog behoefte aan?
3. Waarom vindt u dat de activiteit uit de app wel of niet aansluit bij de bestaande behoeften en wensen van persoon met dementie?
 - o Zo nee, hoe zou de activiteit beter kunnen aansluiten?

Uitvoerbaarheid app:

1. Vond u de app makkelijk in gebruik?
 - a. Hoe zou de app overzichtelijker gemaakt kunnen worden?
 - b. Wat zijn voor u redenen om de app wel te gebruiken? En waarom?
 - c. Wat zijn voor u redenen om de app niet te gebruiken? En waarom?
2. Welke onderwerpen zou u ook nog graag in de app zien?
 - a. Kunt u aangeven hoe de app beter visueel kan aansluiten bij uw persoonlijke voorkeuren? Wat vindt u zelf mooi om te zien? Namen van apps?
 - b. Kunt u aangeven hoe de informatie in de app beter kan aansluiten bij uw persoonlijke voorkeuren?
3. Hoe was uw contact met de persoon met dementie tijdens het invullen van de app?
 - a. En waaraan merkte u dat?

Uitvoerbaarheid natuuractiviteit:

1. Wat had u na het invullen van de app van de activiteit verwacht, en kwam dit overeen met hoe de activiteit was?
2. Wat denk u dat [PERSOON DEMENTIE] van het uitvoeren van de natuuractiviteit vond?
3. Wat vond u zelf van het uitvoeren van de natuuractiviteit?
4. Waarom heeft de natuuractiviteit u wel/geen voldoening gegeven?
5. Was u in de mogelijkheid om de activiteit uit te voeren zoals de app dat aangaf? Beschikte u over de juiste locatie/ hulpmiddelen/ kennis etc?
 - o Zo nee, waaraan merkte u dit en hoe heeft u dit opgelost, en hoe reageerde de persoon met dementie hierop?
6. Op welke manier kan een natuur activiteit/ activiteit de belasting voor mantelzorgers tijdelijk verlichten volgens u?
7. Welke ondersteuning vanuit de app zou u nodig hebben om de activiteiten voldoende helder te begrijpen?

8. Welke onduidelijkheden kwam u tegen tijdens de activiteit, en hoe heeft u dit opgelost?
9. Hoe was uw contact met de persoon met dementie tijdens het uitvoeren van de natuuractiviteit?
 - o En waaraan merkte u dat?
10. Hoe zou u het gedrag/stemming van [PERSOON DEMENTIE] voor de activiteit omschrijven? En waarom?
11. Hoe zou u het gedrag van [PERSOON DEMENTIE] tijdens de activiteit omschrijven? En waarom?
12. Op welk moment of welke momenten tijdens de activiteit merkte u dat de persoon met dementie het leuk vond?
 - o En waar denkt u dat dit aan lag?
13. Op welk moment of welke momenten tijdens de activiteit merkte u dat de persoon met dementie het niet leuk vond?
 - o En waar denkt u dat dit aan lag?
14. Was er een moment of waren er momenten tijdens het uitvoeren van de activiteit waarbij u het gevoel had dat [PERSOON DEMENTIE] de situatie probeerde te vermijden, ontwijkend gedrag vertoonde?
 - o Zo ja, Welk moment of momenten was dit?
15. Welke rol denkt u dat dementie speelt in de beleving van een natuur activiteit?
 - o Waarin denkt u dat deze beleving verschilt van uw eigen ervaring?
16. Welke omgevingsfactoren, als bomen, dieren, kleuren etc, spelen volgens u een belangrijke rol bij het plezier hebben tijdens het uitvoeren van een activiteit voor de persoon met dementie?
17. Welke factoren spelen volgens u een belangrijke rol bij het verstoren van de plezierige beleving tijdens het uitvoeren van een activiteit voor de persoon met dementie?
18. Hoe denk u over de beschikbare kennis en ervaring bij organisaties zoals die van u om deze natuuractiviteiten uit te voeren?
 - o Op welke manier kan dit worden aangepakt?
19. Welke redenen heeft u om natuuractiviteiten zoals deze uit te voeren?
 - o Zo nee, hoe kunnen we zorgen voor meer motivatie?
20. Welke financiële belemmeringen zouden er voor kunnen zorgen dat u een natuuractiviteiten niet zou uitvoeren?
 - o Wat kan een oplossing zijn?
21. Welke andere barrières kunt u bedenken waardoor het uitvoeren van deze activiteiten wordt bemoeilijkt (bv. geen ruimte, geen hulpmiddelen, geen tijd)?
 - o Hoe ziet u dit terug bij de persoon met dementie?
 - o En hoe zou dit probleem kunnen worden opgelost?
22. Welke factoren kunt u bedenken die het uitvoeren van deze activiteiten kunnen vergemakkelijken?

Afsluiting:

- Wij willen u hartelijk danken voor u tijd en bereidwilligheid om mee te werken aan dit onderzoek.
24. Heeft u verder nog ideeën of op- en aanmerkingen over het implementeren van deze applicatie en de activiteit?

Mantelzorgers:

Relevantie

4. Wat vond u van de activiteit?
5. Waarin onderscheidde de activiteit die uit de app kwam zich van activiteiten die u normaal doet?
6. Op welke manier heeft de app u nieuwe activiteiten, ondersteuning en kennis aangereikt?
 - o En hoezo dan?
 - o En waar heeft u nog behoefte aan?
7. Op welke manier sluit de activiteit uit de app aan bij de bestaande behoeften van persoon met dementie? En waarom?
 - o Zo nee, hoe zou de activiteit beter kunnen aansluiten?

