Universiteit Leiden

Faculteit der Sociale Wetenschappen

Place Attachment & Stewardship in Urban Parks

Clara Sofie Hemshorn de Sanchez

Master thesis proposal Psychology, specialization Soc. & Org. Psychology
Institute of Psychology
Faculty of Social and Behavioral Sciences – Leiden University

Date: 02 February 2017
Student number: s1812580
First examiner of the university: ……
Second examiner of the university: ……...…….
(Opt.) External supervisor: …….

Table of Contents

Abstract

Urban parks are vital for urban life quality providing spaces for recreation, exercise, restoration, as well as providing ecosystem services. Simultaneously, they shape citizens attitude towards nature by enabling contact with nature. Thus, voluntary park maintenance allows such contact with the benefit that the park's quality improves at low costs. Therefore, it is worth exploring what motivates people to get involved in such activities. Place attachment (PA) to the park, the positive, psychological bond to that park, is a potential candidate with such a motivating power. Yet, the literature does not offer a clear answer how exactly PA is related to such pro-environmental behaviour. Similarly, the underlying mechanisms of this relationship seem to be unexplored yet. Applying the extended planned behaviour model this study offers an approach to explain the relationship between the attachment to a place and a intentions to perform behaviour linked to that place. Results provide support for the hypothesis that PA predicts intentions to help maintaining this park. This relationship is fully mediated by the attitude towards maintaining the park whereas personal norms play a less relevant role in this context. This study also investigated predictors for PA and their potential to predict stewardship behaviour for that park. Recommendations for managers of volunteer schemes for park maintenance and future research are included.

Urban green areas are vital for urban life. They provide spaces for human recreation and exercise (Cranz & Boland, 2004), restoration of attentional fatigue (Hartig & Kahn, 2016), social interaction and contact with nature (Ryan, 2006) and even ecosystem services (Dennis & James, 2016a). The maintenance of an urban park determines its attractiveness and therefore its use (Cranz & Boland, 2004; Ryan, 2005). Often city councils do not have available the resources required for appropriate maintenance (Cranz & Boland, 2004). Involvement of the community around the park, people who use the park and those who live in the neighbourhood, can help to fill the resource gap (Cranz & Boland, 2004). Community involvement can even go beyond since it plays an important role in enhancing the productivity and sustainability of urban green areas (Dennis & James, 2016a,b,c; Enqvist, Tegö, & Bodin, 2014; Locke et al., 2014; Roman et al., 2015). Therefore, the reciprocal relationship between what urban parks offer to communities, and what communities can do for their maintenance enhances urban life quality in several ways. To identify motivations for such an active care for a particular place (here urban parks) and how these motivations may

be encouraged it can be useful to look at person-place interactions (Devine-Wright, 2012; Uzzell, Pol, & Badenas, 2002). Emotional bonds with places for example have been conceptualized as place attachment (PA) (Anton & Lawrence, 2016; Lewicka, 2013; Lee & Shen, 2012; Hallpenny, 2010; Ryan, 2006). There is evidence that place attachment is related to pro-environmental attitudes in general (e.g. Halpenny, 2010; Budruk, 2009) and also to place-specific stewardship (e.g. Hallpenny, 2010; Ryan, 2005). Within the context of park maintenance, a focus on place specific stewardship is more relevant. Stewardship has been defined as "work to conserve, manage, monitor, restore, advocate for, and educate the public about a wide range of issues related to sustaining the local environment" (p.76, Connolly, Svendsen, Fisher, & Campbell, 2013).

Although there are numerous studies that investigate the relationship between place attachment and some form of stewardship, there is no explanation yet for the underlying processes of this relationship. Furthermore, research on urban parks in particular is limited in this context.

Therefore, the following four questions are central to this study. First, is place attachment to an urban park related to its stewardship? Second, do PA predictors also predict stewardship? If there is a relationship between PA and stewardship we may also expect a link between PA predictors and stewardship. Third, how do PA predictors differ in strength relative to each other? If PA encourages stewardship and PA predictors do so too, then knowing the relative strengths of predictors can help to direct efforts to increase attachment and thereby increase motivations for stewardship in an effective way. Finally, what are the underlying processes of the relationship between PA and stewardship behaviour?

1. Literature Review

1.1 The role of urban green spaces

There are two important reasons why the role of green spaces and in particular parks in urban areas becomes increasingly important. First, 53.9% of the world population currently lives in urban areas (The World Bank, 2016). In the Netherlands this number is as high as 90.0% and numbers are increasing all around the world (The World Bank, 2016). As a consequence there is a pronounced need for optimizing urban spaces to meet the requirements of human well-being. In his classic paper on urban psychology, Milgram (1970) describes the benefits that cities offer their citizens including job opportunities, cultural attractions, ambience, infrastructure, and variety as well as a range of different opportunities for social interaction. Simultaneously, he embarks upon the dark sides of urbanity: a cognitive overload,

caused by crowding and large amounts of stimuli that have to be dealt with potentially increasing stress levels and negatively affecting mental health. Although there is empirical evidence for the rural-urban dichotomy and its impacts on mental health (e.g. Lederbogen et al., 2011), Hartig and Kahn (2016) recommend to take these findings as a warning while at the same time considering the various factors and circumstances that lead to a more complex picture. For instance, urban green spaces such as parks, cemeteries, trees along streets, green patches, and private gardens have the potential to provide restoration from stressing factors caused by city life to some extent (Hartig & Kahn, 2016). Attention Restoration Theory specifically deals with the effects of nature to aid in recovery of mental fatigue (Kaplan & Kaplan, 1989; Kaplan, 1995). While the restorative potential of (urban) green spaces is a large field in itself, deserving more attention than given here, green spaces also have other benefits, which brings us the second important reason.

Green spaces have direct ecological benefits such as providing space for biodiversity (Rozenzweig, 2003). Further, since urban areas are largely sealed with concrete, green areas can retain rain water temporarily which is an important element in the management and control of water in cities (Fryd et al., 2012). Similarly, concrete surfaces absorb high amounts of sunlight which confronts cities that receive large amounts of sunlight with dramatically increasing temperatures. This effect can be mitigated via green urban areas, especially when they have a high tree-density (Gunawardena, Wells, & Kershaw, 2017). Green spaces also have indirect benefits through shaping citizen attitudes (Hartig & Kahn, 2016). This two-folded effect of bringing nature back to the city has been embraced by the reconciliation ecology approach (Rosenzweig, 2003). This approach is based on the observation that biodiversity is proportionally related to the land available for biodiversity. Therefore, it calls for an optimization of human-used land "establishing and maintaining new habitats to conserve species diversity in places where people live, work, and play" (p. 7, Rosenzweig, 2003). Simultaneously, urban green spaces provide opportunities to counterbalance the growing disconnect from nature and what Hartig and Kahn (2016) term environmental generational amnesia. The result of these phenomena is that people identify less with natural environments, become more indifferent towards it and are not able to see the dramatic changes we are experiencing now (Hartig & Kahn, 2016; Rosenzweig, 2003). Based on their data, several researchers conclude that in part, this explains the lack of action with regard to behaviour change in climate change mitigation (Hartig & Kahn, 2016; Rosenzweig, 2003; Scannell & Gifford, 2010a).

The current interest for community gardens, open green spaces where neighbors come

together to garden and especially to grow edible plants such as herbs, vegetables and fruits (McMillan, 2016; Schlosberg, 2011) reflects a growing desire to gain back some control over how food is produced and get back in touch with nature to some extent. Such community gardens have a real potential for providing biodiversity (Cabral et al., 2017) and reducing carbon emissions with regard to food production (Cleveland et al., 2017) while also having a positive impact on physiological and psychological health as well as improving quality of life and sense of community (Soga, Gatson, & Yamaura, 2017; Francis et al., 2012).

1.2. Place Attachment and its predictors

Place attachment is a psychological outcome of person-place interactions. In the current literature, PA is most often referred to as a positive affective bond of a person to a place (e.g. Anton & Lawrence, 2016; Lewicka, 2013; Lee & Shen, 2012; Ryan, 2006). Already 26 years ago, Freitelson (1991, in Devine-Wright, 2012) proposed that PA is key for understanding human behaviour with regard to climate change. Indeed, PA has been empirically related with predicting pro-environmental attitudes (e.g. Ryan, 2006; Budruk et al., 2009; Hallpenny, 2010; Enqvist, Tegö, & Bodin, 2014) as well as place specific stewardship (Hallpeny, 2010; Ryan, 2005; Krasny, Crestol, Tidball, & Stedman, 2014). In general, the literature in this field has to be read with caution because concepts such as place identity, place dependence, place satisfaction, sense of place and place attachment are used across various disciplines involved in place studies, are sometimes used as interchangeable ideas and other times as discrete constructs (Lewicka, 2011a). Stedman (2002), for example uses place attachment and place identity as synonymous concepts, while Hallpenny (2010) summarizes research that distinguishes between a cognitive (identity), a functional (dependence), and an affective (emotional) component. Williams and Vaske (2003) only differentiate between place identity and place dependence as two dimensions of place attachment. Place identity involves an emotional attachment that gives rise to a symbolic importance that provides meaning and purpose to life and is a component of the self-identity. Place dependence refers to the functional attachment to a place and the role this place has to enable particular objectives or activities. It is centered on the physical characteristics of a place that may or may not meet the individual's needs and goals. There scale is widely used (Lewicka, 2011) and easily adaptable to the current context. Thus, following this operationalization, in the current study, place attachment will be defined as a positive psychological bond that has both a cognitive (place identity) and a functional (place dependence) component.

Place attachment can be measured at various levels including the home, holiday homes, the neighbourhood, the city, the country or even the continent but also recreational places such as urban or national parks (Lewicka, 2011a). Similarly, people develop different levels of place attachment to different places (Williams & Vaske, 2003). Here, the focus will be on place attachment to an individual's most frequently visited (urban) park.

In the literature we find several factors that predict PA. The first two predictors that have crystallised as reliable predictors for PA in general are the time someone has lived at a particular place and owning his*her home (Lewicka, 2011a). Two further factors, have been identified parks specifically, namely proximity to the park and visiting frequency (urban parks: Ryan, 2006; national parks: Moore & Graefe, 1994; William & Vaske; 2003). Finally, Ryan (2005) identified qualitatively different types of park users (e.g. active visitors, by-passers, volunteers and park-management staff) and measured how intensively they rated their use of the park. He found significant differences between different intensity levels of park involvement (e.g. gardeners working in the park, volunteers working in the park, neighbours walking their dog) with regard to their attachment measures. Therefore, we will include user-intensity as a fifth predictor for place attachment to parks.

Hypothesis 1: Length of time at current residence (a), home ownership (b), proximity to the park (c), frequency of use (d), and use-intensity (e) predict place attachment to the most-often used park.

If PA is linked to stewardship, it would be useful to know how we can encourage PA. The predictors investigated in this study are a starting point. To be able to direct such efforts efficiently it is useful to know which predictors are stronger and which are weaker.

Question 1: How do predictors of place attachment differ in strength relative to each other?

1.3 Place attachment and Stewardship

The relationship between place attachment and pro-environmental behaviour has been investigated widely yielding mixed results. It is crucial to inspect operationalization of both constructs with caution (Appendix A). This can be illustrated with the following example. Acceptance of windmills in the local area may originate in a pro-environmental attitude. At the same time it involves destruction of the local environment and potential danger for birds.

Therefore, ambiguities in this field may not only be attributed to diverse measurement methods for place attachment and places for which attachment is measured, but also to the complexity of study-contexts that may involve pro- and anti-environmental aspects at different levels of analysis.

There is limited research on the relationship of PA to urban green areas and stewardship of these places. Ryan (2005) conducted a study on urban green areas in Michigan. Based on the idea that negative changes sensitize PA, he used exploratory factor analysis on items describing possible actions in response to a negative change to participants' nearby parks. Three factors emerged: personal loss, environmental activism and seeking another park. Environmental activism comprised involvement with a local environmental group, visiting public meetings to express opposition, and engaging with preserving the rest of the park. These results are an indication that attachment to a nearby urban park is related to increased dispositions for stewardship in that park but they are not strong evidence. Hunter (2011) investigated stewardship behaviour for the maintenance of local street trees. She found that an increased level of emotional sensitivity towards local places was related to higher stewardship dispositions. Krasny, Crestol, Tidball, and Stedman (2014) studied the motivations, memories and sense of place of volunteer oyster gardeners in New York City. They found that specific social-ecological experiences with the estuary were deeply connected with their attachment to the place and their motivations to volunteer there. Finally, Budruk, Thomas, & Tyrell (2009) investigated place attachment to recreational green areas in the city of Pune, India. Using the New Environmental Paradigm, the authors extracted three factors (Balance of Nature, Anthropocentrism, and Ecological Limits). Although these factors do not include stewardship in particular, high attachment was strongly related to an increased sensitivity for the fine balance of nature and decreased anthropocentrism.

Some more evidence exists in the context of natural areas in general and national parks (also see Table 1). Lokocz, Ryan, and Sadler (2011) for instance investigated place attachment to a specific rural landscape in Massachusetts and support for conservation of the area. Mean conservation scores (attitudes towards land protection of that area, level of support of landscape planning and conservation strategies, financial support for conservation strategies, support of land acquisition for an open space network and attitude towards new development) were significantly higher for strong relative to weak attachment. Stedman (2002) surveyed homeowners around a lake in Wisconsin. He measured their place identity with the lake and asked for participants' willingness to take action (vote for a law against it or join a pro-environmental group) in four hypothetical scenarios that would introduce a

negative change to the lake. Place identity had an independent, positive effect on taking action. An often cited study, to illustrate the ambiguous effect of place attachment was conducted by Uzzell, Pol, and Badenas (2002). They looked at social identification with place and attitudes and behaviours with respect to (local) environmental sustainability in two neighbourhoods in the UK. Social identity with place was a combined measure taken from data on place identification, place satisfaction, and social cohesion. The two neighbourhoods differed significantly in their place identity and place satisfaction but not in their social cohesion and sustainability. The authors could show that in the neighbourhood with low place identification and satisfaction, the relationship between place-related social identity and environmental sustainability was strong, while in the neighbourhood with high place identification and satisfaction this relationship was weak and in a negative direction. In this context it is interesting to have a look at Stedman's (2002) findings again. He investigated place identity and satisfaction separately and found that both exert independent and, importantly, opposing effects on place-protective action. In Uzzell et al.'s study these concepts were merged together so that their effects on interest in sustainability cannot be distinguished. Halpenny (2010) surveyed visitors to a Point Pelee National Park, Canada. She measured their attachment to the park and their intentions for pro-environmental behaviour for that specific site. Place-specific environmental behaviour included items describing a variety of behaviours (e.g. picking up litter, signing protective petitions, volunteer to stay away from favourite spots to allow recovery from damage, attending public meetings about park management, or joining a project to protect the park). Halpenny could demonstrate that place attachment predicted intentions for place-specific behaviour and that the effects of place dependence were mediated via place identity. The author explains this effect by drawing on the theory of reasoned action (Fishbein & Ajzen, 1975). In short, this theory proposes that attitudes about a particular behaviour predict intentions for that behaviour. These intentions are important predictors for the performance of that behaviour. Halpenny argues that a pro-environmental behaviour directed towards a place will be influenced by the experience with that place and the resulting attachment to it. Unfortunately, her findings are not a direct evidence for the effect of place attachment on attitudes but on intentions. Since intentions can be influenced by several factors (Staats, 2003), her findings are not useful for a better understanding of the underlying processes of the relationship between attachment and stewardship behaviour. Still, the author provides evidence for the relationship between place attachment and intentions for stewardship.

Hypothesis 2: Place attachment to a specific park positively predicts with a) intentions for stewardship and b) actual stewardship activity in that park.

Question 2: Do the predictors of place attachment to the park also predict stewardship intentions and stewardship behaviour?

1.4 The Theory of Planned Behaviour and the Norm Activation Model

To understand the underlying processes of the relationship between place attachment and stewardship, it is helpful to consult theories that explain what factors influence behaviour. The theory of reasoned action and the theory of planned behaviour (TPB) (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980) offer an approach. The three central premises of these theories are that behaviour is reasoned, that it is volitional and that the theory is sufficient to explain the behaviour. The theories are based on four key concepts. First, an attitude towards a particular behaviour. Second, a subjective norm that involves the perception that others want the individual to perform this behaviour. Third, a behavioural intention that consists of a purposeful plan to carry out this behaviour, and fourth, the performance of the behaviour itself. Finally, the TPB contains an additional concept, perceived behavioural control. The three predictors for behavioural intention, attitudes, subjective norm and perceived control are each influenced by a set of beliefs. For example, beliefs about the target behaviour will influence the attitude towards it. According to Staats (2003), TPB is relatively successful in predicting a specific behaviour as long as the premises are met and we find correspondence in target, context, and time across the individual elements of the model. Nevertheless, he recommends including personal norms as additional element to predict pro-environmental behaviour. Personal norms are self-expectations rooted in internalized values (Schwartz, 1977) and may give rise to moral and fairness concerns that are important additional predictors for behaviour (Staats, 2003). Personal norms are at the center of the Norm Activation Model (NAM) (Schwartz, 1977). In contrast to the TPB which attempts to explain a range of different behaviours, the Norm Activation Model was originally developed in the context of helping behaviour (Onwezen, Antonides, & Bartells, 2013). Four situational factors activate personal norms. First, an awareness that the performance of a particular helping behaviour has specific consequences (*awareness of need*). Second, feeling responsible for carrying out the helping behavior (*situational responsibility*). Third, the degree to which a particular behavior is perceived as effective in mitigating the need (*efficacy*). Fourth, resources or skills that are necessary to take action have to be available to the individual (*ability*). Harland, Staats, and Wilke (2007) were first to demonstrate that in the context of

pro-environmental behavior including all four factors or activators yielded the highest explanatory power and that personal norms mediate their effect on pro-environmental behaviour. TPB and NAM have been integrated in models to explain behavioural intentions with regard to pro-environmental consumer and transport behaviour (Onwezen, Antonides, and Bartel, 2013) and with regard to public transport use (Bamberg, Hunecke, & Blöbaum, 2007). This research shows that combining the two models increases the explanatory power of the model.

