Measuring the influence of environmental norms and concerns on the travelled kilometres by airplane in tourism context

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Summary

Tourism, especially (air) travelling to destinations, accounts for a big amount of emitted greenhouse gasses. These greenhouse gasses are seen as one of the causes of climate change. The problem is that prognoses shows that (air) travel and tourism keeps on increasing, which means that emitted greenhouse gasses will increase which have a negative impact on the climate and natural world. Therefore it is important to investigate the relation between environmental concern and choices someone makes during his holiday and leisure time

The aim of this study *is to research how psychological antecedents influences the choices someone makes in tourism setting, the amount of travelled kilometres by different motorized vehicles to their holiday destination.* Someone has different options to choose as transportation when going on a holiday, where one option is less polluting than the other. This study tries to find relationship(s) between psychological factor(s) and environmental friendly behaviour.

The theory of this study is based on the cognitive hierarchy, which tries to explain behaviour through means of different cognitions. It basically says that cognitions influences behaviour. If you know someone's values, value orientations, attitudes, norms and behavioural intentions you can predict someone's behaviour. To measure someone's environmental values the new ecological paradigm and the connectedness to nature scale is used in this study. To define someone's norms the norm activation theory was used, which consist of problem awareness and ascription of responsibility.

A questionnaire was conducted where the respondent had to answer the statements of the new ecological paradigm, connectedness to nature scale and the self-defined statements for the norm activation theory. Next to this there was asked how many kilometres the respondent travelled during his or hers last holiday and with which mode of transport. The modes of transport which were asked about are bus, airplane, car and train.

Correlations were found between values (new ecological paradigm and connectedness to nature) and the norm activation (problem awareness and ascription of responsibility). As also was predicted on the basis of the theory. No relations were found between the psychological antecedent and the actual behaviour.

The overall conclusion of this research is that psychological antecedents which show pro-environmental values or norms do not reduce the travelled kilometres by polluting motorized vehicles. Therefore you can conclude that environmental values or norms are not important enough for people to choose to travel with a greener mode of transport.

1. Introduction

Today it is almost common knowledge that the environment is on heavy pressure. This is mainly due to the behaviour of humans. The debate about changing climates, framed as global warming, is heavenly debated in the media. According to the IPCC the beginning of the industrialization had a big impact on the environment. For example the oceanic uptake of CO_2 increased enormously which results in acidification of the ocean and ice around the world is melting and leads to increased sea water levels (IPCC, 2015). According to the IPCC it is extremely likely that humans are responsible for many of the environmental issues: "*It is extremely likely that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in greenhouse gas concentrations and other anthropogenic forcing's together*" (IPCC, 2015 p. 5).

One of the biggest sources of pollution in the world is transportation. According to the European Environment Agency transportation accounts for over 23 percent of all global carbon dioxide emissions (European Environment Agency, 2010). In the United Nations Environment Programme (UNEP) is stated that "a single transatlantic return flight emits almost half the CO_2 emission produced by all other sources consumed by an average person yearly" (Hillman, 1996 in UNEP 2014).

The European Environment Agency conducted also a research on the emission of motorized vehicles. They calculated grams of CO_2 per passenger per kilometre they travel with different types of vehicles. This shows that air travel and travel by car are the most polluting ways to travel, the results of this research are shown in figure 1.1 (European Environment Agency, 2010). This figure gives a clear overview which modes of transport are in general more polluting than other modes of transport.

CO₂ Emissions Per Passenger (grams per kilometer)