Uitvoerbaarheid app:

1. Wat viel u als eerste op aan de app?
2. Hoe vond u de app in het gebruik?
 - d. Hoe zou de app overzichtelijker gemaakt kunnen worden?
 - e. Wat zijn voor u redenen om de app wel te gebruiken? En waarom?
 - f. Wat zijn voor u redenen om de app niet te gebruiken? En waarom?
2. Welke onderwerpen zou u ook nog graag in de app zien?
3. Hoe was uw contact met [PERSOON DEMENTIE] met dementie tijdens het invullen van de app?
 - b. En waaraan merkte u dat?

Uitvoerbaarheid natuuractiviteit:

23. Wat had u na het invullen van de app van de activiteit verwacht, en kwam dit overeen met hoe de activiteit was?
24. Wat denk u dat [PERSOON DEMENTIE] van het uitvoeren van de natuuractiviteit vond?
25. Welke activiteiten vond [PERSOON DEMENTIE] vroeger leuk om te doen buiten?
26. Op welke manier sloot de activiteit aan bij hoe u [PERSOON DEMENTIE] kent vanuit vroeger?
27. Wat vindt u lastig bij het zelf bedenken van buitenactiviteiten om samen te doen?
28. Wat vond u zelf van het uitvoeren van de natuuractiviteit?
29. Waarom heeft de natuuractiviteit u wel/geen voldoening gegeven?
30. Kon u de activiteit uit voeren zoals de app dat aangaf? Beschikte u over de juiste locatie/ hulpmiddelen/ kennis etc?
 - o Zo nee, waaraan merkte u dit en hoe heeft u dit opgelost, en hoe reageerde uw naaste hierop?
31. Wat zijn voor u redenen om de activiteit wel of niet in uw thuisomgeving uitvoeren?
32. Op welke manier kan een natuur activiteit/ activiteit als deze uw belasting tijdelijk verlichten?
33. Welke ondersteuning vanuit de app zou u nodig hebben om de activiteiten voldoende helder te begrijpen?
34. Welke onduidelijkheden kwam u tegen tijdens de activiteit, en hoe heeft u dit opgelost?
35. Hoe was uw contact met de persoon met dementie tijdens het uitvoeren van de natuuractiviteit?
 - o En waaraan merkte u dat?
36. Hoe zou u het gedrag/stemming van [PERSOON DEMENTIE] voor de activiteit omschrijven? En waarom?
37. Hoe zou u het gedrag van [PERSOON DEMENTIE] tijdens de activiteit omschrijven? En waarom?
38. Op welk moment of welke momenten tijdens de activiteit merkte u dat de persoon met dementie het leuk vond?
 - o En waar denkt u dat dit aan lag?
39. Op welk moment of welke momenten tijdens de activiteit merkte u dat de persoon met dementie het niet leuk vond?
 - o En waar denkt u dat dit aan lag?
40. Was er een moment of waren er momenten tijdens het uitvoeren van de activiteit waarbij u het gevoel had dat [PERSOON DEMENTIE] de situatie probeerde te vermijden, ontwijkend gedrag vertoonde?
Zo ja, Welk moment of momenten was dit?

41. Welke rol denkt u dat dementie speelt in de beleving van een natuur activiteit?
 - o Waarin denkt u dat deze beleving verschilt van uw eigen ervaring?
42. Welke omgevingsfactoren spelen volgens u een belangrijke rol bij het plezier hebben tijdens het uitvoeren van een activiteit voor de persoon met dementie?
43. Welke factoren spelen volgens u een belangrijke rol bij het verstoren van de plezierige beleving tijdens het uitvoeren van een activiteit voor de persoon met dementie?
44. Welke redenen heeft u om natuuractiviteiten zoals deze uit te voeren?
 - o Zo nee, hoe kunnen we zorgen voor meer motivatie?
45. Welke financiële belemmeringen zouden er voor kunnen zorgen dat u een natuuractiviteiten niet zou uitvoeren?
 - o Wat kan een oplossing zijn?
46. Welke andere barrières kunt u bedenken waardoor het uitvoeren van deze activiteiten wordt bemoeilijkt (bv. geen ruimte, geen hulpmiddelen, geen tijd)?
 - o Hoe uiten deze barrières zich bij de persoon met dementie?
 - o En hoe zou dit probleem kunnen worden opgelost?
47. Welke factoren kunt u bedenken die het uitvoeren van deze activiteiten kunnen vergemakkelijken?

Afsluiting:

- Wij willen u hartelijk danken voor u tijd en bereidwilligheid om mee te werken aan dit onderzoek.

Heeft u verder nog ideeën of op- en aanmerkingen over het implementeren van deze applicatie en de activiteit?

Personen met dementie

Introductie

- Onszelf voorstellen.
- We willen graag met u praten over de app en de activiteit die u net buiten heeft uitgevoerd.
- Vindt u het goed dat dit gesprek wordt opgenomen? Dit helpt ons bij de verwerking van de gegevens. Dit helpt ons bij het onderzoek.
- Wij verwerken de dingen die u zegt anoniem, uw naam staat er dus niet bij.
- Ik ben erg benieuwd wat u van deze app en activiteit vond.
- Met uw hulp kunnen wij de activiteiten aanpassen en verbeteren.

Uitvoerbaarheid app:

1. Wat vond u van de app?
 - a. Wat vind u van de kleuren?
 - b. Wat vind u van de letters?
2. Was het duidelijk wat u moest doen?
 - a. Wat vond u van de vragen die gesteld werden?
 - b. Wat vond u van de plaatjes?
3. Hoe zouden we de app kunnen verbeteren?