In the next step of the analysis, we will add place attachment to these concepts. Here we have to take great caution. Next to TPB and personal norms, identity has also been brought forward as a factor that influences behaviour (Staats, 2003; Stedman, 2002). Identification with performing a particular behaviour may not be confused with other identity concepts, such as place identity. Moreover, PA is a bond to a place but is not directly related to a behaviour even if it is performed within that place. So when predicting a particular behaviour such as stewardship place attachment would have little chance when competing with the TPB and NAM variables that are specific for the behaviour in question. Anton and Lawrence (2016) for example used TPB and place attachment to investigate disposition to protest against local governmental changes. For TPB, they used three variables (attitude, subjective norms and perceived behavioural control towards "protesting") and for attachment with the local city they used two variables (identity and dependence) to measure effects on protesting. The authors could show that all five variables had a significant, positive correlation with protesting. In a regression model, however, the PA variables became non-significant. A reason could have been that the TPB variables were intimately related to a specific behaviour, protesting, which also was the outcome variable, while the attachment variables were only related to the city where the protesting would happen. So these five variables were not competing on the same level of specificity. Thus, PA should not be added directly in the regression model. Alternatively, we can treat PA as a background variable. Fishbein and Ajzen (1977;1980) emphasise the importance of such background variables and their role in influencing beliefs. According to TPB, attitudes towards a particular behaviour are caused by beliefs about the result of that behaviour and weighted by an evaluation of this result (Staats, 2003). So an attitude towards a behaviour that will affect a park in this case, is likely to be affected by the emotional bond one has with that park.

Hypothesis 3: Place attachment to the park has a positive effect on the attitude towards stewardship in that park (a). The attitude towards taking care of that park

mediates the effect of place attachment on the intention for stewardship (b).

In a similar fashion, place attachment to a particular place may influence feelings of responsibility toward performing a behaviour directed to that place. Place attachment involves an emotional bond but also identification with a particular place and it can be a source of self-esteem and well-being (Lewicka, 2011a). Behaviours that are related to protecting that place may be positively influenced. Lewicka (2011b) showed that attached people versus non-attached people scored higher on concepts such as life satisfaction, sense of coherence, interest in their families, trust in others, less egocentrism. Although she did not test for responsibility, it fits in as a similar concept. Awareness of the problem may be also affected. Research has shown that place attachment to urban parks increases monitoring of the park (Enqvist et al., 2014). In sum, we can expect that personal norms are influenced by PA.

Hypothesis 4: Place attachment to the park has a positive effect on personal norms to stewardship the park (a). Personal norms with regard to taking care of that park mediate the effect of place attachment on the intention for stewardship (b).

Figure 1 shows a schematic of the concepts used and hypotheses developed for this study. Note that the diagram evokes the idea of causal relationships. Although research reviewed here gives reason to assume causality, the methodology of the current study does not allow testing for it.

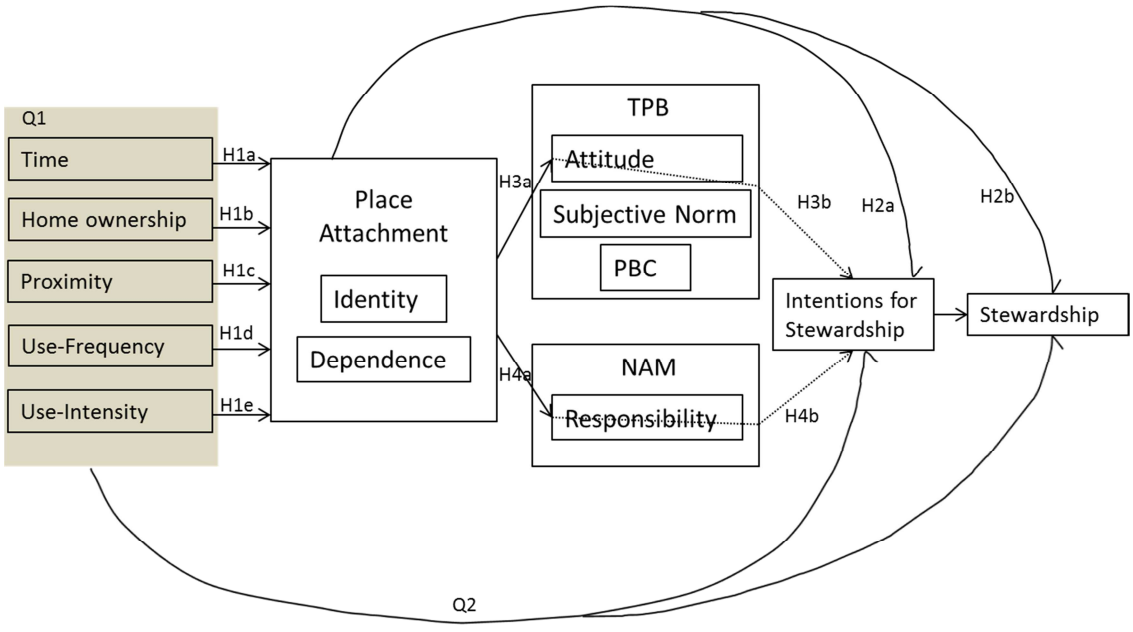


Figure 1. Schematic representation of concepts used and questions and hypotheses developed for this study.

2. Method:

2.1 Data Collection & Participants

The sample population for this study where residents of the city of Leiden. An online survey with 82 items was created with the Qualtrics Survey Software of Leiden University (Qualtrics, 2015). The link to this survey with a short description of the study was distributed via social media, private contacts and networks of local, “green” organizations. The survey was online for nine weeks form the beginning of April until mid-June. At the beginning of the questionnaire participants were briefly informed about the purpose of the study, the voluntary, anonymous, and confidential nature of the survey. Participants had the chance to win one of 10 boat tours for two persons around the canals of Leiden. Subjects gave their consent by checking the respective consent-box. At the end of the questionnaire participants were thanked and shortly debriefed. By emailing the experimenter they could subscribe to the lottery. 10 participants were randomly selected and received two tickets for a boat tour.

2.2 Study Context

In the city of Leiden, in the Netherlands, a large-scale urban park project has been launched (Vrienden van het Singelpark, 2017). Around the city center runs a quadrangular canal, the Singel, which once was surrounded by green areas. Currently, we only find a few individual parks along the canal. The project consists of “greening” the inner canal bank, building a linear park that encircles the city center. The project aims at improving the quality of the city in terms of sustainability and attraction, providing breathing space for its citizens and allowing the citizens to be part of the planning phase as well as encouraging them to take responsibility in the care of the park. (Veneestra et al., 2012) There is already a number of citizens actively involved in gardening projects around Leiden (e.g. Het Zoete Land, Stichting Leiden Oogst, 2016) and specifically the Singel (Vrienden van het Singelpark, 2017). A citizen initiative, "Friends of the Singelpark" is largely involved in bringing the project ahead and activating and organizing citizens here (Vrienden van het Singelpark, 2017).

2.3. Measures

2.3.1 Demographic Information

Participants were asked for their gender, age, home ownership, time of residence, level

of education, employment, whether their household included children under the age of 15, whether they owned a dog, and whether they lived in Leiden.

2.3.2. Park user information

Participants were asked what their most frequently-visited park in Leiden is. They chose from a list of 22 parks in Leiden plus the option of "the park is not on the list" where they could then add their park. Frequency was measured with the question how often they visit the park (daily; weekly; fortnightly; monthly, or less). Proximity was measured with the question how long they take to get to the park on average (0-5 min; 5-10; 10-15 min; 15-20 min; 20 min or more). Use-intensity was measured with the item how much time per visit they spend in the park on average (15 min; 30 min; 45 min; 60 min; more than 60 min).

2.3.3. Place Attachment

Place attachment was measured with a modified scale developed by Williams and Vaske (2003). Originally, this scale was developed in the context of attachment to national parks and it has been used by various authors for similar purposes. It is a popular and often used tool (Lewicka, 2011). It consists of two dimensions, place identity and place dependence. Both dimensions are measured with six items each. For identity examples include "I feel this park is a part of me" and "This park is very special to me". For dependence examples include "This park is the best park for what I like to do" and "I get more satisfaction out of visiting this park than any other park". "This park" refers to the participant's most frequently visited park. The scale is originally in English and was carefully translated into Dutch. In a pilot study these twelve items were given to six native speakers who should indicate whether the items were clear and made sense and whether they sounded "serious". On the basis of these answers the original scales were shortened to nine items and some items were slightly rephrased to suit the Dutch context (see section 3. Results).

2.3.4 Stewardship

Unfortunately, the operationalisations of stewardship behaviour reviewed above include a range of different behaviours, which are not suitable in the context of Theory of Planned Behaviour and the Norm Activation Model. A solution is to identify behaviours that are contained within this stewardship-variable and combine their scores for analysis. In cooperation with members of "Friends of the Singel Park", three classes of behaviour were identified that are especially relevant in this context. Picking up litter, taking care of

flowerbeds, and taking care of herbal gardens. Picking up litter is important to maintain parks clean and nice and therefore more attractive to use. Clean environments are less inviting of breaking the norm "not to litter" (Keizer, Lindenberg, & Steg, 2008). Flowers add aesthetic value to the park and make it appear well-maintained and cared for. Herbal gardens are opportunities to learn about practical uses of plants (medical and culinary uses for example). Therefore, they add practical value to the plants of the park. All three activities have to be performed during the entire year. These three activities were condensed into two broader classes of behaviour to keep the length of the survey reasonable. "Maintaining the park" included picking up litter and maintaining flower beds. "Maintaining a herbal or vegetable garden" included behaviours that are similar to maintaining flowerbeds (e.g. planting new plants, watering, weeding, removing dead plant matter). However, the reasons why someone may do one or the other thing may have different motivations (aesthetic vs. practical use). Especially with regard to a growing interest in urban farming (McMillan, 2016; Schlosberg, 2011) it was considered useful to clearly distinguish between these activities. Each activity was briefly described in terms of its role for maintaining the park, the specific behaviours it involves, and the frequency and intensity of the volunteering effort required. For keeping the park nice the description was as follows:

> *Nice and well-maintained parks are environments where people feel comfortable. The city council of Leiden does not always have the resources for intensive maintenance in all parks. In some parks there are volunteer groups that meet weekly for some 2.5 hours to help maintaining the park. For example, the maintenance of flowerbeds involves planting bulbs, water flowerbeds, and remove weeds and dead plants. Picking up litter is also an important activity that such volunteer groups perform regularly. Volunteers decided for themselves at which activities they want to participate and how often they want to do this. Please answer the following questions with regard to the park you have just described, not another place (even if you are involved in a similar activity in a different park or place!).*

2.3.4.1. Stewardship behaviour.

Participants were asked whether there was such a volunteer group in their park. Those who answer "yes" were asked how often they help (never, less than once a month, once a month, once every two weeks, or once per week) to measure actual performance. Those who responded "no"/"I don't know [whether there is such a group]" were asked whether they

would join such a group if there was one (1=strongly disagree; 5= strongly agree) and how often they would then help out (never, less than once a month, once a month, once every two weeks, or once per week) to measure their intentions. As a control they were also asked whether they thought it was likely that such a group was organized in their park (1=strongly disagree; 5= strongly agree).

2.3.4.2 Planned Behaviour variables.

For each of the two behaviours a set of items were selected and adapted from Staats (2003), Onwezen et al., (2013), and Bamberg et al. (2009). For *behavioural beliefs* in particular, items were selected and adapted from a list of 16 items identified and validated as key motivations for environmental stewardship covering the concepts social belonging, environmental care, and learning (Bramston, Pretty, & Zummit, 2011). Some additional items were included on the basis of interviews with people involved in stewardship activities within the Singelpark project.

Attitude was measured with two items for each behaviour: "Participating at these sessions is … (1= very bad; 5= very good)." and "Participating at these sessions is … (1= very unpleasant; 5= very pleasant)". *Behavioural beliefs* were measured with 13 items for maintaining the park nice and clean and 16 items maintaining a herb- or vegetable garden (e.g. "If I help to keep the park nice and clean I look foolish."; "If I help to keep the park nice and clean, I make a difference for the park."; If I help to take care of the herb- or vegetable garden I can learn from nature.") Responses for these and the following items were measured with a Likert-scale from 1-5, where 1= very unlikely and 5= very likely. *Subjective norms* were measured with two items for each behaviour ("Most people who are important to me think I should participate at [stewardship activity]." and "Most people who are important to me support me participating at [stewardship activity]"). *Normative beliefs* were measured with three items ("My close friends/my family/my neighbours think I should participate at [stewardship activity]"). *Perceived behavioural control* was measured with two items for each of the two behaviours ("For me participating at [stewardship activity] in the park is (1= impossible; 5= possible)" and "Generally I am able to participate at such an event in the park in the next few weeks (1= very unsure; 5= very sure"). *Control beliefs* were measured with three items per behaviour on a 5 point-Likert scale with 1= strongly disagree and 5= strongly agree (e.g. "My time plan makes it easy to participate at [stewardship activity] in the park."; "My physical condition makes it difficult to [stewardship activity] in the park.").

2.3.4.3 Personal Norms

Personal norms for each of the two behaviours were measured with three items on a 5-point Likert scale with 1= strongly disagree and 5= strongly agree. Examples include “I feel a moral obligation to help taking care of a herb- or vegetable garden in the park.”; “I feel that I should help to protect the herb- or vegetable garden in the park.”; or “I feel it is important that people in general should help to maintain a herb- or vegetable garden in a park”.

For a complete list of all questions see Appendix B.

3. Results

3.1. Demographic Information

When not specified differently, data was analyzed with the statistical software package IBM SPSS statistics 23 (IBM Corporation, 2015).104 participants completed at least the first section of the questionnaire (14 items). 74 participants finalized the survey. The average age of these 74 participants was 44.89 years (*SD*= 13.55) (the average age of the Leiden population is 38.3 year; UrbiStaat, 2015). 64.9% were female, 33.8% were male and 1.4% identified as “other” (the average Leiden population has 51.4% females; UrbiStaat, 2015). On average participants have been living in the same home for the last 10.8 years (*SD*= 10.13). 69.3% were homeowners (46% of the Leiden population own their home; Gemeente Leiden, 2017). 29.7% had children younger than 15 years of age and 11.0% had a dog. In terms of education, 54.1% of participants indicated that WO was their highest diploma in education. For 16.2% it was HB. VWO, MBO and other (Master, education abroad, MAVO, Leao, and ULO) each covered 8.1% of the participants. VMBO and HAVO each covered 2.7% (in 2015 23% of the Leiden population had a low education level, 33% had a medium education level and 44% had a high education level; Gemeente Leiden, 2017). With regard to employment, 33.3% had a full-time job, 37.3% had a part-time job, 4.0% were looking for a job, 4.0% were retired, 6.7% were students, 6.7% were a housewife/-man and 8.0% had no job but worked as volunteers (*M*=26.67 h; *SD*= 13.29) (in 2015 6.8% of the Leiden population were registered as unemployed, 34.8% were students; Gemeente Leiden, 2017).

When asked which park in Leiden participants visited most frequently 11 parks out of a list of 22 parks were selected, 8 parks were added. The distribution of parks selected for “my most-often used park” is presented in Figure 2.