Air 130.2

Passenger Car 124.5

Two-Wheelers 83.0

City Bus 66.8
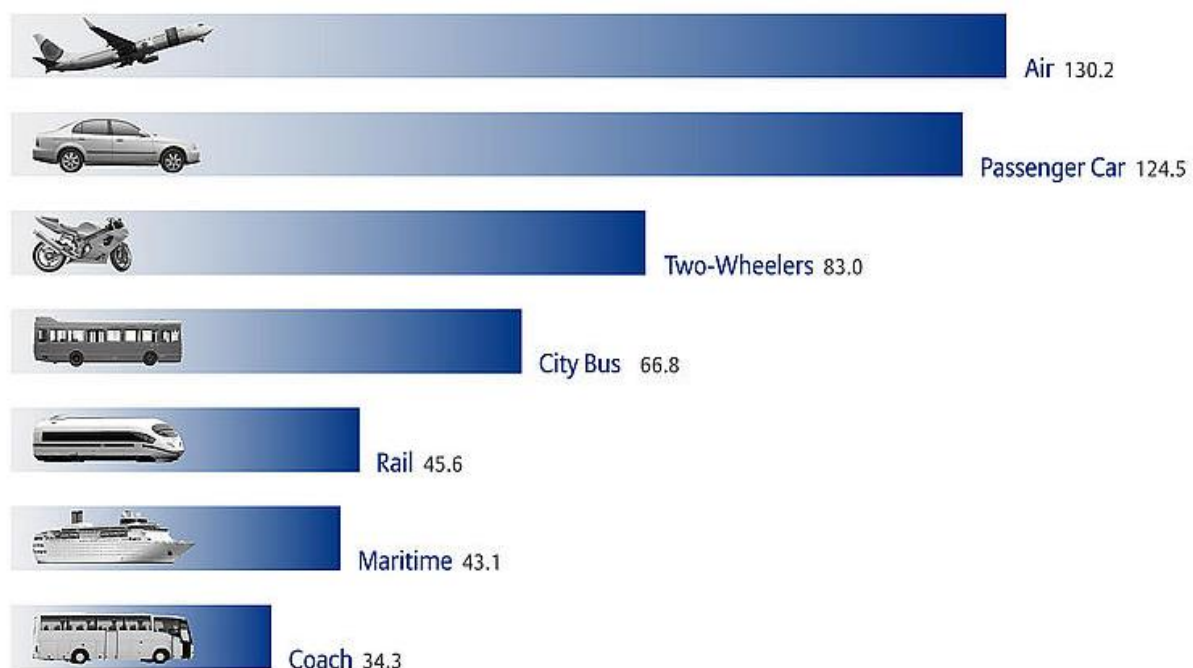
Rail 45.6

Maritime 43.1

Coach 34.3

Figure 1.1: CO2 emission per passenger (Source: European Environment Agency, 2010)

Governments are worried about the pollution and changing climates. There are worldwide conferences about climate change, organised by the United Nations. Since the Kyoto protocol from 1997 there is a meeting about climate change every year. Next to this, around the world human society is demanding more and more eco-friendly products, especially in the western and more advanced economies (Husted et al., 2013). Green products are popular at the moment and companies take the increasing demand of ecological friendly products seriously. For example stores give bags of recycled plastic with purchases, supermarkets have biological versions of almost every product they sell and the so-called environmentally friendly electric cars are emerging. Not only the markets adept to demands of ecological friendly products, people also take action to be more ecological friendly. One action people take is household waste separation, especially in developed countries (Tadesse, 2009). These few examples show that people are occasionally green-minded in daily life and that they have concerns about the environment nowadays.

About 25 years ago Balderjahn (1988) investigated whether people would pay more for green products. At that time it used to be dependent on the income and age of people (Balderjahn, 1988). A more recent study shows that one is willing to pay a price premium for green products, thus they want to pay more for environmental friendly products (Husted et al., 2013). These two studies would suggest that there is a change in environmental green consumer behaviour. The studies imply that consumers are willing to take environmental impact of a product into account when purchasing it, even when the greener product is more expensive.

People are getting more and more environmental friendly, however there are exceptions. For example; tourism, which accounts for estimated 14% of the emission of all greenhouse gasses (McKercher et al., 2010). And the prospect for this sector is that the emissions will increase coming years (McKercher et al., 2010). So tourists are responsible for a relatively big share of the emitted greenhouse gasses and it is not likely this share will decrease in the near future, predictions are that it will increase. So people want to live more environmental friendly; however it is not visible in all their actions they take.

The emitted greenhouse gasses have a negative influence on the preservation of environments. According to Fridgen (1984; p20) "tourism and environment are inseparable", as stated in his research about the relationship of environmental psychology towards tourism. One seeks out specific environments to maintain or return to an optimal level of psychological and physical functioning (Fridgen, 1984). However tourism also has a negative effect on natural environments by polluting a big share of greenhouse gasses.

1.1 Problem statement
As described above the humans have a big influence on the climate change and might as well be responsible for it. Due to climate change, environments are altering and ecosystems are getting degraded. Species diversity loss, smaller nature areas and fragmentation are impacts caused by human activities and changing environments.

Although climate change is caused for a big share by humans, people also are willing to change and become more environmental friendly. People are adapting to a greener consuming pattern in daily life. Green consumerism is something which seems to be a phenomenon which has

begun recently; a research from 1988 shows house isolation was dependent on age and income and had nothing to do with green consumerism (Balderjahn, 1988). While more recent research shows that green consumerism is related to the willingness of a person instead of just someone's social status. An example in this case is that willingness to pay for environmental certification on furniture has a positive and significant relationship with environmental attitude (Husted et al., 2013). So this would suggest that people are more environmental concerned in daily life.

It is unclear whether people behave environmental friendly during their choices in leisure and tourism. Since tourism accounts for a big share of the emission of greenhouse gasses it is important to understand why people choose for the environmental friendly options in the context of tourism. The problem is that prognoses shows that (air) travel and tourism keeps on increasing, which means that emitted greenhouse gasses will increase which have a negative impact on the climate and natural world. Therefore it is important to investigate the relation between environmental concern and choices someone makes during his holiday and leisure time. Is someone willing to make environmental friendly choices during his holidays, in his leisure time?

1.2 Research objectives
Tourism, especially (air) travelling, accounts for a big amount of emitted greenhouse gasses. These greenhouse gasses are seen as one of the causes of climate change. Especially travel is a big polluter and has a big impact on the environment; therefore this research focusses on the travel choices in tourism setting.

The aim of this study *is to research how psychological antecedents influences the choices someone makes in tourism setting, the amount of travelled kilometres by different motorized vehicles to their holiday destination.* Someone has different options to choose as transportation when going on a holiday, where one option is less polluting than the other, see also figure 1.1. This study tries to find relationship(s) between psychological factor(s) and environmental friendly behaviour. This environmental behaviour is in leisure and tourism setting, therefore in next part of the introduction leisure and tourism will be defined.