Uitvoerbaarheid natuuractiviteit:

4. Vond u het leuk om de activiteit te doen?
 - a. Vond u het leuk om de activiteit buiten te doen?
5. Wat vond u het leukste? En waarom?
6. Wat vond u minder leuk? En waarom?
7. Wat vond u het leukste aan het buiten zijn?
8. Helpt de gedachten aan natuur u ook al te ontspannen?
9. Kon u de activiteit goed uitvoeren?
 - a. Indien ja, waardoor kon u de activiteit goed uitvoeren?
 - b. Indien nee, waardoor kon u de activiteit niet goed uitvoeren?
10. Vond u het leuk om de activiteit vandaag uit te voeren?
 - a. Of wanneer had u het liefste de activiteit gedaan?
11. Voelde u zich op uw gemak tijdens de activiteit?
 - a. en waarom/ waardoor kwam dat?
12. En hoe voelt u zich nu?
13. Vond u het leuk om de activiteit samen met uw partner/ verzorgende te doen?
 - a. en waarom?
14. Zou u de activiteit graag met de anderen (van de afdeling) samen doen?
 - a. en waarom?
15. Wilt u nog een keer een buitenactiviteit uitvoeren?
16. Welke andere buitenactiviteiten lijken u ook leuk?
17. Hoe zouden we de activiteit dan leuker/makkelijker kunnen maken?

Evaluatie:

- Wij willen u hartelijk danken voor u tijd en bereidwilligheid om mee te werken aan dit onderzoek.

Wil u verder nog iets aan ons kwijt?

Appendix D Intervention 2: Interview guide

Professional/ mantelzorger

Algemene interesse in natuur

1. **Bent u graag buiten of in de natuur?**
 - a. En zo ja/nee waarom?
 - b. Wat zijn de redenen hiervoor?
2. **Hoe vaak onderneemt u natuur activiteiten alleen? En hoe vaak samen met de anderen?**
3. **Hoe zou u uw kennis van natuur omschrijven?**
4. **Kunt u uw eigen interesse/voorkeuren in de natuur omschrijven?**
5. **Kunt u de interesse in natuur van de persoon met dementie omschrijven?**

Activiteit

6. **Kunt u de route die we gelopen hebben nog eens van begin tot eind omschrijven?**
 - a. Wat is u onderweg allemaal opgevallen?
 - b. Kunt de grenzen van het gebied waar u geweest bent omschrijven, bijvoorbeeld tot aan de vijver, tot de bosrand?
 - c. Waar op de route moest u keuzes maken voor het vervolg van de route?
- Kunt u deze keuzes omschrijven/ toelichten?
7. **Kon u de activiteit goed uitvoeren?**
- En waarom?
 - a. Wat denkt u dat de persoon met dementie van de uitvoering van de activiteit vond?
- En waarom?
 - b. En wat vond u er zelf van?
8. **Had u voldoende kennis van de natuur om de activiteit uit te voeren?**
 - a. Was dit ook nodig/van toegevoegde waarden?
 - b. Is er binnen uw organisatie/ kennissenkring voldoende kennis aanwezig om activiteiten als deze uit te voeren, en wat zou daar anders voor nodig zijn?

Omgeving van de activiteit

9. **Welke dingen vindt u positief aan deze omgeving?**
10. **Welke dingen maken een minder prettige indruk op u?**

Belemmeringen

11. **Welke redenen kunt u bedenken om activiteiten als deze niet uit te voeren?**
 - a. En waarom juist deze?
12. **Op welke manier denkt u dat uw ervaring van de activiteit verschilt dan van degene met wie u de activiteit uitgevoerd heeft?**

Contact met persoon met dementie

13. **Hoe heeft de activiteit u geholpen om een gesprek te voeren?**
 - a. Over welke onderwerpen hebben jullie gesproken tijdens het uitvoeren van de activiteit?

Vormgeving van de app

14. **Kunt u vertellen wat u had verwacht van de app, bijvoorbeeld hoe deze eruit zou zien en hoe je deze zou gebruiken?**
15. **Hoe vond u de app in gebruik?**
 - a. Is de app duidelijk leesbaar?
 - b. Wat vond u van het lettertype?
 - c. Wat vond u van de besturing van de app, op het gebied van scrollen/ swipen enzo?
16. **Hoe vond u de vormgeving van de app?**
 - a. Wat vond u van de kleuren die gebruikt zijn in de app?
 - b. Wat vond u van de afbeeldingen die werden weergegeven?
17. **Hoe denkt u over de moeilijkheidsgraad van het invullen van de app?**
 - a. Heeft u extra instructies nodig bij het invullen van de app?
 - b. En wat zouden deze instructies moeten zijn?

- 18. Sluit de app aan op de belevingswereld/tijdsgeest, behoeften, wensen en mogelijkheden van de persoon met dementie?**
- 19. Wat vond u van de uitkomst van de app?**
 - a. Wat had u van te voren verwacht van de uitkomst van de activiteit?
 - b. Wat vond u van de presentatie en informatie over de uitkomst van de activiteit?
- 20. Wat zou u graag verbeterd willen zien in de toekomst van de app en het aanbod van de activiteiten?**
 - a. Hoe zouden we de app beter kunnen personaliseren?
 - b. Welke algemene aanpassingen zou u nog graag willen zien?
- 21. Waarom zou een app als deze juist wel of niet gaan gebruiken in de toekomst?**
 - a. Welke andere apps zou u gebruiken?