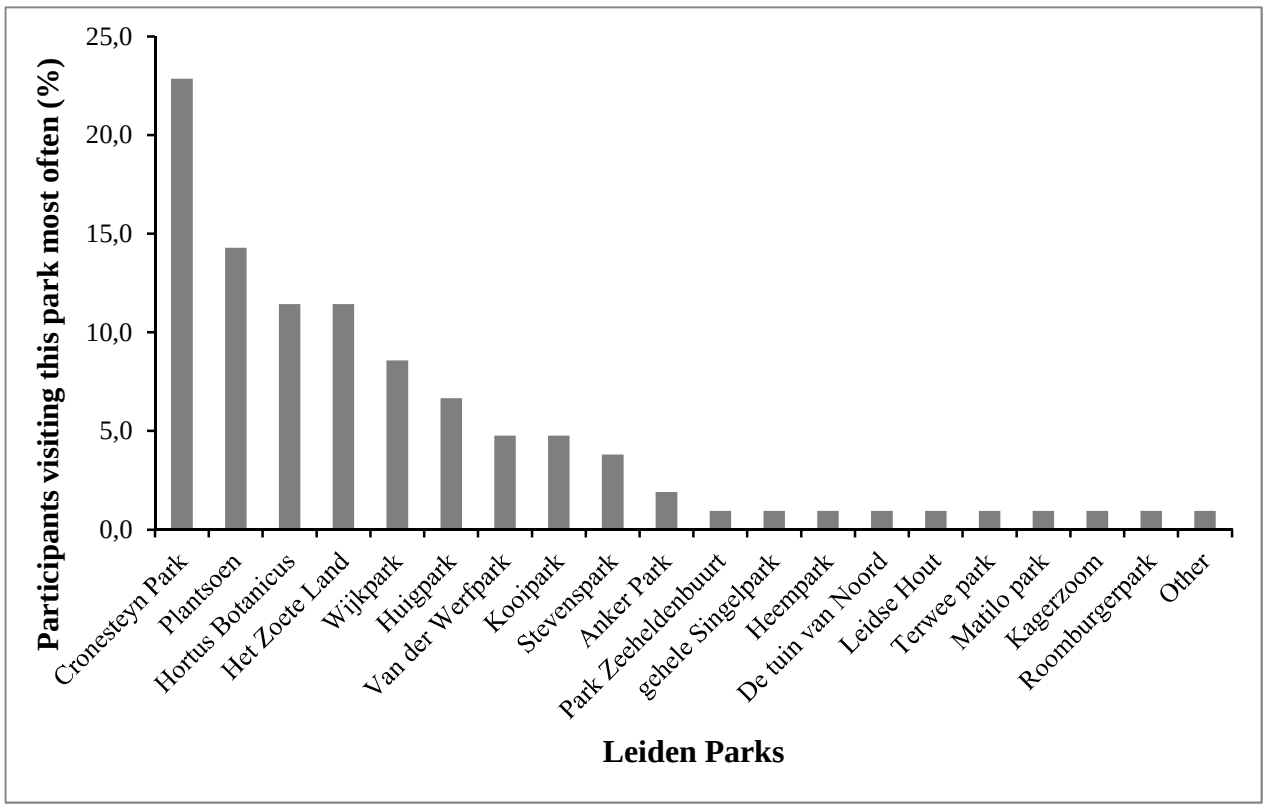


Figure 2. Distribution in % of participants' "most frequently visited park" in Leiden. N= 104.

Most people either get to their park by walking (53.8%) or cycling (40.4). Only 4.8% takes the car and 1% takes the bus. Participants' responses with respect to the proximity to this park, the frequency of use and the intensity of use are shown in Figure 3.

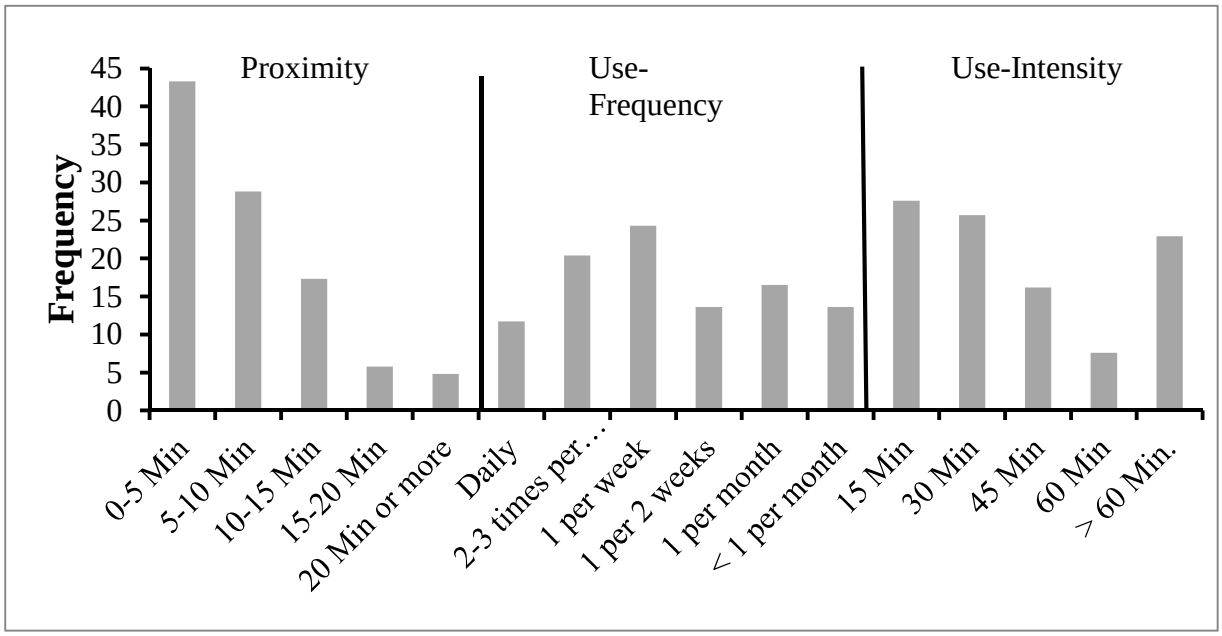


Figure 3. Frequencies for the levels of three park-specific place attachment predictors. *N*= 104

91.9% of participants lived in Leiden. Six people did not but an examination of these cases uncovered that four of them lived 15 minutes or less walking/cycling distance from their park in Leiden. Four of six used the park quite intensively (45 minutes or more per visit). The use-frequency was low with four people using their park once per month or less. The six cases were retained in the sample because the N was rather small already and the relevant variables that could have been affected by not living in Leiden (proximity, use-frequency, and use-intensity) seemed largely unaffected.

3. 2 Place Attachment and its predictors (H1 & Q1)

A principal axis factor analysis with orthogonal varimax rotation was performed on the 9 items for place attachment to verify its two-dimensional structure. The Kaiser-Meyer-Olkin measure supports an adequate sample size, KMO= .88 (well above the minimum criterion of .5; Field, 2013). All KMO values for individual items were above .8 (well above the minimum criterion of .5; Field, 2013). Two factors had eigenvalues over Kaiser's criterion of 1 explaining a cumulative variance of 75.3%. The screeplot had points of inflexion that justified both a one- or a two-factor solution. After rotation the items clustered around the two factors in a pattern that corresponds with the two dimensions of place identity and place dependence (Table 1). These results show that the modifications and translation for the two scales taken from Williams and Vaske (2003) did not affect the measure. Both scales are highly reliable (Pl: Cronbach's α= .92; PD: Cronbach's α= .88). To obtain average values for these scales, scores were added and divided by the number of items of each scale. On average participants scored 3.54 (*SD*= .96) on place identity and 3.03 (*SD*= .84) on dependence on a scale from 1 (=low) to 5 (5= high). Both scales were highly correlated (r= .73, p< .001) which justified combining them into a single score for place attachment by dividing the sum of mean scores for each scale by two. Thus the average score of PA obtained was moderate with 3.30 (*SD*= .83).

Table 1. Factor loadings with orthogonal varimax rotation on the two dimensions of place attachment, identity and dependence. “This park” refers to the park participants indicated as their most frequently used park.

Place Attachment Items	**Place Identity**	**Place Dependence**
This park is very special for me.	.81	.3
I feel a strong bond with this park.	.90	.23
This park means a lot to me.	.84	.31
I feel this park is part of me.	.68	.41
This park is the best park for what I like to do.	.43	.51
No other park can compare to this park.	.20	.82
I get more satisfaction from visiting this park than any other park.	.26	.90
This park is the best park to do what I usually do their (e.g. walking).	.29	.65
No other park offers replacement for the things I do in this park.	.47	.67

Note. The determinant of this analysis was .001 > .00001 (Field, 2013). Communalities were .48 or higher which is acceptable for two factors and N= 104. Bartlett’s test of sphericity was significant (approximate $\chi^2(36)= 696.75$, $p< .001$) confirming an adequate sampling size. All inter-item correlations were between .3 and .9. indicating a good factor structure.

Tabel 2 presents the intercorrelations between place attachment and the five predictors for PA. In Appendix C you find an extended table of intercorrelations that includes controlling variables such as having a dog, having kids, and age.

Table 2. Intercorrelations of place attachment predictors, PA, stewardship intentions and stewardship behaviour.

		Prox.	Use-Frq	Use-Intens.	Time	Home-Own.	PA	St. Intent.	St. Behav.
Proximity	Pearson Cor.	1	.22*	-.35**	.07	-.13	-.07	-.04	.04
	N	104	102	104	73	74	103	65	36
Use-Frequency	Pearson Cor.		1	-.13	.23	-.01	.26**	.34**	.58**
	N		103	103	72	73	102	64	36
Use-intensity	Pearson Cor.			1	.10	.23	.27**	-.05	.67**
	N			105	74	75	104	66	36
Time	Pearson Cor.				1	-.38**	.11	-.19	.30
	N				74	74	74	53	34
HomeOwnership	Pearson Cor.					1	.13	.23	.20
	N					75	75	54	34
Place Attachment	Pearson Cor.					.19	1	.19	.31
	N						104	66	36
Stewardship Intentions	Pearson Cor.						.19	1	-.26
	N						66	66	15
Stewardship Behaviour	Pearson Cor.								1
	N								36

Note. *. Correlation is significant at the 0.05 level. **. Correlation is significant at the 0.01 level. Stewardship intentions and behaviour are correlated here but data stems from different participants. The *N*s for stewardship intention and behaviour differ because they represent two different groups of participants.

To analyze how each of the predictors home-ownership, time living in the current home, proximity to the park, use-frequency and use-intensity as predictors affects the outcome variable place attachment (H1a-H1e) and how they relate to each other (Q1) a hierarchical multiple linear regression (MLR) analysis was conducted with three steps. Home-ownership and time living in the same home have been established as reliable predictors for PA in general (Lewicka, 2011a) and were therefore introduced first to the model. Proximity expresses a physical relationship and will probably influence use-intensity and use-frequency. Therefore, it was introduced in a second step. Use-frequency and use-intensity were entered in the third step. All assumptions for a MLR were perfectly met. Case 22 was an outlier on leverage and Mahalanobis distances but excluding the case from the analysis did not cause a

significant change to the data so it was retained in the data set. The first two steps resulted in models that were not statistically significant (Tabel 3). It worth noting that proximity has a negative regression weight but adding this predictor hardly changes the βs of the first two predictors. Introducing use-frequency and use-intensity in the final step resulted in a model that caused a significant change relative to the previous step ($\Delta F(2,65)= 3.32$, p= .042). Although still not reaching significance the p-value became fairly low (Table 3). Use-frequency and use-intensity resulted as marginally significant predictors for PA.

Table 3. Means and standard deviation and linear model of predictors for place attachment to urban parks.

Step	**Variables**	***M***	***SD***	***b***	***SE B***	***β***	***p***
1	Constant	-	-	2.85	.37		<.001
	Time	-	-	.01	.01	.16	.229
	Home-Ownership	-	-	.28	.23	.16	.223
2	Constant	-	-	2.99	.54		<.001
	Time	-	-	.01	.01	. 16	.227
	Home-Ownership	-	-	.27	.23	.15	.244
	Proximity	-	-	-.03	.09	-.05	.709
3	Constant			2.30	.60		<.001
	Time	10.9	10.29	.00	.01	.04	.773
	Home-Ownership	1.32	.47	.12	.23	.07	.618
	Proximity	4.03	1.12	.01	.10	.02	.912
	Use-Frequency	3.46	1.56	.13	.07	.24	.059
	Use-Intensity	2.77	1.53	.14	.07	.26	.058

Note. N=71. Model 1: $F(2,68)= 1.08$, $p= .345$, $R^2= .03$, Model 2: $F(3,67)= .76$, $p= .522$, $R^2= .03$, $\Delta F(1,67)= .14$, p= .709, Model 3: $F(5,65)= 1.81$, $p= .123$, $R^2= .12$, $\Delta F(2,65)= 3.32$, p= .042. Time was measured in years, Homeownership on a scale form 1=Yes to 2= No; and proximity, use-frequency, and use-intensity were measured on a Likert-scale from 1-5 where 1 indicates a low value and 5 a high value. $M_{PA}= 3.30$ ($SD_{PA}= .83$).

With regard to the first set of hypotheses (H1a-H1e), strictly all five hypotheses have to be rejected. Still the results provide good support for H1d and H1e (*use-frequency and use-intensity predict PA*). To answer Question 1 (*How do the predictors differ in strength relative to each other?*) we can inspect the standardized regression weights for these predictors (Table 2). We can observe that home ownership, time and proximity have relatively small weights ($\leq .07$). Use-frequency and use-intensity on the other hand, have larger and similar standardized regression weights (around .25). Looking at the intercorrelations between predictors demonstrates that proximity significantly correlates with use-frequency in a positive direction and with use-intensity in a negative direction (Table 2). This may be a reason why proximity fails to predict PA, it has to compete with two other predictors in opposing ways.

3.3 Place Attachment & Stewardship (H2 & Q2)

To test hypothesis 2a&b, a single intention measure was calculated first. Intention was measured with two items for each of the two behaviours. For each behaviour, these items were added and divided by two providing a single score for intention for each behaviour. These two new variables correlated highly (r=.52, p= .001, N= 38) and were thus combined to a single measure by adding up scores and dividing the sum by two resulting in a 4-item scale for intention that was reliable (Cronbach's α= .78). For some of the data only one value was available (instead of two). To avoid data loss due to missing cases in the process of combining these two variables, in those cases the available value was taken as the score for intention for that participant. The data for this variable was not normally distributed, bias accelerated bootstrapping was performed to control for this. The median for Intention was 2.37 (*IQR*= 1.56) on a scale from 1 (=low) to 5 (5= high) (M= 2.40, SD= 1.08). Therefore, we can conclude that participants' intentions to stewardship their park were rather moderate.

To test whether place attachment to the park predicts stewardship intentions for this park (H2a) a linear regression analysis with PA as predictor and Intention as outcome was conducted. The model was not statistically significant (F(1, 64)= 2.44, p= .123, R^2= .04, adjusted R^2= .02). Strictly, H2a should be rejected, especially because the bootstrapped confidence intervals include zero. Nevertheless, the beta is positive the p-value is not too high. Especially considering that the N for this analysis was 66 we can still conclude that there is a support for the hypothesis that higher levels of PA predict stronger stewardship intentions.

(Table 4)

Stewardship behaviour itself was only measured with one item per behaviour-type these two variables were correlated directly resulting in a high correlation (r= .79, p< .001, N= 19) which justified combining the two scores to a single behavioural measure which was highly reliable (Cronbach's α= .88). Again, missing cases were treated as zeros. The data for stewardship behaviour was not normally distributed either. Case 58 was an outlier on leverage and Mahalanobis distance, but exclusion did not change results so the case was retained. The median for actual stewardship behaviour was 1 (IQR= 1) on a scale from 1 (=never) to 5 (5= very regularly) (M= 1.92, SD= 1.4). This indicates that on average participants join voluntary maintenance sessions in their park very seldom only. To test whether place attachment to the park predicted actual efforts to steward this park (H2b) a linear regression analysis with PA as predictor and actual stewardship as outcome resulted in a marginally significant model ($F(1,34)= 3.61$, p= .066, adjusted R^2= .07) explaining a variance of 9.6%. Again, strictly speaking we have to reject H2b, especially because the bootstrapped confidence intervals include zero. Nonetheless, considering the p-value and an N of 36 is rather small to detect this kind of effect we find support for the hypothesis that higher levels of PA predict stewardship behaviour on more regular basis (Table 4).

Table 4. Linear model for PA predicting stewardship intentions (H2a) and stewardship behaviour (H2b), with 95% bias corrected and accelerated confidence intervals. P-values, confidence intervals and standard errors are based on 1000 bootstrapped samples.

Hypothesis	**Variables**	***B [BaCI]***	***SE B***	***β***	***p***
H2a	Constant	1.55 [.50, 2.50]	.49		.006
	$PA_{intentions}$	.26 [-.05, .58]	.16	.19	.120
H2b	Constant	-.02 [-2.35, 2.20]	1.06		.977
	$PA_{behaviour}$	.53 [-.04, 1.14]	.31	.31	.106

Note. N_{H2a}= 66, N_{H2b}= 36. M_{PA}= 3.30, SD_{PA}= .83. $M_{Intentions}$= 2.40, $SD_{Intentions}$= 1.08. $M_{Behaviour}$= 1.92, $SD_{Behaviour}$= 1.4. Variables were measured on a Likert-scale from 1(=low) to 5(= high).

To answer the question whether PA predictors also predict stewardship (intentions and actual behaviour) first two MLR analyses were conducted with PA predictors as predictors and intention as well as actual behaviour as the outcome variable for each analysis. A simultaneous procedure was employed since the previous analyses showed that Home-

ownership and time do not appear to have a special predictive power for place attachment. The intercorrelations for these variables are presented in Table 2.

For intention all assumptions were met apart from normality. Therefore, bias corrected bootstrapping was performed on confidence intervals, standard errors and significance tests. Case 34 was identified as outlier on leverage and on Mahalanobis distance but excluding it from the analysis did not result in significantly different results so it was retained in the analysis. The overall prediction of the model was good ($F(5, 44)= 2.79$, $p= .028$) explaining 24.1% of the variance (adjusted $R^2= .15$). Only use-frequency emerged as a significant positive predictor for stewardship intentions (Table 5).

Table 5. Linear model for PA predictors and intention (DV1) and real behaviour (DV2), with 95% bias corrected and accelerated confidence intervals. Confidence intervals and standard errors are based on 1000 bootstrapped samples.