1.3 Defining leisure and tourism
As described above this research is about leisure and tourism, thus it is important to make clear what these terms mean. To be able to fully understand the research and make sure there is consensus about concept of leisure and tourism. Let's start with leisure. What exactly is a leisure activity? People perceive leisure in different ways (Mannell & Kleiber, 1997) and most people will have an intuitive idea about what leisure is (Bell et al., 2001). However leisure and tourism is described in many different ways. Often the attributes freedom or a lack of constraints appears in descriptions of leisure (Mannell & Kleiber, 1997). Most researchers agree that one experience leisure when the person is intrinsically motivated and the person perceives freedom of choice (Bell et al., 2001: p 456) (Bull, 2009). Woodside, Caldwell & Spurr. (2005) claims that there are three common approaches for defining leisure. These three approaches are;

- The time based approach;
- The activity based approach;

- The intention based approach (Woodside, Caldwell & Spurr, 2005: p.3).

The time based approach is about how much time people are not working (Woodside, Caldwell & Spurr, 2005). So, how much of the time people can make their own choices in choosing activities. The activity based approach focuses on the activities people choose when they not have to work. And the intention based approach centres the intention of an activity (Woodside, Caldwell & Spurr, 2005).

Pigram (1993) describes leisure as activities which are chosen in a perceived freedom. This is about why people create particular settings for their leisure time (Pigram, 1993). In this definition of leisure activities there are activities which for outsiders might not be seen as leisurely activity, for example if you next to your job start a language course because you want to learn a new language. This is a choice you made out of free will to do in your own free time, however for others it might appear as something obligatory and thus not as leisure activity.

According to Bull (2009) there are four dimensions in the conceptualization of leisure. The first dimension is that leisure implies freedom from obligation. The second dimension consists of disinterestedness. The third dimensions contains that leisure can be viewed as diversion and lastly leisure depends on personality (Bull, 2009). An important point of leisure is that it possible for the individual to escape the routines and stereotypes forced on him by social institutions (Bull, 2009, p. 120).

Leisure is a difficult concept and is described in different ways in literature. In sum, leisure is time where the person has the freedom to choose by himself what he or she is going to do. What most leisure definitions have in common is that one has the freedom of choice by choosing the activity he or she wants to do. In this research *leisure activities will be seen as activities made by free will of the person in their own free time.* So a leisure activity is something which is not obligatory for the person and the person has freedom of choice by doing it.

Then there is tourism which is an important component of this research. According to the United Nations World Tourism Organization (UNWTO) tourism is: *"a social, cultural and economic phenomenon which entails the movement of people to countries or places outside their usual environment for personal or business/professional purposes. These people are called visitors (which may be either tourists or excursionists; residents or non-residents) and tourism has to do with their activities, some of which imply tourism expenditure."* (UNWTO, 2015). The definition of a tourist is a bit more specific, since it includes an overnight stay according to the UNWTO (2015): "*A visitor (domestic, inbound or outbound) is classified as a tourist (or overnight visitor), if his/her trip includes an overnight stay.*"

In this research the focus lies on the holiday of a person, and thus the overnight stay is an important issue. Next to this, the travels done must be done as a leisurely activity and not for business purposes. Because for business time and money plays a significant role, and in someone's leisure time this might be less important. Therefore tourism in this research is seen as leisurely activity with at least one overnight stay.

1.3 Outline of the report

As any report this one started with the introduction which can be read above. In the next chapter the theories and concepts which are important for this research will be discussed. At the end of chapter 2 there will be a conceptual framework were all theories come together and of course the hypotheses are defined after the conceptual framework. In chapter 3 the methodology and methods are described and in chapter 4 you can find the findings and results of this research. In the last chapter of this report the findings are discussed and a conclusion is drawn.

2. Theory

In this chapter theories and concepts which are important for this research will be explored and discussed. As described in chapter 1 this research tries to find a relation between psychological antecedents and behaviour. Therefore there is first sought for theories or concepts which focusses on explaining behaviour, two theories in respect to behaviour will be discussed in this chapter. The first theory discussed is the theory of planned behaviour, which is often discussed in literature and used to explain behaviour (Ajzen & Fishbein, 1977) (Armitage & Conner, 2001).

Second theory about behaviour discussed in this chapter is called the cognitive hierarchy. This theory actually focusses more on behaviour towards wildlife; however it can also be a valuable theory in other settings.

This chapter will conclude with the conceptual framework and the hypotheses which will be tested. The conceptual framework gives a schematic overview of how to reach the research objectives.

2.1 Explaining behaviour
2.1.1 Theory of planned behaviour
The theory of planned behaviour is the developed version of the theory of reasoned action created by Ajzen and Fishbein (1977) (Kaiser, Wölfing & Fuhrer, 1999) (Ajzen, 1991). Since the theory of reasoned action is the basis for the theory of planned behaviour it is important to know what the thought behind this theory is. In box 2.1 the basis of the theory of reasoned actions is shortly described.

The reason to improve the theory of reasoned action in to the theory of planned behaviour is because the theory of reasoned action had one major weakness (Ajzen, 2011). This weakness of the

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Box 2.1: Theory of reasoned action (Ajzen & Fishbein, 1980)

The reasoned action theory is based on the idea that actions which creates benefits or are rewarding are strengthened and actions which result in punishment are weakened (Ajzen, 2011). This idea is based on two beliefs; the first belief is called behavioural belief, which "*is defined as a person's subjective probability that performing of a certain behaviour will produce a particular outcome, and the subjective value of the reinforcer is designated the person's evaluation of that outcome*" (Ajzen, 2011: p. 440). Thus a person evaluates different option of behaviour with their outcomes and on basis of their evaluation they make their choice on which action they take an thus how they behave.