Interview Nature4DEM
Deelnemer

Algemene interesse in natuur

1. **Bent u graag buiten of in de natuur?**
 - a. En zo ja/nee waarom?
 - b. Wat zijn de redenen hiervoor?
2. **Hoe vaak gaat u naar buiten?**
3. **Waar geniet u het meeste van tijdens het buiten zijn/ in de natuur?**

Activiteit

4. **Kunt u omschrijven wat we onderweg gezien hebben?**
 - a. Wat is u onderweg allemaal opgevallen in de omgeving?
 - b. Waar op de route moest u keuzes maken voor links of rechts? En waarom koos u voor links of rechts?
5. **Kon u de activiteit goed uitvoeren? En waarom?**

Omgeving van de activiteit

6. **Wat vond u fijn aan deze omgeving?**
7. **Wat vond u niet zo fijn aan deze omgeving?**

Contact met persoon met dementie

8. **Begreep u de vragen die de mantelzorger/professional aan u stelde tijdens in het invullen van de app?**
 - a. En waarom ervaarde u dit zo/ waaraan merkte u dit?
9. **Merkte u dat u blij werd van de activiteit?**
 - a. En zo ja, wat was dit, wanneer tijdens de activiteit merkte u dit op en hoe denkt u dat dit kwam?

Vormgeving van de app

10. **Kunt u vertellen wat u had verwacht van de app, bijvoorbeeld hoe deze eruit zou zien en hoe je deze zou gebruiken?**
11. **Hoe vond u de app in gebruik?**
 - a. Is de app duidelijk leesbaar?
 - b. Wat vond u van het lettertype?
 - c. Wat vond u van de besturing van de app, op het gebied van scrollen/ swipen enzo?
12. **Hoe vond u de vormgeving van de app?**
 - d. Wat vond u van de kleuren die gebruikt zijn in de app?
 - e. Wat vond u van de afbeeldingen die werden weergegeven?
13. **Zou u de app ook alleen kunnen gebruiken?**
14. **Sluit de app aan op uw behoeften, wensen en mogelijkheden van wat u in een buitenactiviteit zoekt?**
15. **Wat vond u van de uitkomst van de app?**
 - a. Wat had u van te voren verwacht van de uitkomst van de activiteit?
 - b. Wat vond u van het eindscherm van de activiteit die uit de app kwam?
16. **Wat zou u graag verbeterd willen zien in de toekomst van de app?**
17. **Waarom zou een app als deze juist wel of niet willen gebruiken in de toekomst?**

Appendix E Codelist Atlas.TI

		Name			
◇	○	Argumentatie ervaring persoon met dementie: behoefte aan persoonlijke aandacht	<div><div></div></div>	10	<div><div></div></div>
◇	○	Argumentatie ervaring persoon met dementie: Enthousiasme in stem/spraak	<div><div></div></div>	3	<div><div></div></div>
◇	○	Argumentatie ervaring persoon met dementie: Sociale omgeving	<div><div></div></div>	10	<div><div></div></div>
◇	○	Argumentatie ervaring persoon met dementie: vind ik leuk	<div><div></div></div>	2	<div><div></div></div>
◇	○	Argumentatie ervaring persoon met dementie: Zelf kunnen kiezen	<div><div></div></div>	4	<div><div></div></div>
◇	○	Argumentatie ervaring persoon met dementie: Zelf kunnen vertellen	<div><div></div></div>	4	<div><div></div></div>
◇	○	Begeleider routebeschrijving: afslaan naar specifiek punt	<div><div></div></div>	4	<div><div></div></div>
◇	○	Begeleider routebeschrijving: afslaan naar specifiek punt voor meer rust	<div><div></div></div>	3	<div><div></div></div>
◇	○	Begeleider routebeschrijving: Bankjes	<div><div></div></div>	2	<div><div></div></div>
◇	○	Begeleider routebeschrijving: bebouwing	<div><div></div></div>	6	<div><div></div></div>
◇	○	Begeleider routebeschrijving: Dieren	<div><div></div></div>	6	<div><div></div></div>
◇	○	Begeleider routebeschrijving: Herkenbaar	<div><div></div></div>	4	<div><div></div></div>
◇	○	Begeleider routebeschrijving: Herkenning personen persoon dementie	<div><div></div></div>	1	<div><div></div></div>
◇	○	Begeleider routebeschrijving: omschrijving type natuur	<div><div></div></div>	1	<div><div></div></div>
◇	○	Begeleider routebeschrijving: Ondergrond	<div><div></div></div>	4	<div><div></div></div>
◇	○	Begeleider routebeschrijving: Oversteken van een pad	<div><div></div></div>	1	<div><div></div></div>
◇	○	Begeleider routebeschrijving: Plantenbakken	<div><div></div></div>	2	<div><div></div></div>
◇	○	Begeleider routebeschrijving: Verlaten instituut	<div><div></div></div>	6	<div><div></div></div>
◇	○	Begeleider routebeschrijving: Voorbijgangers	<div><div></div></div>	8	<div><div></div></div>
◇	○	Begeleider routebeschrijving: Weinig natuur	<div><div></div></div>	1	<div><div></div></div>
◇	○	Begeleider routebeschrijving: Wind	<div><div></div></div>	2	<div><div></div></div>
◇	○	Begeleider voorkennis activiteit: Andere activiteit gekozen	<div><div></div></div>	2	<div><div></div></div>
◇	○	Begeleider voorkennis activiteit: Geld meegenomen	<div><div></div></div>	1	<div><div></div></div>
◇	○	Begeleider voorkennis activiteit: kent persoon goed genoeg om nadruk te leggen op perso...	<div><div></div></div>	1	<div><div></div></div>
◇	○	Begeleider voorkennis activiteit: Sigaretten meegenomen	<div><div></div></div>	1	<div><div></div></div>
◇	○	Begeleider voorkennis activiteit: Weet hoe het hulpmiddel werkt	<div><div></div></div>	1	<div><div></div></div>
◇	○	Eerste wat opvalt tijdens activiteit: Bloemen	<div><div></div></div>	2	<div><div></div></div>
◇	○	Ervaring activiteit: Bij grote groep minder focus voor natuur	<div><div></div></div>	1	<div><div></div></div>
◇	○	Ervaring hulpmiddel observatie: bevordert ervaring	<div><div></div></div>	2	<div><div></div></div>
◇	○	Ervaring hulpmiddel observatie: Verstoot ervaring	<div><div></div></div>	2	<div><div></div></div>
◇	○	Ervaring persoon met dementie door begeleider: Als persoon dementie buiten is voelt hij z...	<div><div></div></div>	1	<div><div></div></div>