Dependent Variable	**Variables**	***B [CI]***	***SE B***	***β***	***p***
stewardship intention *N*= 50	Constant	1.54 [-.76, 3.63]	.3		.139
	Use-Frequency	.32 [.11, .48]	.23	.46	.003
	Use-Intensity	.06 [-.17, .30]	.51	.07	.637
	Proximity	-.19 [-.51, .21]	.41	-.18	.248
	Homeownership	.46 [-.26, 1.26]	.31	.19	.199
	Time	-.01 [-.05, .02]	.82	-.11	.451
stewardship behaviour *N*= 34	Constant	-2.85 [-4.58, -.68]	.78		.005
	Use-Frequency	.31 [.09, .55]	.11	.32	.012
	Use-Intensity	.68 [.43, .86]	.12	.72	.001
	Proximity	.33 [.05, .55]	.13	.30	.020
	Homeownership	.24 [-.17, .30]	.32	.09	.481
	Time	.01 [-.03, .06]	.02	.07	.647

Note. $M_{Intentions}= 2.40$, $SD_{Intentions}= 1.08$. $M_{Behaviour}= 1.92$, $SD_{Behaviour}= 1.4$. Variables were measured on a Likert-scale from 1(=low) to 5(= high).

For actual stewardship behaviour the same analysis was performed except for the outcome which was of course real behaviour in this case. All assumptions were met apart from normality. Furthermore, over 50% of the cases had leverage values above the acceptable criterion (Hoaglin & Welsh's criterion, 1978: > 2(k + 1)/n)). Hence the analysis was bootstrapped with an accelerated bias correction to control for this suboptimal condition. The overall prediction of the model was very good ($F(5,28)= 15.69$, $p< .001$) explaining a variance of 73.7% (adjusted $R^2= .69$). All three park-specific predictors made significant contributions to the model (Table 5). Interestingly, the intercorrelations (Table 2) show that behaviour does not correlate with proximity, still this predictor emerged as significant. To answer Q2 we can summarize that someone's intentions to take care of a park can be predicted by how frequently an individual visits the park: the more frequent the visits are, the stronger his*her intentions become. Real stewardship behaviour can be predicted by how often an individual visits the park, how much time he*she usually spends in the park per visit and how long it takes that individual to get to the park. The larger the scores on these predictors the higher the probability that someone will actually be involved in a stewardship activity as described above.

3.4 Place Attachment & the Theory of Planned Behaviour (H3 & H4)

To test H3 and H4, scores for the four TPB and NAM variables were calculated first. The reliability of these four scales (each one consisting of all items across the two stewardship behaviours that measured that variable, e.g. attitude) was assessed to see whether all items of a particular scale could be added into one score. The four items for "Attitude", the four items for "perceived behavioural control", and the six items for "norm-activation (responsibility)" were a reliable scales (Cronbach's α= .82; .61; .89; .78). The four items for "subjective norm" were not highly reliable but still acceptable for a psychological construct (Cronbach's α= .61) (Graefes, Zibarras & Stride, 2013). Therefore, the items of each scale were added and divided by the number of items of that scale. Table 6 presents the intercorrelations of these variables. In Appendix D you find an extended table of intercorrelations that includes controlling variables such as having a dog, having children, and age. The mean scores are presented in table 7.

Table 6**.** Intercorrelations of TPB & NAM variables, stewardship intentions, and stewardship behaviour.

		Atti.	SN	PBC	PN	PA	St.Int.	St.Beh.
Attitude	Pearson Cor.	1	.56**	.65**	.68**	.44**	.68**	.50**
	N	69	68	68	67	69	52	31
Subjective Norm	Pearson Cor.		1	.43**	.61**	.28*	.53**	.15
	N		70	70	69	70	51	32
Perceived Behavioural Control	Pearson Cor.			1	.41**	.22	.47**	.52**
	N			71	69	71	52	32
Personal Norm	Pearson Cor.				1	.25*	.45**	.17
	N				69	69	51	32
PA	Pearson Cor.					1	.19	.31
	N					104	66	36
Stewardship Intentions	Pearson Cor.						1	-.26
	N						66	15
Stewardship Behaviour	Pearson Cor.							1
	N							36

Note. **. Correlation is significant at the 0.01 level.

To test whether "Attitude" and "Personal Norm" are the elements within the extended planned behaviour model that are affected by place attachment (H3a and H4a), two linear regression analyses were conducted. One with PA as predictor and "Attitude" as outcome and a second one with PA as predictor and "Personal Norm" as outcome. For Attitude as outcome the model was highly significant ($F(1,67)= 16.23$, $p<.001$, $R^2= .20$, adjusted $R^2= .18$). For Personal Norm the model was significant as well ($F(1,67)= 4.47$, $p=.038$, $R^2= .06$, adjusted $R^2= .05$). The details of both models are displayed in table 7. Higher levels of PA predict both, a stronger Attitude and Personal Norm with regard to taking care of one's park. Therefore we can accept H3a. Although the significance level of PA predicting personal norms are only marginal, we still find support for H4a. Both hypotheses can be accepted.

Table 7. Linear models of PA predicting Attitude and Personal Norm, with a 95% bias corrected and accelerated confidence interval reported in brackets. Confidence intervals, SEs and p-values are based on 1000 bootstrapped samples.

Hypothesis	**Variable**	***B***	***SE B***	***β***	***p***
H3a	Constant	1.91 [1.18; 2.55]	.38		.001
	$PA_{Attitude}$	.44 [.19; .70]	.12	.44	.002
H4a	Constant	2.23 [.79; 3.15]	.37		<.001
	$PA_{PersonalNorm}$	.20 [-.02; .44]	.12	.25	.075

Note. $N_{Attitude}$= 69; $N_{PerNorm}$= 69. M_{PA}= , SD_{PA}= , M_{Atti}= 3.15, SD_{Atti}= *.75*, M_{PN}= 2.78, SD_{PN}= *.66.* Variables were measured on a Likert-scale from 1(=low) to 5(= high).

Furthermore, it was tested whether Attitude and Personal Norm predict stewardship intentions (H3b and H4b). Thus, a hierarchical MLR analysis was conducted with TPB variables as predictors introduced first to the model and the NAM variable (Personal Norm) introduced in a second step and stewardship intention as dependent variable. All assumptions apart from normality were met. Therefore, bootstrapping was performed to control for non-normality. The results are presented in table 8. Only attitude significantly predicts intentions. Introducing Personal Norm to the model did not change the model nor the standardized regression weights of the TPB predictors. Moreover, it has a very high p-value and a low and even negative *β*. Examining the correlation matrix shows that attitude and personal norm are highly correlated with stewardship intentions as well as with each other (Table 6). Thus, they may be competing for an impact on the outcome. Attitude has a stronger correlation with intentions, thereby possibly "winning" the competition which may also explain the negative regression weights of personal norm (Table 8). We should also consider that PA predicted attitude more strongly and more reliably than it predicted personal norms (Table 7). This justifies to further focus on attitude only and investigate whether it is a potential mediator in the relationship between PA and stewardship intentions. Also, we should reject H4b (*personal norm mediates an effect of PA in intentions*).

Table 8. Means and standard deviation and linear model of TPB & NAM variables as predictors and stewardship intentions as outcome variable, with 95% BCa confidence intervals, standard errors and significance values (based on 1000 bootstrapped samples).

Step	**Variable**	***M***	***SD***	***B***	***B SE***	***β***	***p***
1	Constant	--	--	-1.83 [.79, 3.15]	.76		.015
	Attitude	--	--	-1.87 [.47; 1.26]	.70	.60	.002
	Subjective Norm	--	--	.44 [-.00, .99]	.24	.24	.070
	PBC	--	--	.08 [-.32, .40]	.17	.06	.655
2	Constant			-1.83 [-3.29, -.78]	.76		.022
	Attitude	3.15	.75	.94 [.49, 1.52]	.22	.65	.004
	Subjective Norm	2.90	.57	.51 [0.7, 1.17]	.28	.27	.071
	PBC	3.31	.87	.07 [-.38, .43]	.18	.06	.716
	Personal Norm	2.78	.66	-.15 [-.49, .10]	.21	-.10	.473

Note. N= 51. Step 1: $F(3, 47)= 22.38$, $p <.001$), $R^2= .59$ (adjusted $R^2= .56$). Step 2: $F(4, 46)= 16.72$, $p <.001$), $R^2= .59$ (adjusted $R^2= .56$), $\Delta F(1, 46)= .49$, $p= .493$. $M_{Intentions}= 2.40$, $SD_{Intentions}= 1.08$. Variables were measured on a Likert-scale from 1(=low) to 5(= high).

To test whether the potential mediator attitude really carries an effect a mediation analysis was conducted. The conditions for such an analysis (Field, 2013) are met, since PA predicts Attitude (Table 7), Attitude predicts intentions while controlling for PA (Appendix E) and there is support for PA predicting Intentions (Table 4). The basic mediation model is shown in Figure 4. The Sobel test was used to test whether the indirect effect is statistically significant from zero. This test requires the unstandardized regression coefficients and standard errors of the (individual) regressions of the predictor on the mediator and the mediator on the outcome. Here, the test was conducted using Preacher and Leonardelli's (2017) software. The test resulted to be highly significant ($Z_{ab}= 3.36$, $SE= .12$, $p< .001$) confirming a mediation effect of attitude in the relationship between place attachment and stewardship intention. The standardized coefficients are shown in figure 5. Therefore, we can accept H3b. In the presence of the mediator attitude the effect of place attachment on

stewardship intentions disappears completely indicating full mediation.

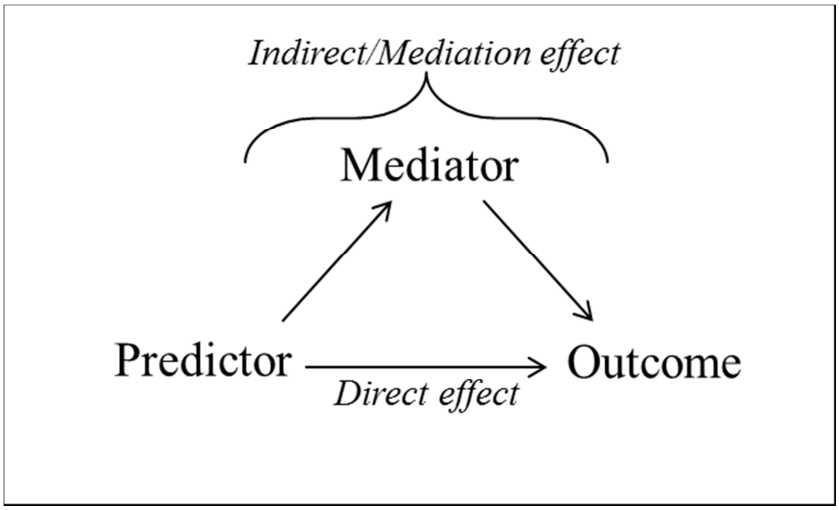


Figure 4. Basic mediation model.

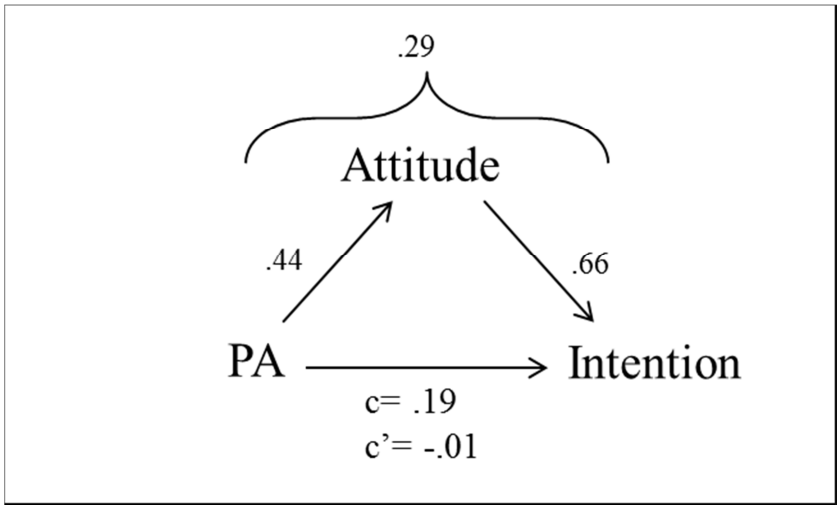


Figure 5. Mediation model for PA as predictor, attitude as mediator and Intention as outcome. C= total effect; c'= direct effect. Unstandardized regression weights and standard errors used for the Sobel Test: a= .44 (SE= .12), b= .93 (SE= .15).

3.5 Controls and exploratory analysis

19.3% of participant indicated that they do other stewardship activities in the park such as education, organizing park- and nature-related events, biodiversity research and taking care of bee hives. 12.8% indicated that they did similar stewardship activities but in a different park.

To control whether people's stewardship intentions were affected by the feeling that their park did not require extra maintenance a MLR analysis was conducted with the four TPB & NAM variables and an item targeting this aspect (Appendix F).

The idea of the TPB and NAM models is to explain behaviour focusing on one of the most important predictors for behaviour which is intention. Ideally, we would also analyze the effect of stewardship intentions on stewardship behaviour. This was not possible for methodological reasons. Either people were already engaged in stewardship (asking for their intentions would have been redundant) or people were currently not engaged in stewardship but we had no opportunity to measure their behaviour after this survey. Instead a multiple regression analysis with the TPB and NAM variables as predictors and stewardship behaviour as outcome to see whether the variables are related to real behaviour in a similar way as they are with intention. None of the predictors were significant. Attitude and subjective norm had the lowest p-values, producing a similar pattern as with stewardship intention (Appendix G).

To control whether any of the demographic variables had an effect a MLR analysis was run with a hierarchical procedure (Step 1: TPB and NAM variables; Step 2: age, gender, current employment situation, education and having children younger than 15 years). Only having children reached a marginal significance (Appendix H).

To assess which behavioural beliefs contributed to a positive attitude towards taking care of a park, two MLR analyses were conducted. One with attitude towards "keeping the park nice" as outcome (Appendix I.1) and one with attitude towards "taking care of a herbal or vegetable garden" as outcome (Appendix I.2). In both cases the respective set of behavioural beliefs were treated as predictors. Unfortunately most of the beliefs were not relevant. For both behaviours, the belief "As I help to [behaviour] I will have fun." was a significant positive predictor, in both cases with comparable strengths (b= .31; .39). For "keeping the park nice" the belief about "peace of mind" was also a significant predictor (b= .23).

4. Discussion

The aim of this study was fourfold. First, investigate whether place attachment to an urban park is related to voluntary stewardship of this park. Second, test what factors predict place attachment to urban parks and investigate whether they also predict stewardship. Third, compare the strength of PA predictors with each other. Finally, examine the underlying processes of the relationship between PA and stewardship.

First of all, the average place attachment score was moderate and comparable to previous research on PA to national parks (Hallpenny, 2010; Williams & Vaske, 2003; Stedman, 2002). Given that national parks often involve beautiful scenery, special flora and fauna and other distinctive characteristics their potential for symbolic value and thus place attachment is larger than a small park in the neighbourhood. Hence it is remarkable that we found comparable PA levels. It suggests that people connect psychologically to relatively simple green areas and may even identify with these places to a certain extent. This finding is especially surprising because in the process of developing this study doubts were raised whether place attachment to a park in the neighbourhood would be an effect that could be captured at all. For instance one participant in the pilot said "people have a favourite park because it's close by, or has lots of flat spaces, or space for kids to play […]. I don't think people from Leiden feel that strongly connected to a park." Essentially, this participant said that place dependence is more relevant than place identity. According to Stedman (2002) being dependent on something is an important factor to cause a pscyhological attachment. Even more interesting in this regard is the finding that here on average participants had a higher place identity with their park than a place dependence ($t(103)= 8.12$, $p< .001$).

With regard to the predictors for place attachment it was predicted that the time participants had been living at their current home, home ownership, the proximity to the park, the frequency with which they visited this park, and the intensity of use would all be positively related to their attachment to the park. These predictions could not be supported by the data as such. Nevertheless, there was good support to interpret use-frequency and use-intensity as moderate predictors for PA, especially considering the small sample. Although use-intensity as operationalised here only measures how much time users usually spend in their park, it supports the notion of environmental experiences with a space are critical for developing a bond with it. For instance, Ryan (2005) demonstrated that the type of activity performed in an urban park was related to different levels of PA to that park. Use-frequency may be an indication of how well the park meets users' needs and goals. If the park meets a

user's needs well, the user will have more reasons to visit the park on a regular basis than when the parks does not really meet the user's goals. Ramkissoon, Smith & Weiler (2013) summarise that a high satisfaction of users' goals and needs leads to an increased place dependence – a component of PA. At the same time, frequent visits to the park provide more opportunities to form cognitive and affective bonds to that place, forming the basis of place identity (Ramkissoon et al., 2013). Similarly, frequent visits help maintain a certain level of salience of that place which makes it more likely to be incorporated into self-identity aspects.

Proximity failed to predict place attachment. There are three possible explanations to this. First, proximity correlated positively with use-frequency and negatively with use-intensity. Therefore its predictive influence on PA may have been neutralized. Second, proximity was measured by participants' estimate of the time it usually takes them to get to the park. Since most participants either walked or cycled to the park this should be a good estimate. However, it would have been more objective and accurate to measure spatial distance from the home for example to the park as others have done (Moore & Graefe, 1994). Third, as mentioned, park density in Leiden is high. Thus, close proximity to a certain park does not distinguish it from other, alternative parks.