The second belief in the theory of reasoned action is normative belief, which "*is defined as a person's subjective probability that a particular normative referent wants the person to perform a given behaviour. It is weighted by the person's motivation to comply with the referents perceived expectation. It is assumed that people can hold normative beliefs with respect to more than one referent individual or group*" (Ajzen, 2011: p. 441). A person keeps in mind what kind of behaviour is expected by other people and this influences his or hers behaviour.

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theory of reasoned actions is that it was not taken into account that a person might be limited in doing what he want. An example of limitation in behaviour is physical inability, for instance you want to take the bike to work but you only have one leg or another example is a lack of resources, such as money, to perform intended action. Therefore Ajzen (1985) improved the theory of reasoned action by taking into account the degree of control over the behaviour and created the theory of planned behaviour. The aim of the theory of planned behaviour is to predict and explain human behaviour in a specific context (Ajzen, 1991).

The theory of planned behaviour is based on the assumption that behaviour is guided by someone's intentions (Ajzen, 2011). According to the theory of planned behaviour someone's behavioural intention is based on three aspects. First one is attitude towards the behaviour and second aspect is subjective norms, these first two aspects were both be present in the earlier theory of reasoned action (Armitage & Conner, 2001)(Kaiser, Wölfing & Fuhrer, 1999). The in the theory of planned behaviour added aspect with respect to the theory of reasoned action is "perceived behavioural control". Perceived behavioural control has influence on someone's behavioural intention and on the final behaviour, because as said above, someone might intent to behave in a certain way but due to different reasons he is not able to behave in that way. Figure 2.1 gives a schematic overview of how the theory of planned behaviour is built. The amount of influence each aspect has on someone's behavioural intention differs from case to case (Ajzen, 1991). It depends on the situation and possibilities for that specific behaviour.
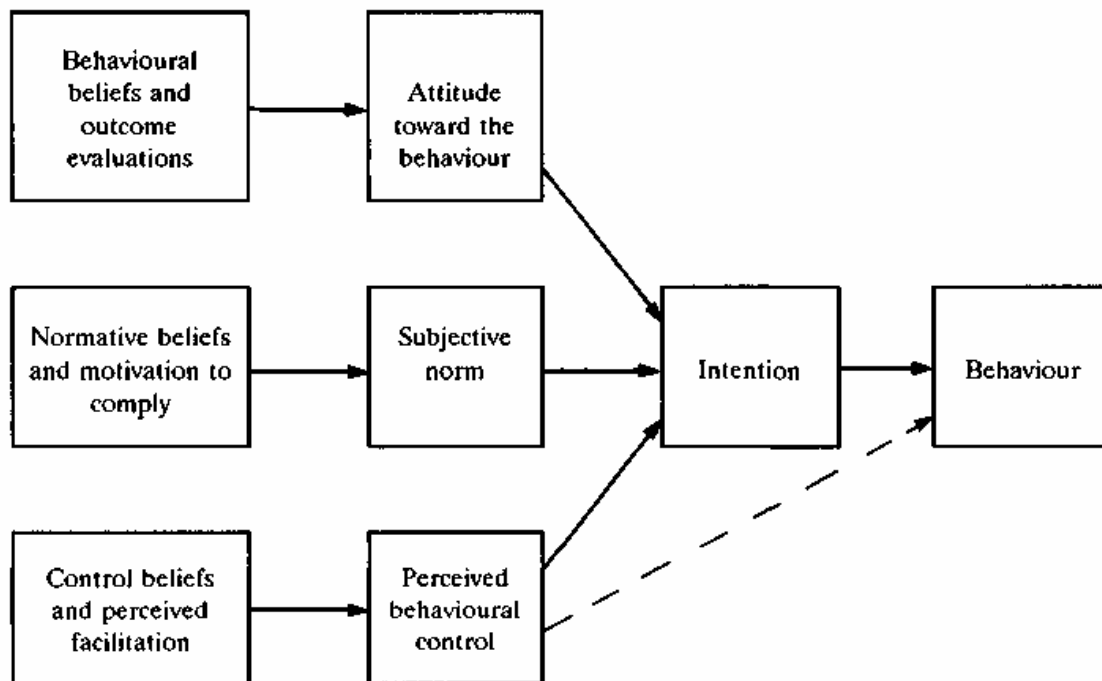

Figure 2.1: Theory of planned behaviour (Ajzen, 1988)

One major limitation of the theory of planned behaviour is that behaviour is self-predicted by the respondent (Armitage & Conner, 2001). This makes it easy for respondents to lie about their intended behaviour.

2.1.2 The cognitive hierarchy

The cognitive hierarchy focusses on studying thoughts and behaviour (Manfredo, 2008) (Jacobs et al., 2012) (Whittaker et al., 2006) (Vaske & Donnelly, 1999). Originally this theory is designed to study thoughts and behaviours towards wildlife. However the basis of the cognitive hierarchy is not really specified towards wildlife, but more general as you can see in figure 2.2.