		Name			
◇	○	Ervaring persoon met dementie door begeleider: Als persoon dementie buiten is voelt hij z...	<div><div></div></div>		
◇	○	Ervaring persoon met dementie door begeleider: Doen veel samen	<div><div></div></div>	1	<div><div></div></div>
◇	○	Ervaring persoon met dementie door begeleider: duurde te lang	<div><div></div></div>	1	<div><div></div></div>
◇	○	Ervaring persoon met dementie door begeleider: Geniet hiervan	<div><div></div></div>	14	<div><div></div></div>
◇	○	Frequentie buitenactiviteiten ondernemen	<div><div></div></div>	2	<div><div></div></div>
◇	○	Frequentie buitenactiviteiten ondernemen: Dagelijks	<div><div></div></div>	6	<div><div></div></div>
◇	○	Frequentie buitenactiviteiten ondernemen: Niet zo vaak	<div><div></div></div>	3	<div><div></div></div>
◇	○	Frequentie buitenactiviteiten ondernemen: wenselijk is niet perse dagelijks	<div><div></div></div>	2	<div><div></div></div>
◇	○	Frequentie buitenactiviteiten ondernemen: Zo vaak mogelijk	<div><div></div></div>	3	<div><div></div></div>
◇	○	Fysieke gesteldheid persoon dementie: Activiteit uitgevoerd met rolstoel	<div><div></div></div>	4	<div><div></div></div>
◇	○	Fysieke gesteldheid persoon dementie: Beïnvloed keuze activiteit	<div><div></div></div>	1	<div><div></div></div>
◇	○	Fysieke gesteldheid persoon dementie: Goed ter been	<div><div></div></div>	4	<div><div></div></div>
◇	○	Fysieke gesteldheid persoon dementie: Slecht ter been	<div><div></div></div>	4	<div><div></div></div>
◇	○	Fysieke gesteldheid persoon dementie: Slecht zicht	<div><div></div></div>	5	<div><div></div></div>
◇	○	Gedrag begeleider tijdens activiteit observatie: Heeft geen persoonlijke aandacht voor per...	<div><div></div></div>	1	<div><div></div></div>
◇	○	Gedrag begeleider tijdens activiteit observatie: Maakt bewuste keuze route	<div><div></div></div>	3	<div><div></div></div>
◇	○	Gedrag begeleider tijdens activiteit observatie: Negeert gedrag persoon dementie	<div><div></div></div>	4	<div><div></div></div>
◇	○	Gedrag begeleider tijdens activiteit observatie: Stimuleert actief bezig zijn met omgeving	<div><div></div></div>	10	<div><div></div></div>
◇	○	Gedrag begeleider tijdens activiteit observatie: Zichtbaar emotioneel	<div><div></div></div>	1	<div><div></div></div>
◇	○	Gedrag keuzemoment: aarzeling bij wisselen ondergrond	<div><div></div></div>	3	<div><div></div></div>
◇	○	Gedrag keuzemoment: Maakt snel heldere keuze	<div><div></div></div>	3	<div><div></div></div>
◇	○	Gedrag keuzemoment: Zelfde ondergrond door	<div><div></div></div>	1	<div><div></div></div>
◇	○	Gedrag persoon met dementie tijdens activiteit observatie: Angstig	<div><div></div></div>	6	<div><div></div></div>
◇	○	Gedrag persoon met dementie tijdens activiteit observatie: Bij veel prikkels tempo omlaag	<div><div></div></div>	2	<div><div></div></div>
◇	○	Gedrag persoon met dementie tijdens activiteit observatie: Bij weinig prikkels opzoek naar...	<div><div></div></div>	6	<div><div></div></div>
◇	○	Gedrag persoon met dementie tijdens activiteit observatie: Deed actief mee	<div><div></div></div>	6	<div><div></div></div>
◇	○	Gedrag persoon met dementie tijdens activiteit observatie: Enthousiast om naar buiten te...	<div><div></div></div>	5	<div><div></div></div>
◇	○	Gedrag persoon met dementie tijdens activiteit observatie: Geeft duidelijk grenzen aan	<div><div></div></div>	1	<div><div></div></div>
◇	○	Gedrag persoon met dementie tijdens activiteit observatie: Geen zin om naar buiten te gaan	<div><div></div></div>	1	<div><div></div></div>
◇	○	Gedrag persoon met dementie tijdens activiteit observatie: geforceerd	<div><div></div></div>	3	<div><div></div></div>
◇	○	Gedrag persoon met dementie tijdens activiteit observatie: Hardop lachen	<div><div></div></div>	9	<div><div></div></div>
◇	○	Gedrag persoon met dementie tijdens activiteit observatie: Hardop voorlezen van woorden	<div><div></div></div>	3	<div><div></div></div>