Time living at the current home and owning this home did not prove as useful predictors for place attachment. Looking at significance levels (Appendix B) does also not encourage thinking that with a larger sample size these results may have looked differently. This is surprising considering that in the field of place studies these predictors have proven to be quite reliable (Lewicka, 2011). Maybe the way how time was measured was not appropriate. Living in a city with a large offer of parks it may not be so relevant how long a participant had been living at the same place but rather for how long he*she had been using the same park. Moore and Graefe (1994) for example measure for how long visitors have been associated with a particular recreational trail and show that this best predicts place identity with this trail. Here it is worth mentioning that age was positively correlated with levels of PA. The reason why homeownership is thought to be strongly related to place attachment is that homeowners made an investment to make it their own home. Owning a home increases feelings of being settled and belonging to place. An explanation for a lacking relationship with place attachment to a park in the neighbourhood could be that the park is seen as a self-contained space. Place attachment to the neighbourhood or to the city for example would refer to a space that comprises the home as well. In these cases homeownership could directly influence how one perceives this space and therefore be a predictor for place attachment to that space. A place with clear boundaries such as an urban

park, may be cognitively isolated from the concept of "my home" and would thus not be sensitive to homeownership.[1]

Investigating how these predictors related to stewardship – both intentions and real behaviour uncovered a slightly different pattern. For intentions to volunteer for park maintenance were only predicted by the frequency of visits to the park. Real volunteering behaviour was predicted by a use-frequency, the usual duration of visits (use-intensity) and time it usually takes a visitor to get to the park (proximity). That real stewardship behaviour is related to all three park-specific predictors is not surprising because it follows the rational of the hypotheses formulated in this study (PA predictors predict PA, PA predicts stewardship behaviour, so PA predictors may also predict stewardship). However, that stewardship intentions are clearly only predicted by use-frequency is somewhat unexpected. To start with, proximity may not be enough to affect someone's plans to volunteer (especially not when park density is high) but putting these plans into practice and really sticking with the group may be critically affected by proximity. Reaching the park adds extra time that will have to be devoted to the stewardship activity and people may only find out whether that is feasible when really engaging with the behaviour. We have to remind ourselves that the relationships investigated here are not causal. Actually, they may affect each other the other way around as well: once someone decides to participate in a volunteer group, it is more likely that that individual will visit the park for longer durations (user-intensity) because the volunteering activity takes so long. Scannell and Gifford (2010b) suggest that place attachment involves a psychological process which besides of an emotional and a cognitive element also features a behavioural component through which place attachment is expressed. Examples include maintaining proximity to the place or reconstructing it after damage has occurred to the place. Thus, it is very likely that there are feedback mechanisms playing a role in the here investigated relationships. This could explain why only for real behaviour we can identify significant relationships with these predictors.

In the second set of hypotheses, it was predicted that place attachment to participants' most frequented park is positively related to both their intentions for stewardship and actual

[1] To explore potential differences between the two dimensions of place attachment, two separate MLR analyses were conducted, each with PA predictors as predictors and place identity and place dependence as the respective dependent variables. The model to predict place identity ($F(65,5)= 2.07$, $p= .080$, $R^2= .14$) was better than the model for predicting place dependence ($F(65,5)= 1.71$, $p= .144$, $R^2= .12$). The standardized regression weights of use-intensity and use-frequency were higher and more reliable for identity relative to dependence. Interestingly, although not reliable, the beta for homeownership predicting dependence was higher than for predicting identity. Overall, the pattern was comparable to the one presented for place attachment in the results section.

stewardship behaviour in the park. Strictly, both hypotheses would have to be rejected. However, the effect that we tried to detect would have required a much larger N (min. 150). Considering our small sample size the marginally significant results give a good reason to assume that there is a positive relationship between PA and stewardship intentions as well as actual stewardship. These conclusions would be in line with research that shows that place attachment or an emotional bond with a green space is related to an increased care for this space (e.g. Krasny et al., 2014; Budruk, Thomas, & Tyrell, 2009; Hunter, 2011; Lokocz, Ryan, & Sadler, 2011; Stedman, 2002). More specifically, Hallpenny (2010) could show that place attachment to a national park predicted intentions for place-specific behaviour that amongst others includes behaviours such as picking up litter and joining a project to protect the park – behaviours that are similar to the ones investigated in the current study. Ryan (2005) looked at urban green areas and he could show that place attachment is linked to increased environmental activism in hypothetical scenarios. In this context, the current study makes a useful contribution by looking at a direct relationship between PA and stewardship intentions as well as actual stewardship behaviour in urban green areas. Within the wider context of urban green spaces and their role for urban life quality as well as for mitigating climate change, this finding is especially relevant. In a study covering 10 years, Locke et al. (2013) showed that while vegetation cover in New York City was generally decreasing, the opposite was the case for neighbourhoods with a higher number of stewardship groups taking care of vegetation cover. So even if research cannot yet provide clear results that place attachment as a general concept is positively related to pro-environmental behaviour, in this very specific but not unimportant case of urban parks we can conclude that attachment to the park encourages maintenance of this park which in turn has positive, pro-environmental effects. So indirectly, place attachment to a park brings pro-environmental benefits. Even more so, if we consider that the behaviour we were looking at here was quite intense, spending an hour or two on a regular basis to work in a park demands effort. If place attachment to a particular green area has the power to motivate real behaviour to develop this space, there is a promising potential in this concept. The only controlling variable that was negatively associated with intentions was having children. This may suggest that stewardship activities are perceived as time consuming and not suitable for taking children under 15 along to join.[2]

[2] To investigate whether the two stewardship behaviours, maintaining the park and maintaining a herb or vegetable garden in the park, were related to place attachment differently, eight linear regression analyses were performed: Four regressions for place identity predicting intentions for each of the behaviours as well as

Especially because the relationship between place attachment and pro-environmental behaviour is ambiguous it is key to understand the underlying process of this relationship. This is what the final set of hypotheses was concerned with. Here, the potential of behavioural models (Theory of Planned Behaviour and the Norm Activation Model) to explain this relationship was explored. It was hypothesised that both attitude (as a hedonistic component) and personal norms (as a moral component) towards stewardship would be predicted by PA and that both would mediate the relationship between PA stewardship intentions. The results support attitude as the dominant mediating element in this relationship. Attitude fully mediated the effect of PA on stewardship intention. Put simply it is a hedonistic element that links PA and stewardship intentions and not so much a moral concern. That attitude towards a specific behaviour is an important component to predict intentions to perform that behaviour is in line with a bulk of behavioural research (e.g. Onwezen et al., 2013; Hallpenny, 2010; Bamberg et al, 2007; Staats, 2003; Harland, Staats, & Wilke, 1999; Fishbein & Ajzen, 1975). That place attachment predicts an attitude towards a specific behaviour performed with in that place is a new finding. It does confirm however, the relevance of so-called background variables that influence the beliefs on which an attitude is based on (Fishbein & Ajzen, 1977;1980). Hence, this study shows that attachment to a place that is intimately linked with the target behaviour may be such a background variable. At this point it is worth considering the exploratory analyses. The beliefs that resulted relevant in predicting attitude to some extent included “to have fun”, “to feel a peace of mind”, “ to contribute to the quality of the park”, “to meet new people” and “to see familiar faces”. Whether PA also affected these beliefs was not tested here. Still looking at these beliefs, it seems plausible that at least some may be affected by place attachment. Attitude itself embraced how important and enjoyable participants rated taking care of their park. Also here it seems very plausible that being dependent on a park to some extent will be related to evaluating maintenance activities in that park as important. Similarly, feeling identified with that park will likely be related to enjoying these activities. Interestingly, age was positively correlated with Attitude, Perceived Behavioural Control and stewardship behaviour. It would be interesting to see whether this is due to generational differences or due to specific phases in life where certain activities such as being outside are more attractive. It does not seem to be related to having more time since

predicting real behavior and four regression for place dependence predicting intentions and real behaviour for both behaviours. Place identity predicting intentions for maintaining the park and place dependence predicting maintaining a herb or vegetable garden in the park obtained the highest standardized regression weights (around .34) and were quite reliable ($p < .85$) considering the low *N*s (56 & 24). Overall, no consistent pattern was observable. Because of strong violations of assumptions in most cases these observations are not conclusive.

current employment was not related to these concepts.

5. Limitations:

There are key limitations to this study. First, the sample size was rather small. Many of the analyses may have resulted more informative with a larger N. A more attractive recruiting strategy may have helped to get more participants to sign up. Although the survey included around 80 items, well below the recommended maximal amount of 150 items, some item blocks were repetitive and may have caused fatigue to continue the survey. Some participants provided feedback such I.B. who wrote that "it was a long questionnaire and the questions are mostly targeted at people who (already) do help. I don't, and so I felt the questions were a lot the same, boring, and not really for me." Indeed, leading on to the second limitation, the items that were used here largely resulted from pre-existing scale on motivations for environmental volunteering. Ajzen (1991) recommends extracting these beliefs from the study population itself to make them as specific as possible. Specificity has shown to be crucial for the predictive power of the TPB model (Oskamp & Schultz, 2005). Greaves, Zibarras, and Stride (2013) for example employ a sophisticated and elaborate technique to identify beliefs for each of the three TPB constructs via workshops and interviews with the target population they collect potential ideas which are analysed and processed further to generate possible items. Although in the current study specificity was considered and an expert interview was conducted, more direct engagement with beliefs from the study population may have yielded more appropriate items. Greaves et al. also show that such a method increases the variance explained by these variables compared with non-customized items. Furthermore, the questionnaire was only pre-tested once for cultural acceptance in a Dutch population. Greaves et al. for example piloted their questionnaire three times. The low number of beliefs that were identified to predict attitude, underline that a more sophisticated method would have been more appropriate. Third, Ryan (2005, 2001) advocates the role of quality for place attachment and engagement with the park. Different parks have different physical characteristics that may appeal to different people and in different ways. Especially when parks undergo re-development this would likely affect users relationship towards the park. Either by increasing attachment when it becomes more attractive (e.g. adding a playground for the children) or by also decreasing attachment because appealing features disappear (e.g. with the new playground the park becomes noisy and busy). This is aspect would most likely interact with

the predictor time some has been associated with the park and would have to be controlled for separately. The fourth caveat is that stewardship or park maintenance as operationalized does not involve major changes to the park but rather enhances the positive aspects the park already provides. Park maintenance that could involve large scale changes such as adding a playground or introducing a biotope that restricts access to areas of the park could result in different reactions. Finally, the study population may only be representative to some extent. First, park density varies across cities and will not always be as high as in Leiden. Second, the fact that an action group was founded to realize to get involved in realizing the Singelpark shows a high disposition amongst citizen to become active in such contexts. The Singelpark is not the only project the Leiden Centraal Park is one of other related project that involves citizens active participation. Comparing the demographics of this sample to the population of Leiden reveals some differences which limits a one-to-one applicability of these results to a practical context. Still, I consider that the results provide valuable insights that are worth taking into consideration.

6. Future research

From the above mentioned limitations we can deduct improvements such as employing more sophisticated technique to identify relevant beliefs. Further, it would be interesting to test how these beliefs are affected by place attachment. It could also be valuable to try and manipulate PA by describing different scenarios to groups of participants, manipulating the visiting frequency, user-intensity proximity to the hypothetical park and then measuring attachment levels with regard to the park described in the scenario. Although place attachment is a concept that build up over time, with use and life in general, well-developed hypothetical scenarios are worth exploring for an experimental approach. For instance, Ryan (2005) employed participants' possible responses towards a hypothetical negative change as one measure for place attachment for a specific natural area. Here the target place really exists but attachment is detected via a fictive change. In addition, a more complex analysis such as structural equation modeling could test the entire model for which only individual relationship were tested here. Finally, in the context of place attachment to cities, Scannell and Gifford (2010a) emphasised the distinction between PA to the natural (e.g. houses, streets, non-residential indoor settings, lakes, parks, trails, forests) and civic aspects (e.g. social interactions occurring there, spatial symbols of one's group or social bonds). Here we have

looked at place attachment to a park – a natural space. However, urban parks are spaces where social relationships are likely to occur, to form, and to develop. Parents enjoying free time with their children, neighbours meeting each other walking their dog, school children exploring the flora and fauna of the park or a volunteer group picking up litter. User-intensity resulted as a predictor for PA in this study and in previous research (Ryan, 2005). Hence PA to a park is intimately linked with the kind of activity performed there. It would be interesting to investigate how important the social component is here. Especially, because Scannell and Gifford (2010a) found that it is the natural dimension but not the civic dimension of PA that predicts pro-environmental behaviour. Applying Scannell & Gifford's (2010a) scale to measure PA to urban parks could reveal whether they are "just" a physical feature or whether they are places to which people become attached for their physical features (e.g. many benches, water, many flowers) as well as for their civic features (e.g. meeting point for neighbours, many children playing, dog-friendly atmosphere).

7. Conclusion

In conclusion, with this study shows that William and Vaske's (2003) measure for place attachment also applies to the context of urban parks and that PA to these green areas is similar to PA to much larger natural areas emphasising their importance to urban life quality. This study also demonstrated that PA to a particular park predicts volunteering behaviour linked to that park. The frequency with which that park is visited by an individual and the intensity with which the park is used by that individual predict that individual's level of PA to that park with a similar strength. The visiting-frequency also predicts intentions to volunteer in park maintenance activities. Real stewardship behaviour is predicted by the visiting-frequency, the duration of an average visit to the park as well as the proximity to the park. Finally, the underlying process that explains the relationship between PA and stewardship intentions involves the attitude towards stewardship in that park. Therefore, PA is a promising concept in the context of encouraging voluntary park maintenance. Project managers of volunteer schemes should aim at attracting diverse visitor groups to increase the likelihood that a large park or several small parks close by meet the needs of many people thereby psychologically "binding" them to the park and increasing the pool for potential volunteers. This could be achieved by providing playground for kids, facilities for physical exercise, historic monuments, and bird watching points to attract different people on a regular basis.

Moreover, the focus should be on speaking to people's enjoyment, inviting them to have a good time, rather than appealing to their moral obligations. These insights are especially relevant considering that urban parks and specifically attractive urban parks make key contributions to the quality of urban life.

Acknowledgements

I want to thank the following people for their support throughout this project: my supervisor, Dr Henk Staats, for his dedicated guidance and advice throughout the project, Wouter Dijskstra for his kind support in translating essential documents into Dutch. Leen Ooms who took the time to provide information about current stewardship activities in Leiden and his experience and advice on what is important in running these activities in general. I thank Cansu Özden, who proof read the final piece of work and all the kind people who helped to distribute the survey link through their networks. Finally I would like to thank the 105 participants who took their time to participate in this study. All the data used in this project was collected by myself.

Literature:

Anton, C.E. & Lawrence, C. (2016). The relationship between place attachment, the theory of planned behaviour and residents' response to place change. *Journal of Environmental Psychology, 47*: 145-154.

Ajzen, I. & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior.* Englewood Cliffs, N.J.: Prentice Hall.

Bamberg, S., Hunecke, M., & Blöbaum (2007). Social context, personal norms and the use of public transportation: Two field studies. *Journal of Environmental Psychology, 27:*190-203.

Budruk, M., Thomas, H., & Tyrell, T. (2009). Urban Green Spaces: A Study of Place Attachment and Environmental Attitudes in India. *Society and Natural Resources, 22*:824-839.

Bramston, P., Pretty, G., & Zammit, C. (2011). Assessing Environmental Stewardship Motivation. *Environment and Behaviour, 43*(6): 776-788.

Cabral, I., Keim, J., Engelmann, R., Kraemer, R., Siebert, J., & Bonn, A. (2017). Ecosystem services of allotment and community gardens: A Leipyig, Germany case study. *Urban Forestry &*

Urban Gardening, 23: 44-53.

Cleveland, D.A., Phares, N., Nightingale, K.D., Weatherby, R.L., Radis, W., Ballard, J., Campagna, M., Kurtz, D., Livingston, K., Riechers, G., & Wilkins, K. (2017). *Landscape and Urban Planning, 157*:365-374.

Connolly, J.J., Svendsen, E.S., Fisher, D.R., & Campbell, L.K. (2013). Organizing urban ecosystem services through environmental stewardship governance in New York City. Landscape and Urban Planning, 109:76-84.

Cranz, G. & Boland, M. (2004). Defining the Sustainable Park: A Fifth Model for Urban Parks. *Landscape Journal, 23*:102-120.

Dennis, M. & James, P. (2016a). Site-specific factors in the production of local urban ecosystem services: A case study of community-managed green spaces. *Ecosystem Services, 17*: 208-216.

Dennis, M. & James, P. (2016b). Considerations in the valuation of urban green spaces: Accounting for user participation. *Ecosystem Services 21:* 120-129.

Dennis, M. & James, P. (2016c). User participation in urban green commons: Exploring the links between access, voluntarism, biodiversity and well-being. *Urban Forestry & Urban Gardening, 15*:22-31.

Devine-Wright, P. (2012). Think global, act local? The relevance of place attachments and place identities in a climate changed world. *Global Environmental Change, 23*: 61-69.

Enqvist, J., Tengö, M., & Bodin, Ö. (2014). Citizen networks in the Garden City: Protecting urban ecosystems in rapid urbanization. *Landscape and Urban Planning, 130*: 24-35.