The cognitive hierarchy is building on insights in social psychology (Jacobs et al., 2008). Cognitions and behaviours are organized into a hierarchy leading from general values to specific attitudes and norms (Whittaker et al., 2006). The theory claims that there is a hierarchy of cognitions and these cognitions form the basis for human behaviour (Jacobs et al., 2008). The cognitive hierarchy tries to create a better understanding of human behaviour.
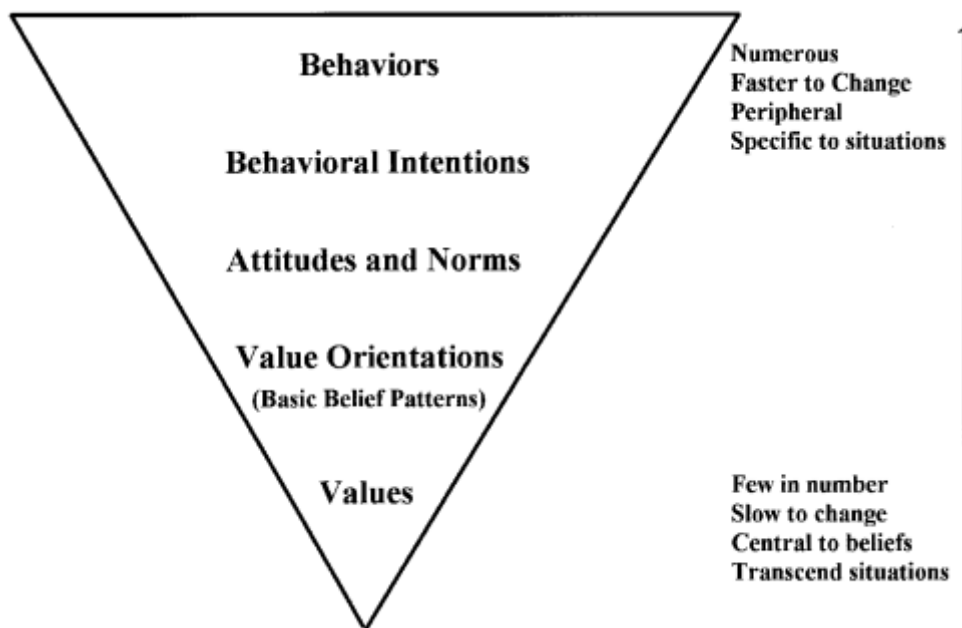
Figure 2.2: Cognitive hierarchy (Vaske & Donnelly, 1999)

The most static and constant cognition in the cognitive hierarchy is values. Values are the most basic cognition and hardly ever change for a person (Whittaker et al., 2006). Therefore this cognition is also a bit different from the others, since it does not change when situations change (Whittaker et al., 2006). Often are values also dependant on the culture, education and background of a person (Jacobs et al., 2012). To be able to make the step between abstract levels (values) to more specific levels (attitudes and norms) value orientations are introduced. Value orientations are basic beliefs about general objects, so it gives meaning to more abstract values (Whittaker et al., 2006).

As you can see in figure 2.2 there are different cognitive steps taken to get to certain behaviour. These cognitions are ranged from very general at the bottom to very specific, such as behavioural intentions. Behavioural intentions are the most direct predictor of someone's behaviour (Vaske & Donnelly, 1999). One step more general, you have attitudes and norms. These are often scientifically investigated and appeared a lot in literature (Vaske & Donnelly, 1999). "*Attitudes represent an individual's consistent tendency to respond favourably or unfavourably toward the object in question*" (Vaske & Donelly, 1999; p. 527). Attitudes can be measured in typical questions

with a scale range from positive to negative towards and object. The attitudes of someone are a good indicator for behavioural intentions.

The cognitive hierarchy shows that behaviour is built from different cognitions. To predict and find reason behind behaviour we can measure the different cognitions. With the help of this theory we can unravel the motives for certain behaviour. The cognitive hierarchy can serve as a basis for the theories to find a relation between values and specific behaviour. The cognitive hierarchy helps to make the connection between the abstract values and attitudes toward the specific behaviour.

Both the theory of planned behaviour and the cognitive hierarchy are about explaining behaviour and could fit this study. In next part I will compare both theories and discus which theory will be the best fit for this study.

2.1.3 Theory of planned behaviour versus the cognitive hierarchy
Both the theory of planned behaviour and the cognitive hierarchy claims that behaviour consist of different steps. In both theories attitudes, norms and intentions are seen as influencer of behaviour. An asset of the theory of planned behaviour is the "perceived behavioural control"; it takes into account that intended behaviour is not always possible.

A difference between both theories is that the cognitive hierarchy sees the cognitions in a vertical way, where more abstract cognitions influences less abstract cognitions. While in the theory of planned behaviour different cognitions are seen as more horizontal order, where different cognitions influences directly the behavioural intention, but not each other. This can clearly be seen when comparing figure 2.1 and 2.2.

A disadvantage of the theory of planned behaviour is that this theory focusses on predicting behaviour, which is in the future. In this research we measure past behaviour and therefore the theory of planned behaviour is not perfectly suitable for this research. The cognitive hierarchy focuses more on explaining behaviour on the basis of different cognitions, and that is what we need in this research.