		Name		
◇	○	Gedrag persoon met dementie tijdens activiteit observatie: Herinneringen ophalen	<div><div></div></div>	4 0
◇	○	Gedrag persoon met dementie tijdens activiteit observatie: Maakt dierengeluiden bij zien...	<div><div></div></div>	4 0
◇	○	Gedrag persoon met dementie tijdens activiteit observatie: Moeite met keuzes maken ove...	<div><div></div></div>	3 0
◇	○	Gedrag persoon met dementie tijdens activiteit observatie: reageert op bewegende voorw...	<div><div></div></div>	7 0
◇	○	Gedrag persoon met dementie tijdens activiteit observatie: reageert op kleurcontrasten	<div><div></div></div>	5 0
◇	○	Gedrag persoon met dementie tijdens activiteit observatie: reageert op omgevingsgeluiden	<div><div></div></div>	2 0
◇	○	Gedrag persoon met dementie tijdens activiteit observatie: route bepaald door 1 omgevin...	<div><div></div></div>	1 0
◇	○	Gedrag persoon met dementie tijdens activiteit observatie: sterke focus op 1 object bloem...	<div><div></div></div>	1 0
◇	○	Gedrag persoon met dementie tijdens activiteit observatie: sterke focus op 1 object dieren	<div><div></div></div>	1 0
◇	○	Gedrag persoon met dementie tijdens activiteit observatie: sterke focus voor 1 object	<div><div></div></div>	5 0
◇	○	Gedrag persoon met dementie tijdens activiteit observatie: Veranderde positief gedurende...	<div><div></div></div>	3 0
◇	○	Gedrag persoon met dementie tijdens activiteit observatie: Vragen stellen	<div><div></div></div>	1 0
◇	○	Gedrag persoon met dementie tijdens activiteit observatie: Zoekt fysiek contact	<div><div></div></div>	8 0
◇	○	Gedrag persoon met dementie tijdens activiteit: Angstig	<div><div></div></div>	1 0
◇	○	Gedrag persoon met dementie tijdens activiteit: Bij stevig doorwandelen jas los	<div><div></div></div>	1 0
◇	○	Gedrag persoon met dementie tijdens activiteit: Deed actief mee	<div><div></div></div>	2 0
◇	○	Gedrag persoon met dementie tijdens activiteit: Hardop lachen	<div><div></div></div>	2 0
◇	○	Gedrag persoon met dementie tijdens activiteit: Helderder	<div><div></div></div>	3 0
◇	○	Gedrag persoon met dementie tijdens activiteit: Kon er geen genoeg van krijgen	<div><div></div></div>	1 0
◇	○	Gedrag persoon met dementie tijdens activiteit: Voelde zich blij	<div><div></div></div>	2 0
◇	○	Gedrag persoon met dementie tijdens activiteit: Volledig positief veranderd na activiteit	<div><div></div></div>	2 0
◇	○	Gedrag persoon met dementie tijdens activiteit: Wanneer voldaan stevig doorwandelen	<div><div></div></div>	1 0
◇	○	Gespreksonderwerp tijdens observatie: Bebouwing	<div><div></div></div>	3 0
◇	○	Gespreksonderwerp tijdens observatie: Behoeft aan sociale omgeving	<div><div></div></div>	5 0
◇	○	Gespreksonderwerp tijdens observatie: Benoemen van details	<div><div></div></div>	11 0
◇	○	Gespreksonderwerp tijdens observatie: Bloemen	<div><div></div></div>	2 0
◇	○	Gespreksonderwerp tijdens observatie: Dieren	<div><div></div></div>	5 0
◇	○	Gespreksonderwerp tijdens observatie: Even weg van afdeling	<div><div></div></div>	1 0
◇	○	Gespreksonderwerp tijdens observatie: Herhaling van 1 onderwerp	<div><div></div></div>	9 0
◇	○	Gespreksonderwerp tijdens observatie: Herinneringen familie	<div><div></div></div>	10 0
◇	○	Gespreksonderwerp tijdens observatie: Omgevingsgeluiden	<div><div></div></div>	2 0
		Name		
◇	○	Gespreksonderwerp tijdens observatie: Ondergrond	<div><div></div></div>	1 0
◇	○	Gespreksonderwerp tijdens observatie: Rust	<div><div></div></div>	2 0
◇	○	Gespreksonderwerp tijdens observatie: Vroeger	<div><div></div></div>	7 0
◇	○	Gespreksonderwerp tijdens observatie: Vroeger beroep	<div><div></div></div>	2 0
◇	○	Gespreksonderwerp tijdens observatie: Vroeger dieren	<div><div></div></div>	2 0
◇	○	Gespreksonderwerp tijdens observatie: Weer	<div><div></div></div>	5 0
◇	○	Gezondheid persoon met dementie: Goed ter been	<div><div></div></div>	1 0
◇	○	Gezondheid persoon met dementie: Moeilijk ter been	<div><div></div></div>	1 0
◇	○	Inhoud gesprek tijdens activiteit: Activiteit zorgt voor gesprekstof	<div><div></div></div>	14 0
◇	○	Inhoud gesprek tijdens activiteit: Bloemen	<div><div></div></div>	1 0
◇	○	Inhoud gesprek tijdens activiteit: Dieren	<div><div></div></div>	2 0
◇	○	Inhoud gesprek tijdens activiteit: Familieleden	<div><div></div></div>	2 0
◇	○	Inhoud gesprek tijdens activiteit: gezondheid	<div><div></div></div>	1 0
◇	○	Inhoud gesprek tijdens activiteit: Kaarsje aansteken	<div><div></div></div>	1 0
◇	○	Inhoud gesprek tijdens activiteit: Kapel	<div><div></div></div>	1 0
◇	○	Inhoud gesprek tijdens activiteit: natuur	<div><div></div></div>	9 0
◇	○	Inhoud gesprek tijdens activiteit: Ongeremde onderwerpen	<div><div></div></div>	1 0
◇	○	Inhoud gesprek tijdens activiteit: Veel herhaling van dezelfde onderwerpen	<div><div></div></div>	1 0
◇	○	Inhoud gesprek tijdens activiteit: Voorbijganger	<div><div></div></div>	1 0
◇	○	Inhoud gesprek tijdens activiteit: Vroeger	<div><div></div></div>	8 0
◇	○	Inhoud gesprek tijdens activiteit: Weer	<div><div></div></div>	1 0
◇	○	Inhoud gesprek tijdens activiteit: Zingen	<div><div></div></div>	1 0
◇	○	Karakter persoon met dementie: Negatieve instelling	<div><div></div></div>	4 0
◇	○	Karakter persoon met dementie: Niet sociaal	<div><div></div></div>	1 0
◇	○	Karakter persoon met dementie: Sociaal	<div><div></div></div>	6 0
◇	○	Karakter persoon met dementie: Voelt zich bezwaard voor de ander	<div><div></div></div>	6 0
◇	○	Kenmerken ziektebeeld: impulsief gedrag	<div><div></div></div>	2 0
◇	○	Kenmerken ziektebeeld: Kopieer gedrag	<div><div></div></div>	1 0
◇	○	Kenmerken ziektebeeld: ongeremd gedrag	<div><div></div></div>	4 0
◇	○	Kenmerken ziektebeeld: opstandig	<div><div></div></div>	2 0
◇	○	Kenmerken ziektebeeld: snel afgeleid	<div><div></div></div>	4 0