Field, A. (2013). *Discovering Statistics Using IBM SPSS Statistics.* Los Angeles, London, New Dehli, Singapore, & Washington DC: SAGE Publications Inc.

Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behaviour: An introduction to theory and research*. Reading, MA: Addison-Wesley.

Francis, J., Giles-Corti, B., Wood, L., Knuiman, M. (2012). Creating sense of community : The role of public space. *Journal of Environmental Psychology, 32*:401-409.

Fryd, O., Backhaus, A., Birch, H., Fratini, C., Ingvertsen, S.T., Jeppesen, J., Panduro, T.E., Roldin, M. K., Dam, T., Wenningsted-Torgard, R.M., & Jensen, M.B. (2012). *Potentials and limitations for Water Sensitive Urban Design in Copenhagen: a multidisciplinary case study*. Paper presented at International Conference on Water Sensitive Urban Design, Melbourne Australia.

Gemeente Leiden (2017). *Parken in Leiden*. [online]. Available at: https://gemeente.leiden.nl/over-de-stad/natuur-en-milieu/natuur-in-leiden/parken-in-leiden/. [Accessed 28 June 2017].

Greaves, M., Zibarras, L., & STride, C. (2013). Using the theory of planned behaviour to explore environmental behavioural intentions in the workplace. *Journal of Environmental Psychology, 34*:109-120.

Gunawardena, K.R., Wells, M.J., & Kershaw, T. (2017). Utilising green and bluespace to mitigate urban heat island intensity. *Science of The Total Environment, 584-585*:1040-1055.

Halpenny, E.A. (2010). Pro-environmental behaviours and park visitors: The effect of place attachment. *Journal of Environmental Psychology, 30*: 409-421.

Harland, P., Staats, H., & Wilke, H.A.M. (1999). Explaining Proenvironmental Intention and Behavior by Personal Norms and the Theory of Planned Behavior. *Journal of Applied Social Pscyhology, 29*(12):2505-2528.

Harland, P., Staats, H., & Wilke, H.A.M. (2007). Situational and Personality Factors as Direct or Personal Norm Mediated Predictors of Pro-environmental Behavior: Questions Derived From Norm-activation Theory. *Basic and Applied Social Psychology, 29*(4):323-334.

Hartig, T. & Kahn Jr., P.H. (2016). Living in cities, naturally. *Science, 352*(6288): 938-941.

Hunter, MC. R. (2011). Impact of ecological disturbance on awareness of urban nature and sense of environmental stewardship in residential neighbourhoods. *Landscape and Urban Planning, 101*: 131-138.

IBM Corporation (2015). *SPSS Statistics for Windows* (Version 23) [Software]. Chicago: SPSS Inc.

Kaplan, S. (1995). The restorative benefits of nature: Toward an integrative framework. *Journal of Environmental Psychology*, 15: 169-182.

Kaplan, R. & Kaplan, S. (1989). *The experience of nature: A psychological perspective*. Cambridge: Cambridge University Press.

Keizer, K., Lindenberg, S., & Steg, L. (2008). The Spreading of Disorder. *Science, 322*(5908):1681-1685.

Krasny, M.E., Crestol, S.R., Tidball, K.G., & Stedmann, R.C. (2014). New York City's oyster gardeners: Memories and meanings as motivations for volunteer environmental stewardship. *Landscape and Urban Planning, 132*: 16-25.

Kyle, G., Graefe, A., Manning, R., & Bacon, J. (2004). Effect of Activity Involvement and Place Attachment on Recreationits' Perceptions of Setting Density. *Journal of Leisure Research, 36*(2): 209-231.

Lederbogen, F., Kirsch, P. Haddad, L., Streit, F., Tost, H., Schuch, P., Wüst, S., Pruesser, J.C., Rietschel, M., Deuschle, M., & Meyer-Lindenberg, A. (2011). City living and urban ubringing affect neural social stress processing in humans. *Nature, 474*: 498-501.

Locke, D.H., King, K.L., Svendse, E.S., Campbell, L.K., Small, C., Sonti, N.F., Fisher, D.R., & Lu, J.W.T. (2013). Urban environmental stewardship and changes in vegetative cover and building footprint in New York City. *Journal of Environmental Study Sciences*. DOI 10.1007/s13412-014-0176-x.

Gemeente Leiden (2017). Over de Stad. [online]. Avaliable at: https://gemeente.leiden.nl/over-de-stad/ [Accessed July 28 2017].

Lewicka, M. (2011a). Place attachment: How far have we come in the last 40 years? *Journal of Environmental Psychology, 31*: 207-230.

Lewicka, M. (2011b). On the varieties of people's relationships with places: Hummon's typology

revisited. Environment and Behavior, 43, 676e709.

Lewicka, M. (2013). Localism and Activity as two dimensions of people-place bonding: The role of cultural capital. *Journal of Environmental Psychology, 36*: 43-53.

Locke, D.H., King, K.L., Svendsen, E.S., Campbell, L.K., Small, C., Sonti, N.F., Fisher, D.R., Lu, J.W.T. (2014). Urban environmental stewardship and changes in vegetative cover and buildinng footprint in New York City neighborhoods (2000-2010). Journal of Environmental Study Science: DOI:10.1007/s13412-014-0176-x.

Lokocz, E., Ryan, R.L., & Sadler, A.J. (2011). Motivations for land protection and stewardship: Exploring Place attachment and rural landscape character in Massachusetts. *Landscape and Urban Planning, 99*: 65-76.

McMillan, T. (2016). National Geographic: Boom Time for Urban Farming. [online] (May 27, 2016). Available at: http://www.nationalgeographic.com/people-and-culture/food/the-plate/2016/05/usda-recognizes-urban-growers-as-farmers--not-hobbyists/. Accessed July 7, 2017.

Moore, R.L. & Graefe, A.R. (1994). Attachments to recreational settings: The case of rail-trail users. *Leisure Sciences, 16*(1):17-31.

Milgram, S. (1970). The Experience of Living in Cities. *Science, 167*(3924): 1462-1468.

Onwezen, M.C., Antonides, G., & Bartels, J. (2013). The Norm Activation Model: An exploration of the functions of anticipated pride and guilt in pro-environmental behaviour. *Journal of Economic Psychology, 39*:141-153.

Oskamp, S., & Schultz, P. W. (2005). Environmental attitudes. In S. Oskamp, & P. W. Schultz (Eds.), *Attitudes and opinions* (pp. 440e462). Mahwah, NJ: Lawrence Erlbaum Associates.

Preacher, K.J. & Leonardelli, G.J. (2010-2017). Calculation for the Sobel test: An interactive calculation tool for mediation tests [Computer software[. Available from: http://quantpsy.org/sobel/sobel.htm.

Qualtrics (2015). *Qualtrics.* (March-June, 2017). [Computer software] Qualtrics: Provo, Utah, USA. Available at: http://www.qualtrics.com [Accessed 1 March – 12 June, 2017].

Ramkissoon, H., Smith, L.D.G., & Weiler, B. (2013). Testing the dimensionality of place attachment and its relationships with place satisfaction and pro-environmental behaviours: A structural modelling approach. *Tourism Management, 35*: 552-566.

Roman, L.A., Walker, L.A., Martineau, C.M., Muffly, D.J., MacQueen, S.A., & Harris, W. (2015). Stewardship matters: Case studies in establishment success of urban trees. *Urban Forestry & Urban Greening, 14*:1174-1182.

Rosenzweig, M. (2003). Win-win Ecology: How the Earth's Species Can Survie in the Midst of human

Enterprise. New York: Oxford University Press.

Ryan, R. L., R. Kaplan, and R. E. Grese. 2001. Predicting volunteer commitment in environmental stewardship programmes. *Journal of Environmental Planning and Management* 44(5): 629–48.

Ryan, R.L. (2005). Exploring the effects of environmental experience on attachment to urban natural areas. *Environment and Behaviour, 37*(1):3-42.

Ryan, R.L. (2006). The Role of Place Attachment in Sustaining Urban Parks. In: Ed. Platt, R.H.. *The Human Metropolis: People and Nature in the 21st-Century City*. ScholarWorks: UMass Amherst.

Scannell, L. & Gifford, R. (2010a). The relations between natural and civic place attachment and pro-environmental behavior. *Journal of Environmental Psychology, 30*: 289-297.

Scannell, L. & Gifford, R. (2010b). Defining place attachment: a tripartite organizing framework. *Journal of Environmental Psychology, 30*(1), 1e10.

Schlosberg, D. (2011). *Carnegie Council for Ethics in International Affairs: From Sustainability to a New Materialism*. [online] (September 7 2011) Available at: https://www.carnegiecouncil.org/publications/articles_papers_reports/0103. [Accessed July 11 2017].

Schwartz, S. H. (1977). Normative influences on altruism. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 10, pp. 221-279). New York: Academic Press.

Soga, M., Gaston, K.J., & Yamaura, Y. (2017). Gardening is beneficial for health: A meta-analysis. *Preventive Medicine Reports, 5*:92-99.

Staats, H. (2003). Understanding Proenvironmental Attitudes and Behavior. An Analysis and Review of Research Based on the Theory of Planned Behavior. In: Bonnes, M., Lee, T., & Bonaiuto, M. (Eds.). *Psychological Theories for Environmental Issues* (pp.171-201). Aldershot: Ashgate.

Stedman, R. (2002). Toward a social psychology of place: Predicting Behaviour From Place-Based Cognitions, Attitude, and Identity. *Environment and Behavior, 34*(5): 561-581.

Stichting Leiden Oogst (2016). *Het Zoet Land*.[online] Available at: < https://www.hetzoeteland.nl/>. [Last access: June 12 2017].

The World Bank (2016). *Urban population*. [online]. [Accessed 13 December 2016]. Available at: http://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS?view=map.

UrbiStaat (2015). *Municipality of Leiden*. [online]. Available at: <https://ugeo.urbistat.com/AdminStat/en/nl/demografia/dati-sintesi/leiden/23055724/4> . [Accessed July 28 2017].

Uzzell, D., Pol, E., and Badenas, D. (2002). Place Identification, social cohesion, and environmental sustainability. *Environment and Behaviour, 34*: 26-53.

Veenstra, P., Pleijster, E., Sobiech, A., Schulz, J., Chladova, E., Sobels, O., et al., (2012, June).

SINGEL PARK Leiden full circle. [pdf] LOLA landscape architects. Available at: <https://gemeente.leiden.nl/fileadmin/files/Projecten/Masterplan_Leidse_Singels/1SPL_LOLA_singelpark_booklet_print.pdf>. [Accessed 6 November 2016].

Vrienden van het Singelpark, 2017. *Vrienden van het Singelpark*. [online] Available at: <http://www.singelpark.nl/>. [Accessed January 1 2017].

Williams, D.R. & Vaske, J.J. (2003). The Measurement of Place Attachment: Validity and Generalizability of a Psychometric Approach. *Forest Science, 49*(6): 830-840.

Appendix:

Appendix A

Table A.1. Summary of illustrative research on place attachment and pro-environmental behaviour

Authors	Place Attachment	Pro-environmental Behaviour	Effect
Budruk et al., (2009)	Place identity & place dependence to green areas in Pune, India	Balance of nature, anthropocentrism, ecological limits	Positive effect of Attachment on balance of nature, negative effect on anthropocentrism.
Hallpenny, 2010; study 1	Place identity & place dependence to Point Pelee National Park	Place specific pro-environmental behaviours	Positive effect of attachment
Krasny et al., 2014	Attachment to the New York Estuary taken form qualitative data (interviews)	Volunteering for Oyster-gardening in the New York estuary	Strong relationship between attachment to the estuary and motivations to volunteer
Lokocz, Ryan, & Sadler, 2011	Photo-questionnaire with photographs from Conway, Massachusetts and single-item questions how attached participants felt to the scene on the photo	Mean conservation score (attitudes towards land protection of that area, level of support of landscape planning and conservation strategies, financial support for conservation strategies, support of land acquisition for an open space network and attitude towards new development)	Strong attachment scores yielded significantly higher mean conservation scores.

Continued on p. 47

Table A.1 continued

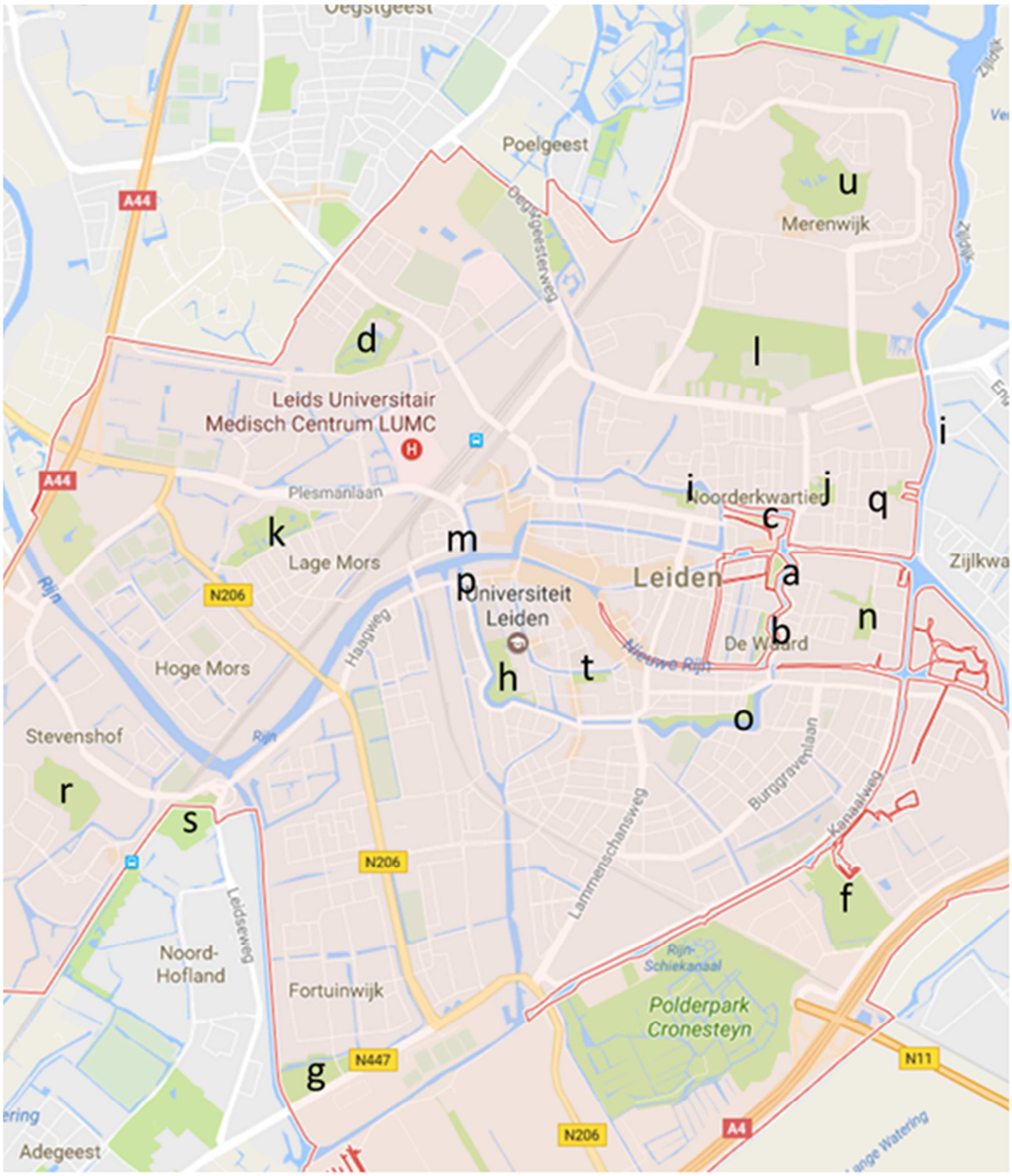
Scannell and Gifford, 2010	Civic & Physical Attachment to home city	General ecological behaviour	Positive effect of physical but not of civic attachment
Stedman, 2002	Place identity with a lake and asked for participants'. Place identity had an independent, positive effect on taking action	Willingness to take action (vote for a law against it or join a pro-environmental group) in four hypothetical scenarios that would introduce a negative change to the lake	Positive effect of place identity on willingness to take action to protect the lake
Uzzel et al., 2002	Social Identity of place (place identity, place satisfaction, & social cohesion) of own neighbourhood	Attitudes and behaviours towards sustainability	Low social identity of place was strongly related to sustainable behaviour, but high social identity of place was weakly and negatively related to it

Appendix B

The complete list of items found in the study survey. In squared brackets you find an indication to which construct the item belongs (e.g. [Attitude_1.1] meaning that this is the first of several items measuring attitude). In round brackets you find the score that each multiple choice answer has.

Q1 Welk park in Leiden bezoekt u het vaakst? Kies alstublieft uit de lijst. Als het niet in de lijst staat, kies voor optie w) niet in de lijst. Gebruik de kaart om het park te vinden, indien nodig.