Another reason to choose for the cognitive hierarchy is that it suggests that the different cognitions influence each other. This creates the opportunity to research cognitions on different abstraction levels and their influence on behaviour.

The aim of this research is to find out whether psychological antecedents influences tourism behaviour. To measure the psychological antecedent the different cognitions in the cognitive hierarchy will be used. To be able to measure these cognitions there is sought for different theories and concepts, which fit in the cognitive hierarchy, these theories and concepts are discussed below. We will start to discuss the most abstract cognitions, which are values and value orientations.

2.2 Values and value orientations

In this paragraph different concepts are discussed in which the focus lies on measuring values and values orientations. Since this research is about environmental friendly behaviour, the focus lies on environmental or natural values, instead on general values or value orientations. Environmental values are a psychological tendency expressed by evaluating the natural environment with some degree of favour or disfavour, and are a crucial construct in the field of environmental psychology. (Hawcroft & Milfont, 2010). There are a variety of approaches to measure someone's environmental values or value orientations. Three well-known approaches to define someone's environmental values or value orientations are the new ecological paradigm by Dunlap et al. (2000), the connectedness to nature scale by Mayer & Frantz (2004) and the third approach is Inglehart's Post-materialist Index. Inglehart's post-materialist index links environmental concern with socio-economic status and their culture. Basically it claims that higher welfare generates higher pro-environmental values (Tadesse, 2009). There is chosen to not include this last approach in this research because of the focus on culture and socio-economic status in Inglehart's post-materialist index. This research does not want to focus on the background, but on the values which are to lesser extent linked with culture or socio-economic status.

The new ecological paradigm and the connectedness to nature scale are two concepts which will fit in the research. Both the new ecological paradigm and connectedness to nature scale measures general values and value orientations and therefore it fit in the cognitive hierarchy as values or value orientations. They claim that they measure someone's environmental attitude, but the statements in these two concepts are really general. Therefore in this research the new ecological paradigm and the connectedness to nature scale will be used to measure the top of the pyramid (bottom of the figure), which are values and value orientations. In this research there will be no distinction made between values and value orientations as in the cognitive hierarchy, therefore these terms will be used interchangeably. In the next part of this paragraph the new ecological paradigm will be described. The connectedness to nature scale will be described right after the description of the new ecological paradigm.

2.2.1 New ecological paradigm

As said above, one well-known approach to determine someone's environmental value is the new ecological paradigm by Dunlap and van Liere (1978) (Dunlap et al., 2000). This instrument is most widely used to measure environmental values and attitudes (Hawcroft & Milfont, 2010) (Pienaar, Lew & Wallmo, 2013). Although it is often said that the new ecological paradigm is measuring someone's environmental attitude, in this research it is seen as environmental value. The statements which needs to be answered for the new ecological paradigm are very general and according to Kaiser, Wölfing & Fuhrer (1999) the new ecological paradigm measures a person's cognitions, and not specifically his or hers environmental attitudes. Therefore in this research the new ecological paradigm will be used to measure someone's environmental values instead of attitudes.

The new ecological paradigm is commonly used to measure the environmental values of the general public, however in some research it is also used on a specific sector, such as farmers (Dunlap et al., 2000). The new environmental paradigm is different from other environmental value scales in the sense of that the new environmental paradigm is measuring the general beliefs while other scales are measuring specific environmental topics which might not always be applicable for the

research (Hawcroft & Milfont, 2010). The new ecological paradigm predicts pro-environmental behaviour in many studies (Hawcrof and Milfont, 2010),

The new ecological paradigm is the improved version of Dunlap's and van Liere's new environmental paradigm. According to Dunlap et al. (2000) the new environmental paradigm scale is validated in different studies. Various researches show that groups with environmental interest score higher on the scale than the general public does (Dunlap et al., 2000). In 2000 Dunlap et al. revised some of the statements of the new environmental paradigm and created an enhanced version; the new ecological paradigm (Dunlap et al., 2000). To define someone's environmental value on the base of the new ecological paradigm there is a tool with 15 general statements about the environment. This measurement tool can be found in table 3.1 in the methods chapter. The 15 are designed to cover each of the five hypothesized facets of an ecological worldview. These five facets are; the reality of limits to growth; anti-anthropocentrism; the fragility of nature's balance; rejection of exemptionalism and the possibility of an ecocrisis.

Despite it is one of the most widely used tools to determine environmental attitude it also generated criticism from different researchers. Pienaar, Lew & Wallmo (2013) suggest in their research about the influence survey context might have on the outcome of the new ecological paradigm, it is survey context dependent. Thus the description you give with your questionnaire might influences the outcomes and according to Pienaar, Lew & Wallmo (2013) this influence is quite big. Another criticism is that the items asked in the new ecological paradigm are simplistic and outdated (Dunlap, 2010). According to Mayer and Frantz (2004) the new ecological paradigm does not measure correctly environmental values or attitudes since it rather measures the cognitive beliefs instead of the affective experiences of a person. According to them, the individual's personal relationship is more important to determine the environmental value of a person and therefore they made a connectedness to nature scale to determine someone's environmental concern (Mayer & Frantz, 2004). The connectedness to nature scale will be discussed next.