		Name			
◇	○	Kenmerken ziektebeeld: Veranderend karakter	<div><div></div></div>	1	0
◇	○	Kenmerken ziektebeeld: Vergeetachtigheid	<div><div></div></div>	5	0
◇	○	Kenmerken ziektebeeld: Verwarde spraak	<div><div></div></div>	9	0
◇	○	Kenmerken ziektebeeld: Wil graag aangeraakt worden	<div><div></div></div>	2	0
◇	○	Kennis natuur begeleider: Goed	<div><div></div></div>	1	0
◇	○	Kennis natuur begeleider: Heel slecht	<div><div></div></div>	2	0
◇	○	Kennis natuur begeleider: vind het wel mooi	<div><div></div></div>	2	0
◇	○	Kennis natuur begeleider: voldoende	<div><div></div></div>	9	0
◇	○	Kennis natuur persoon dementie: Goed	<div><div></div></div>	2	0
◇	○	Kennis natuur persoon dementie: Minimaal	<div><div></div></div>	1	0
◇	○	Kennis van natuur niet nodig om activiteit uit te kunnen voeren	<div><div></div></div>	7	0
◇	○	omgeving activiteit observatie: Dieren	<div><div></div></div>	1	0
◇	○	omgeving activiteit observatie: Geen verkeer	<div><div></div></div>	1	0
◇	○	omgeving activiteit observatie: Herkenbaar	<div><div></div></div>	3	0
◇	○	omgeving activiteit observatie: Onbekend voor persoon dementie	<div><div></div></div>	1	0
◇	○	Omgeving activiteit observatie: Voorbijganger met actieve rol in activiteit	<div><div></div></div>	5	0
◇	○	omgeving activiteit observatie: Voorbijgangers	<div><div></div></div>	5	0
◇	○	Omgeving activiteit: Aanwezigheid water	<div><div></div></div>	2	0
◇	○	Omgeving activiteit: Alweer vergeten	<div><div></div></div>	3	0
◇	○	Omgeving activiteit: biedt mogelijkheid tot rust	<div><div></div></div>	4	0
◇	○	Omgeving activiteit: bos	<div><div></div></div>	2	0
◇	○	Omgeving activiteit: Dieren	<div><div></div></div>	1	0
◇	○	Omgeving activiteit: Geen goede locatie	<div><div></div></div>	1	0
◇	○	Omgeving activiteit: Geen verkeer	<div><div></div></div>	2	0
◇	○	Omgeving activiteit: Herkenbaar	<div><div></div></div>	5	0
◇	○	Omgeving activiteit: Negatief	<div><div></div></div>	3	0
◇	○	Omgeving activiteit: Niet zo bijzonder	<div><div></div></div>	3	0
◇	○	Omgeving activiteit: omgevinggeluiden	<div><div></div></div>	3	0
◇	○	Omgeving activiteit: positief	<div><div></div></div>	5	0
◇	○	Omgeving activiteit: Rustgevend	<div><div></div></div>	2	0
◇	○	Omgeving activiteit: snel uitgekeken op belevingstuin	<div><div></div></div>	1	0
		Name			
◇	○	Omgeving activiteit: Veel verschillende mogelijkheden	<div><div></div></div>	3	0
◇	○	Omgeving activiteit: voelt natuurlijk	<div><div></div></div>	3	0
◇	○	omgeving activiteit: Voorbijganger gaf extra beleving aan activiteit	<div><div></div></div>	3	0
◇	○	Omgeving activiteit: Voorbijgangers	<div><div></div></div>	3	0
◇	○	Omschrijving eigen kennis in natuur	<div><div></div></div>	1	0
◇	○	Omschrijving interesse natuur persoon met dementie: Bloemen	<div><div></div></div>	4	0
◇	○	Omschrijving interesse natuur persoon met dementie: Bomen en planten	<div><div></div></div>	1	0
◇	○	Omschrijving interesse natuur persoon met dementie: buiten zijn	<div><div></div></div>	4	0
◇	○	Omschrijving interesse natuur persoon met dementie: Dieren	<div><div></div></div>	3	0
◇	○	Omschrijving interesse natuur persoon met dementie: geen bos	<div><div></div></div>	1	0
◇	○	Omschrijving interesse natuur persoon met dementie: geen wind	<div><div></div></div>	1	0
◇	○	Omschrijving interesse natuur persoon met dementie: gezondheid	<div><div></div></div>	3	0
◇	○	Omschrijving interesse natuur persoon met dementie: goed weer	<div><div></div></div>	2	0
◇	○	Omschrijving interesse natuur persoon met dementie: Rust	<div><div></div></div>	2	0
◇	○	Omschrijving kennis in natuur persoon met dementie	<div><div></div></div>	1	0
◇	○	Partner persoon dementie heeft ook dementie	<div><div></div></div>	1	0
◇	○	Persoon dementie routebeschrijving: Bebouwing	<div><div></div></div>	2	0
◇	○	Persoon dementie routebeschrijving: Bloemen	<div><div></div></div>	3	0
◇	○	Persoon dementie routebeschrijving: Bomen	<div><div></div></div>	1	0
◇	○	Persoon dementie routebeschrijving: Buitenlucht	<div><div></div></div>	1	0
◇	○	Persoon dementie routebeschrijving: Dieren	<div><div></div></div>	7	0
◇	○	Persoon dementie routebeschrijving: Snoep	<div><div></div></div>	1	0
◇	○	Persoon dementie routebeschrijving: Verlaten instituut	<div><div></div></div>	1	0
◇	○	Persoon dementie routebeschrijving: Voorbijgangers	<div><div></div></div>	1	0
◇	○	Reden om activiteit niet uit te voeren: Allergie persoon met dementie	<div><div></div></div>	1	0
◇	○	Reden om activiteit niet uit te voeren: communicatie problemen	<div><div></div></div>	2	0
◇	○	Reden om activiteit niet uit te voeren: fysieke gesteldheid persoon met dementie	<div><div></div></div>	10	0
◇	○	Reden om activiteit niet uit te voeren: geen	<div><div></div></div>	1	0
◇	○	Reden om activiteit niet uit te voeren: geen personeel	<div><div></div></div>	1	0
◇	○	Reden om activiteit niet uit te voeren: psychische gesteldheid persoon met dementie	<div><div></div></div>	1	0
◇	○	Reden om activiteit niet uit te voeren: slecht weer	<div><div></div></div>	9	0