- a) Anker Park (1)
- b) Begraafplaats Groenesteeg (2)
- c) Blekerspark (3)
- d) Bos van Bosman (4)
- e) Cronesteyn Park (5)
- f) De Bult (6)
- g) Hooghkamer (7)
- h) Hortus Botanicus (8)
- i) Huigpark (9)
- j) Kooipark (10)
- k) Kweeklust (11)
- l) Noorderpark (12)
- m) Park de Put (13)
- n) Park Zeeheldenbuurt (14)
- o) Plantsoen (15)
- p) Rembrandspark (16)
- q) Steneveltpark (17)
- r) Stevenspark (18)
- s) Ter Wadding (19)
- t) Van der Werfpark (20)
- u) Wijkpark (21)
- v) Het Zoete Land (22)
- w) Niet in de lijst, namelijk (23)



Display This Question:

If Welk park in Leiden bezoekt u het vaakst? Kies alstublieft uit de lijst. Als het niet in de lijst... w) Niet in de lijst, namelijk Is Selected

Q1.1 Vul alstublieft de naam in van het park dat u niet in de lijst kon vinden.

Q2 Hoe lang duurt het normaal voor u om in dit park te komen ? [Proximity]

- 0 - 5 Min (5)
- 5 - 10 Min (4)
- 10 - 15 Min (3)
- 15 - 20 Min (2)
- 20 Min of meer (1)

Q3 Hoe vaak komt u in dit park? [User-Frequency]

- Dagelijks (6)
- Twee/Drie keer per week (5)
- Eens per week (4)
- Eens per twee weken (3)
- Eens per maand (2)
- Minder (1)

Q4 Hoeveel tijd besteedt u gemiddeld in het park per bezoek? [User-Intensity]

- 15 Min (1)
- 30 Min (2)
- 45 Min (3)
- 60 Min (4)
- Meer dan 60 Min (5)

Q5 Hoe gaat u meestal naar het park?

- Te voet (1)
- Met de fiets (2)
- Met de bus (3)
- Met de auto (4)

Beantwoord de volgende vragen met betrekking tot het park dat u het vaakst bezoekt. [Place Attachment Scale]

Q6 Dit park is heel speciaal voor mij.

- Sterk mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Sterk mee eens (5)

Q7 Ik voel een sterke band met dit park.

- Sterk mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Sterk mee eens (5)

Q8 Dit park betekent veel voor me.

- Sterk mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Sterk mee eens (5)

Q9 Ik voel dat dit park een deel van mij is.

- Sterk mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Sterk mee eens (5)

Q10 Dit park is de beste plek voor wat ik graag doe.

- Sterk mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Sterk mee eens (5)

Q11 Geen ander park haalt het bij dit park.

- Sterk mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Sterk mee eens (5)

Q12 Ik haal meer voldoening uit een bezoek aan dit park dan aan welke ander park dan ook.

- Sterk mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Sterk mee eens (5)

Q13 Dit park is het beste park om te doen wat ik er meestal doe (bvb. wandelen, met mijn kinderen spelen, tot rust komen etc.).

- Sterk mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Sterk mee eens (5)

Q14 Geen enkel ander park zou vervanging kunnen bieden voor de dingen die ik doe in dit park.

- Sterk mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Sterk mee eens (5)

In het volgende deel wordt u gevraagd naar vrijwillige deelname aan het verzorgen van dit park (dat u hierboven hebt genoemd). Elke activiteit wordt kort beschreven gevolgd door een reeks vragen.

Het onderhoud van het park

Schone en mooie parken zijn omgevingen waarin mensen zich prettiger voelen. De gemeente Leiden beschikt niet altijd over de middelen om alle Leidse parken intensief te onderhouden. In sommige parken zijn er groepen vrijwilligers die wekelijks gedurende zo'n 2.5 uur samen werken om mee te helpen het park te onderhouden. Bijvoorbeeld om bloemperken te onderhouden moeten bollen worden geplant, ze moeten worden bewaterd, onkruid moet worden geschoffeld, en dode planten moeten worden vervangen. Opruimen van zwerfvuil is ook een belangrijke taak waarin vrijwilligers regelmatig een rol spelen. Vrijwilligers beslissen zelf hoe vaak zij deelnemen en bij welke acties ze mee helpen. Beantwoord de volgende vragen met betrekking tot het park dat u heeft genoemd, waar u het vaakst komt, niet voor een andere plek (zelfs als u dit aan een andere plek doet denken)!

Q15 Is er in het park waar U het meeste komt een groep vrijwilligers die regelmatig werkt aan het onderhoud van het park?

- Ja (1)
- Nee/Weet niet (2)

Display This Question:
If Is er in het park waar U het meeste komt een groep vrijwilligers die regelmatig werkt aan het ond... Ja Is Selected

Q15.1 Ik help regelmatig mee het park te onderhouden met een vrijwilligers-groep.[Behaviour_1]

- Nooit (1)
- Minder dan één keer per maand (2)
- Een keer per maand (3)
- Eens per twee weken (4)
- Wekelijks (5)

Display This Question:
If Is er in het park waar U het meeste komt een groep vrijwilligers die regelmatig werkt aan het ond... Nee/Weet niet Is Selected

Q15.2 Het is heel waarschijnlijk dat zo'n onderhoud-groep in mijn park wordt georganiseerd.

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Display This Question:
If Is er in het park waar U het meeste komt een groep vrijwilligers die regelmatig werkt aan het ond... Nee/Weet niet Is Selected

Q15.3 Als er een dergelijke groep zou zijn in het park, ben ik van plan om mee te helpen met het onderhouden van het park. [Intention_1.1]

- Sterk mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Sterk mee eens (5)

Display This Question:
If Is er in het park waar U het meeste komt een groep vrijwilligers die regelmatig werkt aan het ond... Nee/Weet niet Is Selected

Q15.4 Als er een dergelijke groep zou zijn in het park, hoe vaak zou U dan meewerken in zo'n groep? [Intention_1.2]

- Nooit (1)
- Minder dan één keer per maand (2)
- Een keer per maand (3)
- Eens per twee weken (4)
- Wekelijk (5)

Beantwoord de volgende vragen alstublieft. Als nu nog geen vrijwillersgroep actief is in uw park wilit u zich dan voorstellen wat u zou denken van de volgende vragen als er wel zo'n groep zou zijn en u mee zou kunnen doen?

Q16 Meehelpen met het onderhouden van het park vind ik belangrijk. [Attitude_1.1]

- ❍ Erg mee oneens (1)
- ❍ Mee oneens (2)
- ❍ Niet oneens, niet eens (3)
- ❍ Mee eens (4)
- ❍ Erg mee eens (5)

Q17 Meehelpen met het onderhouden van het park vind ik plezierig. [Attitude_1.2

- ❍ Erg mee oneens (1)
- ❍ Mee oneens (2)
- ❍ Niet oneens, niet eens (3)
- ❍ Mee eens (4)
- ❍ Erg mee eens (5)

Q18 Als ik help het park te onderhouden zie ik er gek uit. [Behavioural Belief_1.1]

- ❍ Erg mee oneens (1)
- ❍ Mee oneens (2)
- ❍ Niet oneens, niet eens (3)
- ❍ Mee eens (4)
- ❍ Erg mee eens (5)

Q19 Als ik meedoe in onderhoud-activiteiten zal ik veel bekenden treffen in de groep. [Behavioural Belief_1.2]

- ❍ Erg mee oneens (1)
- ❍ Mee oneens (2)
- ❍ Niet oneens, niet eens (3)
- ❍ Mee eens (4)
- ❍ Erg mee eens (5)

Q20 Als ik meedoe met onderhoud-activiteiten heb ik daar veel plezier in. [Behavioural Belief_1.3]

- ❍ Erg mee oneens (1)
- ❍ Mee oneens (2)
- ❍ Niet oneens, niet eens (3)
- ❍ Mee eens (4)
- ❍ Erg mee eens (5)

Q21 Als ik meedoe met onderhoud-activiteiten voeg ik echt iets toe aan de kwaliteit van het park. [Behavioural Belief_1.4]

- ❍ Erg mee oneens (1)
- ❍ Mee oneens (2)
- ❍ Niet oneens, niet eens (3)
- ❍ Mee eens (4)
- ❍ Erg mee eens (5)

Q22 Als ik meedoe met onderhoud-activiteiten lever ik echt een bijdrage aan de kwaliteit van het park. [Behavioural Belief_1.5]

- ❍ Erg mee oneens (1)
- ❍ Mee oneens (2)
- ❍ Niet oneens, niet eens (3)
- ❍ Mee eens (4)
- ❍ Erg mee eens (5)

Q23 Als ik meedoe met onderhoud-activiteiten geeft me dat rust. [Behavioural Belief_1.6]

- ❍ Erg mee oneens (1)
- ❍ Mee oneens (2)
- ❍ Niet oneens, niet eens (3)
- ❍ Mee eens (4)
- ❍ Erg mee eens (5)

Q24 Als ik meedoe met onderhoud-activiteiten ben ik lichamelijk actief bezig. [Behavioural Belief_1.7]

- ❍ Erg mee oneens (1)
- ❍ Mee oneens (2)
- ❍ Niet oneens, niet eens (3)
- ❍ Mee eens (4)
- ❍ Erg mee eens (5)

Q25 Onderhoud van het park is belangrijk voor de kwaliteit van het park. [Behavioural Belief_1.8]

- ❍ Erg mee oneens (1)
- ❍ Mee oneens (2)
- ❍ Niet oneens, niet eens (3)
- ❍ Mee eens (4)
- ❍ Erg mee eens (5)

Q26 Een schoon en goed onderhouden park stimuleert respectvol gedrag ten opzichte van het park. [Behavioural Belief_1.9]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q27 Het goed onderhouden van het park betekent dat de natuur (planten en dieren) geen schade wordt toegebracht. [Behavioural Belief_1.10]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q28 Als ik meedoe met onderhoud-activiteiten zie ik het park opknappen door mijn werk. [Behavioural Belief_1.11]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q29 Als ik meedoe met onderhoud-activiteiten leer ik dingen over mijn omgeving (bvb. over de planten in mijn omgeving, over de bedreiging van afval voor de natuur, over natuurlijke processen in mijn omgeving). [Behavioural Belief_1.12]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q30 Als ik meedoe met onderhoud-activiteiten zal ik nieuwe mensen leren kennen. [Behavioural Belief_1.13]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q31 De meeste mensen die voor mij belangrijk zijn vinden dat ik zou moeten helpen het park te onderhouden. [Subjective Norm_1.1]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q32 De belangrijke mensen in mijn leven steunen me als ik besluit te helpen het park te onderhouden. [Subjective Norm_1.2]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q33 Mijn familie vindt dat ik zou moeten helpen het park te onderhouden. [Normative Belief_1.1]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q34 Mijn buren vinden dat ik zou moeten helpen het park te onderhouden. [Normative Belief_1.2]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q35 Mijn vrienden vinden dat ik zou moeten helpen het park te onderhouden. [Normative Belief_1.3]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q36 Dat ik mee help het park te onderhouden met zo'n groep is voor mij... [Perceived Behavioural Control_1.1]

- Geheel onmogelijk (1)
- Onmogelijk (2)
- Niet onmogelijk, niet mogelijk (3)
- Mogelijk (4)
- Erg mogelijk (5)

Q37 Ik zou in principe in staat zijn mee te doen aan onderhoud acties in het park. [Perceived Behavioural Control_1.2]

- Sterk mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Sterk mee eens (5)

Q38 Meedoen aan onderhoud acties met een vrijwilligers-groep past makkelijk in mijn planning. [Control Belief_1.1]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q39 Mijn lichamelijke gezondheid maakt het mogelijk om mee te doen met onderhoud acties. [Control Belief_1.2]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q40 Het park is schoon en heeft dit soort acties niet nodig. [Control Belief_1.3]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q41 Ik voel me verplicht om te helpen het park te onderhouden, daar hoor je eigenlijk aan mee te doen. [Personal Norm_1.1]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q42 Ik heb het gevoel dat ik het park schoon moet houden. [Personal Norm_1.2]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q43 Ik vind in het algemeen dat mensen moeten mee helpen parken te onderhouden. [Personal Norm_1.3]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Het verzorgen van een kruiden- of groentetuin

Kruiden- of groentetuinen voegen speciale waarde toe aan parken. Kruiden en groente kunnen worden geoogst en gegeten door de gemeenschap. Zo hebben de planten niet alleen esthetische en ecologische waarden, maar kunnen ze ook praktisch gebruikt worden. Normaal beschikt de gemeente Leiden niet over de middelen om kruiden- of groentetuinen in parken te onderhouden. Afhankelijk van het seizoen moeten nieuwe kruiden en groente worden geplant, kruiden- en groentebedden moeten worden bewaterd, onkruid moet worden geschoffeld, en dode planten moeten worden vervangen. In sommige gevallen onderhoudt een vrijwilligers groep een kruiden- of groentetuin in een park. Zij ontmoeten wekelijks voor 2.5 uur om samen in de kruiden- of groentetuin te werken. Zij hebben dan ook de mogelijkheid om kruiden en groenten te oogsten en te gebruiken voor maaltijden thuis. Vrijwilligers kunnen zelf beslissen hoe vaak zij deelnemen. Beantwoord de volgende vragen met betrekking tot het park dat u heeft genoemd, geen andere plek (zelfs als u dit aan een andere plek doet)!

Q44 Is er in het park waar U het meeste komt een groep vrijwilligers die regelmatig werkt aan het onderhoud van zo'n groente- of kruidentuin?

- Ja (1)
- Nee/Weet niet (2)

Display This Question:
If Is er in het park waar U het meeste komt een groep vrijwilligers die regelmatig werkt aan het ond... Ja Is Selected

Q44.1 Ik ben al lid van een vrijwilligers groep die een kruiden- of groentetuin in het park onderhoudt. [Behaviour_2]

- Nee (1)
- Ja, ik help minder dan een keer per maand (2)
- Ja, ik help een keer per maand (3)
- Ja, ik help eens per twee weken (4)
- Ja, ik help wekelijk (5)

Display This Question:
If Is er in het park waar U het meeste komt een groep vrijwilligers die regelmatig werkt aan het ond... Nee/Weet niet Is Selected

Q44.2 Het is heel waarschijnlijk dat zo'n kruiden- of groentetuin-onderhoud-groep in mijn park wordt georganiseerd.

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Display This Question:
If Is er in het park waar U het meeste komt een groep vrijwilligers die regelmatig werkt aan het ond... Nee/Weet niet Is Selected

Q44.3 Als er een dergelijke groep zou zijn in het park, hoe vaak zou U dan mee werken in zo'n groep? [Intention_2.1]

- Nooit (1)
- Onregelmatig (5)
- Een keer per maand (2)
- Eens per twee weken (3)
- Wekelijks (4)

Display This Question:
If Is er in het park waar U het meeste komt een groep vrijwilligers die regelmatig werkt aan het ond... Nee/Weet niet Is Selected

Q44.4 Als er een dergelijke groep zou zijn in het park, zou mijn voornemen zijn om regelmatig te helpen bij het onderhoud van een kruiden- of groentetuin. [Intention_2.2]

- Sterk mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Sterk mee eens (5)

Beantwoord de volgende vragen alstublieft. Als nu nog geen vrijwillersgroep actief is in uw park wilit u zich dan voorstellen wat u zou denken van de volgende vragen als er wel zo'n groep zou zijn en u mee zou kunnen doen?

Q45 Meehelpen met het onderhoud van een kruiden- of groentetuin in het park vind ik belangrijk. [Attitude_2.1]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q46 Meehelpen met het onderhoud van een kruiden- of groentetuin in het park vind ik plezierig. [Attitude_2.2]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q47 Als ik help om een kruiden- of groentetuin te onderhouden zie ik er gek uit. [Behavioural Belief_2.1]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q48 Als ik help om een kruiden- of groentetuin te onderhouden zal ik veel bekende mensen zien in de groep. [Behavioural Belief_2.2]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q49 Als ik help om een kruiden- of groentetuin te onderhouden heb ik daar veel plezier in. [Behavioural Belief_2.3]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q50 Als ik help om een kruiden- of groentetuin te onderhouden voel ik me nodig. [Behavioural Belief_2.4]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q51 Als ik help om een kruiden- of groentetuin te onderhouden doe ik echt iets voor het park. [Behavioural Belief_2.5]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q52 Als ik help om een kruiden- of groentetuin te onderhouden voeg ik echt iets toe aan het park. [Behavioural Belief_2.6]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q53 Als ik meedoe met een kruiden- of groentetuin te onderhouden help ik om het park bruikbaarder

te houden. [Behavioural Belief_2.7]

- ❍ Erg mee oneens (1)
- ❍ Mee oneens (2)
- ❍ Niet oneens, niet eens (3)
- ❍ Mee eens (4)
- ❍ Erg mee eens (5)

Q54 Als ik help om een kruiden- of groentetuin te onderhouden geeft me dat rust. [Behavioural Belief_2.8]

- ❍ Erg mee oneens (1)
- ❍ Mee oneens (2)
- ❍ Niet oneens, niet eens (3)
- ❍ Mee eens (4)
- ❍ Erg mee eens (5)

Q55 Als ik help om een kruiden- of groentetuin te onderhouden kan ik delen in de oogst (bijv. rosmarijn, tijm, aardbeien, aardappelen, tomaten) en deze meenemen naar huis. [Behavioural Belief_2.9]

- ❍ Erg mee oneens (1)
- ❍ Mee oneens (2)
- ❍ Niet oneens, niet eens (3)
- ❍ Mee eens (4)
- ❍ Erg mee eens (5)

Q56 Als ik help om een kruiden- of groentetuin te onderhouden ben ik lichamelijk actief bezig. [Behavioural Belief_2.10]

- ❍ Erg mee oneens (1)
- ❍ Mee oneens (2)
- ❍ Niet oneens, niet eens (3)
- ❍ Mee eens (4)
- ❍ Erg mee eens (5)

Q57 Het onderhoud van een kruiden- of groentetuin is belangrijk voor het onderhoud van het park. [Behavioural Belief_2.11]

- ❍ Erg mee oneens (1)
- ❍ Mee oneens (2)
- ❍ Niet oneens, niet eens (3)
- ❍ Mee eens (4)
- ❍ Erg mee eens (5)

Q58 Als een park een rijke en productieve kruiden- of groentetuin heeft stimuleert dat betrokkenheid

bij dit park op een speciale manier. [Behavioural Belief_2.12]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q59 Het onderhouden van een kruiden- of groentetuin helpt bij het herstellen van de band met de natuur. [Behavioural Belief_2.13]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q60 Als ik help om een kruiden- of groentetuin te onderhouden zie ik het park opknappen door mijn werk. [Behavioural Belief_2.14]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q61 Als ik help om een kruiden- of groentetuin te onderhouden leer ik dingen over de planten in mijn omgeving. [Behavioural Belief_2.15]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q62 Als ik help om een kruiden- of groentetuin te onderhouden zal ik nieuwe mensen ontmoeten. [Behavioural Belief_2.16]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q63 De meeste mensen die voor mij belangrijk zijn vinden dat ik zou moeten helpen een kruiden- of groentetuin te onderhouden in het park. [Subective Norm_2.1]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q64 De belangrijke mensen in mijn leven steunen me als ik besluit te helpen om een kruiden- of groentetuin te onderhouden in het park. [Subjective Norm_2.2]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q65 Mijn familie vindt dat ik zou moeten helpen een kruiden- of groentetuin in het park te onderhouden. [Normative Belief_2.1]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q66 Mijn buren vinden dat ik zou moeten helpen een kruiden- of groentetuin in het park te onderhouden. [Normative Belief_2.2]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q67 Mijn vrienden vinden dat ik zou moeten helpen een kruiden- of groentetuin in het park te onderhouden . [Normative Belief_2.3]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q68 Dat ik help een kruiden- of groentetuin met zo'n groep in het park te onderhouden is voor mij...