2.2.2 Connectedness to nature scale
The connected to nature scale is often used in surveys where environmental attitude, values or concern is to be expected as an explanatory variable for behaviour (Pienaar, Lew & Wallmo, 2013). The scale is a measure which focus on the individual's affective and experiential connection to nature (Mayer & Frantz, 2004: p. 504) and is based on the belief that a person need to feel as a part of the broader natural world in order to actively address environmental issues and take actions (Mayer & Frantz, 2004). The difference between the connectedness to nature scale and the new ecological paradigm is that the connectedness to nature scale, as the name also would suggest, measures someone's connectedness to nature and his view on the natural world. The new ecological paradigm measures more global environmental values about environment in general,

The aim of the scale is to measure an individual's experiential sense of oneness with the natural world (Mayer & Frantz, 2004). This is important to measure since one's experience with nature partly determine the values of a person towards environment and nature. When someone has a sense of belonging to a natural community he or she will more likely take action to protect nature (Mayer & Frantz, 2004). Therefore the connectedness to nature scale focuses on the affective cognitions of a person, which is influenced by one's own experience. Thus the big difference between

the new ecological paradigm and connectedness to nature scale is that the latter is measuring the affective feelings with nature and the new ecological paradigm is measuring the cognitive aspects of environmental values of a person (Perrin & Benassi, 2009). This is also the reason for Mayer & Frantz (2004) to develop this scale, since they belief that emotions are more important in environmental behaviour than cognitive beliefs of a person.

Although Mayer and Frantz (2004) claim that the connectedness to nature scale is an emotional measure, some of the items measure cognition (Perrin & Benassi, 2009). For example statement number 12 (see table 3.2 in the next chapter); "When I think of my place on Earth, I consider myself to be a top member of a hierarchy that exists in nature", seems to be measuring cognition instead of emotion. And there are more statements which measure cognitions instead of emotions. Thus the measurement is not fully emotional as it is claimed to be and in this research it will be used to measure environmental values.

The connectedness to nature scale and the new ecological paradigm both measure values or value orientations, thus the gap between the connectedness to nature and the actual behaviour is still big, in the cognitive hierarchy the actual behaviour is on the one end and values and value orientations on the other. To get more predictive power it is important to also measure attitudes and norms, which are also important components of behaviour. Next to this the connectedness to nature and the new ecological paradigm are focussed on nature and environment, while in the end we want to measure tourism behaviour. Therefore another theory is needed to fill the gap between values and actual behaviour, to be able to see what influences the actual behaviour. A theory which focusses on attitudes and norms will fit in between the values and the actual behaviour. In the next part of this chapter the norm activation theory will be described, which focusses on awareness and ascription of responsibility of a person.

2.3 Attitudes and norms
The aim of this research is to find a relationship between values or attitudes and someone's behaviour. As can be seen in the cognitive hierarchy behaviour is driven by different cognitions. Attitudes and norms are important cognition which influences the behaviour of someone. The behaviour measured in this research is behaviour which is beneficial for someone else or the environment, for example taking the train instead of airplane, which causes less pollution. This behaviour is meant to produce and maintain the well-being of other people (Brief & Motowidlo, 1986). This is seen as prosocial behaviour (Bar-Tal, 1976). Pro-social behaviour is often researched through the norm activation model. Below the norm activation model is discussed, this model will fit in the research. With the norm activation model people's norms can be measured, in a relatively specific way.

2.3.1 Norm activation model
The norm activation model is often used to explain pro environmental behaviour (Harland, Staats & Wilke, 2007) (Steg & Groot, 2010). The norm activation theory is a complex model of human decision making in moral situations (Harland, Staats & Wilke, 2007). The theory describes that pro social behaviour starts with the individuals problem awareness of the consequences due to the behaviour,

next to this also his or hers feeling of responsibility for the problem (not acting environmental friendly) has influence on the behavioural decisions one makes. The third factor explains pro-social behaviour is someone's personal norms. (Han, 2014)(Harland, Staats & Wilke, 2007). For this research the personal norms are left out of consideration. The focus lies on the problem awareness and ascription of responsibility, because these two concepts together might cover personal norms already. When someone is not aware of the problem, it would be logical that he or she also does not have specific norms in respect to this problem, which in this case is the negative influence of transportation on the environment.

As said above, in this research the focus lies on the concepts ascription of responsibility and problem awareness from the norm activation model. These concepts still have a certain level of abstraction, but they are easily adaptable to specific types of behaviour. To return to the cognitive hierarchy these concepts will be used to determine someone's norms for the choice of mode of transport in tourism setting. In chapter three is explained how these concepts are operationalized.

Going back to the cognitive hierarchy, above there are different models and concepts described which will measure the different cognitions. The next step is to make a conceptual framework and hypotheses to see whether there is a relation between the cognitions and the actual behaviour.

2.4 Conceptual framework and hypotheses
The aim of this research is to research possible relationships between different psychological antecedents and the choice for mode of transportation someone makes. To get insight in what psychological antecedents' influences behaviour we used the cognitive hierarchy (Vaske & Donnelly, 1999). They claim that behaviour is driven by different cognitions from very abstract values towards the specific behavioural intentions and in the end the actual behaviour itself.