		Name			
◇	○	Reden om activiteit niet uit te voeren: Tijd		2	0
◇	○	Reden om natuur in te gaan: afwisseling zicht		2	0
◇	○	Reden om natuur in te gaan: Bloemen		4	0
◇	○	Reden om natuur in te gaan: Dieren		2	0
◇	○	Reden om natuur in te gaan: Even er tussenuit		1	0
◇	○	Reden om natuur in te gaan: Gezondheid		4	0
◇	○	Reden om natuur in te gaan: Graag buiten		8	0
◇	○	Reden om natuur in te gaan: Mooi weer		3	0
◇	○	Reden om natuur in te gaan: Planten		1	0
◇	○	Reden om natuur in te gaan: Rustgevend		5	0
◇	○	Reden om natuur in te gaan: Sociaal		6	0
◇	○	Reden om natuur in te gaan: Uitwaaien		6	0
◇	○	Reden om natuur in te gaan: Van je af kunnen kijken		2	0
◇	○	Reden om natuur in te gaan: Water		1	0
◇	○	Redenen om de natuur in te gaan		2	0
◇	○	Type natuur: Bos		2	0
◇	○	Uitvoering activiteit ervaring persoon dementie: Ging goed		2	0
◇	○	Uitvoering activiteit ervaring persoon dementie: ging niet goed		1	0
◇	○	Uitvoering activiteit: door opdracht nieuwe dingen gezien		2	0
◇	○	Uitvoering activiteit: ging goed		5	0
◇	○	Uitvoering activiteit: ging goed door hulpmiddel		2	0
◇	○	Uitvoering activiteit: liefde per auto		1	0
◇	○	Uitvoering activiteit: Rolstoel ivm te veel afleiding		1	0
◇	○	Verskil ervaring activiteit: Andere geschiedenis		1	0
◇	○	Verskil ervaring activiteit: Andere levensvisie		3	0
◇	○	Verskil ervaring activiteit: Begeleider bezig met apparaat en veilige omgeving creëren,...		1	0
◇	○	Verskil ervaring activiteit: Geen		4	0
◇	○	Verskil ervaring activiteit: Genieten er allebei van		6	0
◇	○	Verskil ervaring activiteit: Gezondheid		1	0
◇	○	Verskil ervaring activiteit: Leeftijd		1	0
◇	○	Verskil ervaring activiteit: Weinig herinnering		1	0
◇	○	Voorkeur activiteit persoon dementie: Wandelen		1	0
◇	○	Voorkeur gezelschap persoon dementie: Samen met anderen		3	0
◇	○	Voorkeur gezelschap persoon met dementie: Alleen		1	0
◇	○	Voorkeur gezelschap tijdens buitenactiviteit		1	0
◇	○	Voorkeur gezelschap: Alleen		1	0
◇	○	Voorkeur gezelschap: moeder		1	0
◇	○	Voorkeur gezelschap: Partner		2	0
◇	○	Voorkeur gezelschap: Samen met anderen		1	0
◇	○	Voorkeur gezelschap: Samen met anderen en alleen		2	0
◇	○	Voorkeur gezelschap: vader		1	0
◇	○	Voorkeur natuur: Uitzichten kijken		1	0
◇	○	Voorkeur type activiteit: Bos		2	0
◇	○	Voorkeur type activiteit: sociaal		2	0