[Perceived Behavioural Control_2.1]

- Geheel onmogelijk (1)
- Onmogelijk (2)
- Niet onmogelijk, niet mogelijk (3)
- Mogelijk (4)
- Erg mogelijk (5)

Q69 Ik zou in principe in staat zijn mee te doen aan dergelijke onderhoudsacties van een kruiden- of groentetuin in het park. [Perceived Behavioural Control_2.2]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q70 Meedoen aan dergelijke onderhoudsacties van een kruiden- of groentetuin in het park met een vrijwilligers-groep past makkelijk in mijn planning. [Control Belief_2.1]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q71 Mijn lichamelijke gezondheid maakt het mogelijk om mee te doen met dergelijke onderhoudsacties van een kruiden- of groentetuin in het park. [Control Belief_2.2]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q72 Het park heeft geen kruiden- of groentetuin nodig. [Control Belief_2.3]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q73 Ik voel me eigenlijk verplicht om te helpen een kruiden- of groentetuin in het park te onderhouden, daar hoor je eigenlijk aan mee te doen. [Personal Norm_2.1]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q74 Ik vind dat ik een kruiden- of groentetuin in het park moet beschermen. [Personal Norm_2.2]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q75 Ik vind het belangrijk dat mensen in het algemeen een kruiden- of groentetuin in een park onderhouden. [Personal Norm_2.3]

- Erg mee oneens (1)
- Mee oneens (2)
- Niet oneens, niet eens (3)
- Mee eens (4)
- Erg mee eens (5)

Q76 Doet U mee aan andere activiteiten in verband met onderhoud in het park? [Control_1]

- Ja (1)
- Nee (2)

Display This Question:
If Doet U mee aan andere activiteiten in verband met onderhoud in het park? Ja Is Selected

Q76.1 Welke onderhouds-activiteiten doet U?

Q77 Doet U mee aan andere activiteiten die lijken op deze activiteiten, maar dan in een ander park? [Control_2]

- Ja (1)
- Nee (2)

Display This Question:
If Doet U mee aan andere activiteiten die lijken op deze activiteiten, maar dan in een ander park? Ja Is Selected

Q77.1 In welk Park?

Q78 Bent U een man of een vrouw?

- Vrouw (1)
- Man (2)
- Anders (3)

Q79 Wat is uw leeftijd? (Gebruik alstublieft een nummer, geen woord.)

Q80 Woont U in Leiden?

- Ja (1)
- Nee (2)

Q81 Wat is de hoogte opleiding die U hebt afgemaakt met een diploma?

- VMBO (1)
- HAVO (2)
- VWO (3)
- MBO (4)
- HBO (5)
- WO (6)
- Ander (7)

Display This Question:
If Wat is de hoogte opleiding die U hebt afgemaakt met een diploma? Ander Is Selected

Q81.1 Namelijk...

Q82 Hebt U op het ogenblik een betaalde baan?

- Ja, full-time (1)
- Ja, deeltijd (2)
- Nee, werkzoekend (3)
- Nee, pensioen (4)
- Nee, student (5)
- Nee, ik werk als vrijwilliger. (6)
- Nee, huisvrouw/huisman (7)

Display This Question:

If Hebt U op het ogenblik een betaalde baan? Nee, ik werk als vrijwilliger. Is Selected

Q82.1 Voor hoeveel uur per week werkt U als vrijwilliger? (Gebruik alstublieft een nummer, geen woord.)

Q83 Hoeveel jaar woont u al in dezelfde woning? (Gebruik alstublieft een nummer, geen woord.) [Time living at the same place]

Q84 Bent U of uw huishouden eigenaar van uw woning? [Homeownership]

- ❍ Ja (1)
- ❍ Nee, ik/wij huur/huren de woning. (2)

Q85 Heeft u kinderen jonger dan 15 jaar?

- ❍ Ja (1)
- ❍ Nee (2)

Q86 Heeft u een hond?

- ❍ Ja (1)
- ❍ Nee (2)

Appendix C

Table C.1. Interrcorelations of PA, PA predictors and other controlling variables.

		Prox.	Use-Freq.	Use-int.	Time	Home-Own.	PA	Dog	Child.	Empl.	Edu.	Age
Proximity	Pearson Corr.	1	.22*	-.35**	.07	-.13	-.07	.10	.06	-.10	.16	13
	N	104	102	104	73	74	103	72	73	74	73	73
Use-Frequency	Pearson Cor.		1	-.13	.23	-.01	.26*	,04	.11	.16	.45**	.22
	N		103	103	72	73	102	71	72	73	72	72
Use-intensity	Pearson Cor.			1	.10	.23	.27**	-.10	.06	.14	-.31**	.02
	N			105	74	75	104	73	74	75	74	74
Time	Pearson Cor.				1	-.38**	.11	.13	.10	.09	.11	.48**
	N				74	74	74	73	74	74	74	74
HomeOwnership	Pearson Cor.					1	.13	-.05	.31**	.20	-.22	-.30**
	N					75	75	73	74	75	74	74
PA	Pearson Cor.						1	.04	-.01	.20	.11	.25*
	N						104	73	74	75	74	74
Dog	Pearson Cor.							1	-.14	-.06	.19	-.01
	N							73	73	73	73	73
Children under 15	Pearson Cor.								1	.18	-.07	.11
	N								74	74	74	74
Employ-ment	Pearson Cor.									1	-.11	.10
	N									75	74	74
Education level	Pearson Cor.										1	.16
	N										74	74
Age	Pearson Cor.											1
	N											74

Note. *. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).

Appendix D

Table D.1. Intercorrelations for TAB & NAM variables, PA, stewardship intentions & behaviour and controlling variables.

		Att	SN	PBC	PN	St.Int	St. Behav.	PA	Dog	Age	Edu.	Empl.	Child.
Attitude	Pears. Cor.	1	.56**	.65**	.68**	.66**	.50**	.44**	-.06	.27*	.11	.20	.10
	N	69	68	68	67	52	31	69	67	68	68	68	68
Subjective Norm	Pears. Cor.		1	.43**	.61**	.49**	.15	.27*	-.04	.04	.22	.15	.10
	N		70	70	69	51	32	70	68	69	69	69	69
Perceived Behav. Contrl.	Pears. Cor.			1	.41**	.50**	.52**	.22	-.10	.33**	.16	.10	.05
	N			71	69	52	32	71	68	69	69	70	69
Personal Norm	Pears. Cor.				1	.50**	.17	.25*	-.19	.05	.05	.04	.20
	N				69	51	32	69	67	68	68	68	68
Stewardship Intentions	Pears. Cor.					1	-.26	.19	-.03	.10	.16	-.02	.32*
	N					66	15	66	53	53	53	54	53
Stewardship Behaviour	Pears. Cor.						1	.31	-.03	.36*	.13	.11	.13
	N						36	36	33	34	34	34	34
Place Attachment	Pearson Cor.	.						1	.04	.25*	.11	.20	-.01
	N							104	73	74	74	75	74
Dog	Pears. Cor.								1	-.01	.19	-.06	-.14
	N								73	73	73	73	73
Age	Pears. Cor.									1	.16	.10	.11
	N									74	74	74	74
Education	Pears.Cor.										1	-.11	-.07
	N										74	74	74
Employ- ment	Pears. Cor.											1	.18
	N											75	74
Children	Pears. Cor.												1
	N												74

Note. **. Correlation is significant at the 0.01 level. Correlation is significant at the 0.05 level.

Appendix E

Table E.1. Means, standard deviations and linear model for attitude and PA as predictors and stewardship intentions as outcome with 95% BCa confidence intervals, standard errors and significance values (1000 bootstrap samples).

Variable	***M***	***SD***	***B***	***SE B***	***β***	***p***
Constant			-.53 [-1.91, .68]	.76		.487
Attitude	3.18	.76	.93 [.67, 1.25]	.14	.66	.001
PA	3.12	.73	-.02 [-.35, .33]	.01	-.01	.898

Note. $F(49,2)= 18.41$, $p< .001$, $R^2= .43$. Intention (*M*= 2.37, *SD*= 1.08).

Appendix F

Table F.1. Linear model of TPB & NAM variables and control as predictors and stewardship intention as outcome variable, with 95% BCa confidence intervals, standard errors and significance values (1000 bootstrap samples).

Variable	***M***	***SD***	***B***	***B SE***	***β***	***p***
Constant			-2.15 [-4.13, 2.13]	.87		.024
Attitude	3.15	.75	.94 [-.20, 1.90]	.23	.65	.001
Subjective Norm	2.90	.57	.50 [-1.22, 2.07]	.27	.27	.097
PBC	3.31	.87	.09 [-.07, 1.40]	.20	-.07	.634
Personal Norm	2.78	.66	-.14 [-1.22, 2.07]	.22	-.08	.533
Agree that the park does not require extra maintenance	2.55	.80	.09 [-.17, .30]	.13	.07	.495

Note. N= 51. Intentions (*M*= 2.40, *SD*= 1.08). All variables were measured on a Likert scale from 1= low to 5= high.

Appendix G

Table G.1. Means, standard deviation and linear model of TPB & NAM variables as predictors and stewardship behaviour as outcome variable, for with 95% BCa confidence intervals, standard errors and significance values (1000 bootstrap samples). For the intercorrelations see table 6 in text.

Variable	***M***	***SD***	***B***	***B SE***	***β***	***p***
Constant			-1.08 [-3.80, 2.09]	1.47		.448
Attitude	3.15	.75	.81 [-.20, 1.81]	.44	.47	.098
Subjective Norm	2.90	.57	-1.01[-2.72, .07]	.64	-.47	.082
Perceived Behavioral Control	3.31	.87	.54 [.08, 1.08]	.35	.34	.128
Personal Norm	2.78	.66	.45 [-1.00, 1.79]	.80	.18	.553

Note. *N*= 30. DV: Stewardship behavior (*M*= 1.92; *SD*= 1.36). All variables were measured on a Likert scale from 1= low to 5= high.

Appendix H

Table H.1. Linear model of TPB & NAM variables and demographic variables as predictors and stewardship intention as outcome variable, for with 95% BCa confidence intervals, standard errors and significance values (based on 1000 bootstrapped samples). The intercorrelation matrix for this analysis can be found in Appendix D.

Step	**Variabel**	***M***	***SD***	***B***	***B SE***	***β***	***p***
1	Constant	-	-	-1.84 [-3.33, -.59]	.77		.020
	Attitude	-	-	.94 [-.20, 1.90]	.23	.65	.002
	Subjective Norm	-	-	.51 [.01, 1.25]	.29	.27	.074
	PBC	-	-	.06 [-.40, .44]	.19	.05	.769
	Personal Norm	-	-	-.14 [-.52, .10]	.22	-.09	.522
2	Constant			-2.45 [-4.43, -.10]	.13		.015
	Attitude	3.15	.756	.94 [.31, 1.60]	.27	.65	.002
	Subjective Norm	2.91	.57	.45 [-.07, 1.27]	.08	.24	1.27
	PBC	3.30	.87	.10[-.68, .19]	.08	.08	.441
	Personal Norm	2.81	.65	-.22 [-.68, 19]	.28	-.13	.488
	Education	5.08	1.43	.06 [-.10, .23]	.08	.08	.228
	Employment	2.24	1.64	-.02 [-.25, .14]	.10	.07	.140
	Children	1.72	.45	.52 [-.01, 1.1]	.26	.25	.076
	Age	42.08	13.61	-.01 [-.02, .01]	.01	.01	.555
	Dog	1.9	.30	-.03 [-1.10, .84]	.45	-.02	.870

Note. *N*= 50. Intentions (M= 2.40, SD= 1.08). All variables in step 1 were measured on a Likert scale from 1= low to 5= high. Having children and a dog were measured on scale from 1= Yes to 2=No. Employement (1= full-time, 2= part-time; 3-7= unemployed (also students, pensioners, volunteeres, houseman/-wife); Education (1= VMBO; 2=HAVO; 3= VWO; 4=MBO; 5= HBO; 6= WO; 7= other).

Appendix I

Table I.1. Linear model of behavioural beliefs with regard to the attitude towards maintaining the park.

Beliefs	*B*	*SE*	*β*	*p*
Constant	-.05	.79		.952
As I help with maintenance activities I will look foolish.	.08	.10	.08	.423
As I help with maintenance activities I will see familiar faces.	-.10	.07	-.12	.189
As I help with maintenance activities I will have fun.	.31	.11	.39	.005
As I help with maintenance activities I really add to the quality of the park.	.12	.13	.11	.368
As I help with maintenance activities I contribute to the quality of the park.	.29	.18	.24	.116
As I help with maintenance activities I feel a peace of mind.	.23	.09	.31	.019
As I help with maintenance activities I do physical exercise.	-.04	.14	-.03	.784
Park maintenance is important for the quality of the park.	.02	.13	.02	.863
A well-maintained park encourages respectful behaviour towards the park.	.04	.10	.03	.737
A well-maintained park prevents that nature is harmed (plants & animals).	.02	.08	.02	.847
As I help with maintenance activities I can see improvements from my work.	.06	.18	.05	.753
As I help with maintenance activities I learn about my environment (e.g. about the plants in my environment, the impact of waste on nature, natural processes in my environment).	-.06	.12	-.05	.642
As I help with maintenance activities I meet new people.	-.01	.12	-.01	.920

Note. *N*= 69. All assumptions were met.

Tabel I.2. Linear model of behavioral beliefs with regard to the attitude towards maintaining a herb- or vegetable garden in the park.

Beliefs	*B*	*SE*	*β*	*p*
(Constant)	.72	.65		.271
As I help to maintain the herb or vegetable garden I look foolish.	.03	.10	.03	.743
As I help to maintain the herb or vegetable garden I will see many familiar faces.	.15	.09	.18	.082
As I help to maintain the herb or vegetable garden I will have fun.	.39	.13	.50	.004
As I help to maintain the herb or vegetable garden I feel needed.	.01	.11	.01	.946
As I help to maintain the herb or vegetable garden I really do something for the park.	-.08	.13	-.09	.526
As I help to maintain the herb or vegetable garden I contribute to the quality of the park.	.15	.13	.17	.273
As I help to maintain the herb or vegetable garden I help to make the park more useful.	.10	.13	.11	.470
As I help to maintain the herb or vegetable garden it gives me peace of mind.	.13	.10	.18	.178
As I help to maintain the herb or vegetable garden I can share the harvest (e.g. rosemary, thyme, strawberries, potatoes, tomoatoes) and take it home.	-.06	.10	-.06	.556
As I help to maintain the herb or vegetable garden I am physically active.	.06	.15	.06	.672
Maintaining a herb- or vegetable garden is important for park maintenance in general.	-.03	.12	-.03	.817
When a park has a rich and productive herb or vegetabel garden it encourages a special engagement with the park.	.07	.14	.08	.590
Maintaining a herb or vegetable garden helps to form a bond with nature.	-.09	.13	-.11	.478
As I help to maintain the herb or vegetable garden I see improvements from my work.	.01	.14	.02	.922
As I help to maintain the herb or vegetable garden I learn about plants in my environment.	.18	.15	.20	.227
As I help to maintain the herb or vegetable garden I meet new people.	-.22	.16	-.19	.192

Note. *N*= 65. All assumptions were met.