Different cognitions will be measured with different models and concepts. Values and value orientations will be measured by the new ecological paradigm and the connectedness to nature scale. Norms will be measured with the norm activation theory in form of problem awareness and ascription of responsibility and the actual behaviour will be measured. These concepts have all different abstraction levels. In figure 2.4 you can see how the different models and concepts relate to each other in this research. The gradation from abstract values to the specific behaviour is filled with the different concepts. This research tries to find the different relationships between the different cognition levels. As can be seen in the figure there are three layers, which are the different cognitions as in the cognitive hierarchy. The biggest square consist of the environmental values and value orientations, this is measured by the new ecological paradigm and connectedness to nature scale. This is the biggest and overarching square since the other squares are based on the values and value orientations, next to this, values are very abstract and influences way more than the behaviour measured in this research. The middle square can best be compared with the attitudes and norm cognition in the cognitive hierarchy, here the problem awareness of consequences of behaviour and ascription of responsibility is measured. This is a bit less abstract than the biggest square, however it also influences more than the behaviour measured in this research. The smallest square is the actual behaviour, this is placed within the other two squares, since the other squares influences the behaviour. The behaviour is very specific and therefore it is at the bottom of the figure.
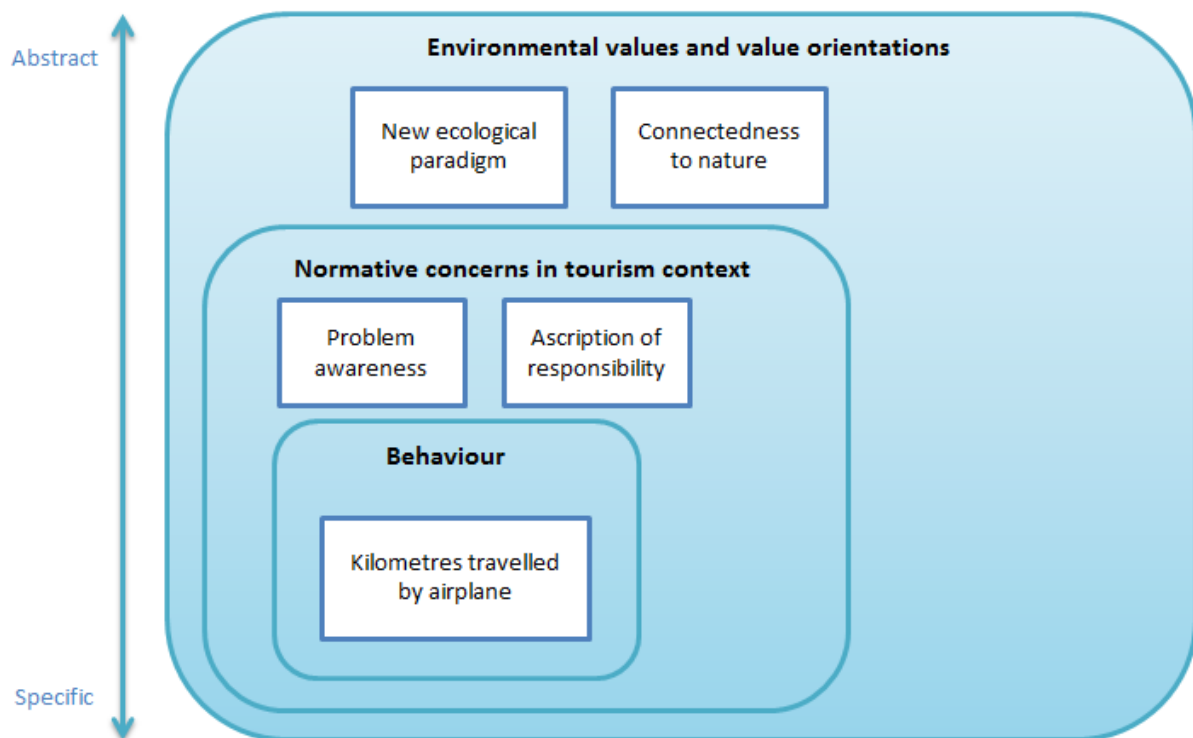
Figure 2.4: Conceptual framework

On the next page the hypotheses for this research are given and in figure 2.5, on the next page, the hypothesis shown in a schematic way in the conceptual framework. Hypothesis 5 and 6 expect to be a negative relation since the expectation is that when someone is more aware of the problem or feels more responsible he or she will travel less kilometres by airplane. These hypotheses given are in line with the cognitive hierarchy, which says that the more abstract cognitions influences more specific cognitions and in the end causes the behaviour. Therefore hypotheses 1 until 4 are all expected to have a positive relation. Hypotheses 7 and 8 are added to see whether more abstract cognitions also influence the actual behaviour, these expected to have also a negative correlation for the same reason as hypotheses 5 and 6.

H1: There is a positive relation between the new ecological paradigm and the problem awareness of consequences of the specific behaviour

H2: There is a positive relation between connectedness to nature and the problem awareness of consequences of the specific behaviour

H3: There is a positive relation between the new ecological paradigm and the ascription of responsibility

H4: There is a positive relation between connectedness to nature and the ascription of responsibility

H5: There is a negative relation between problem awareness of consequences of behaviour and travelled kilometres by airplane

H6: There is a negative relation between ascription of responsibility and travelled kilometres by airplane

H7: There is a negative relation between new ecological paradigm and travelled kilometres by airplane

H8: There is a negative relation between connectedness to nature and travelled kilometres by airplane
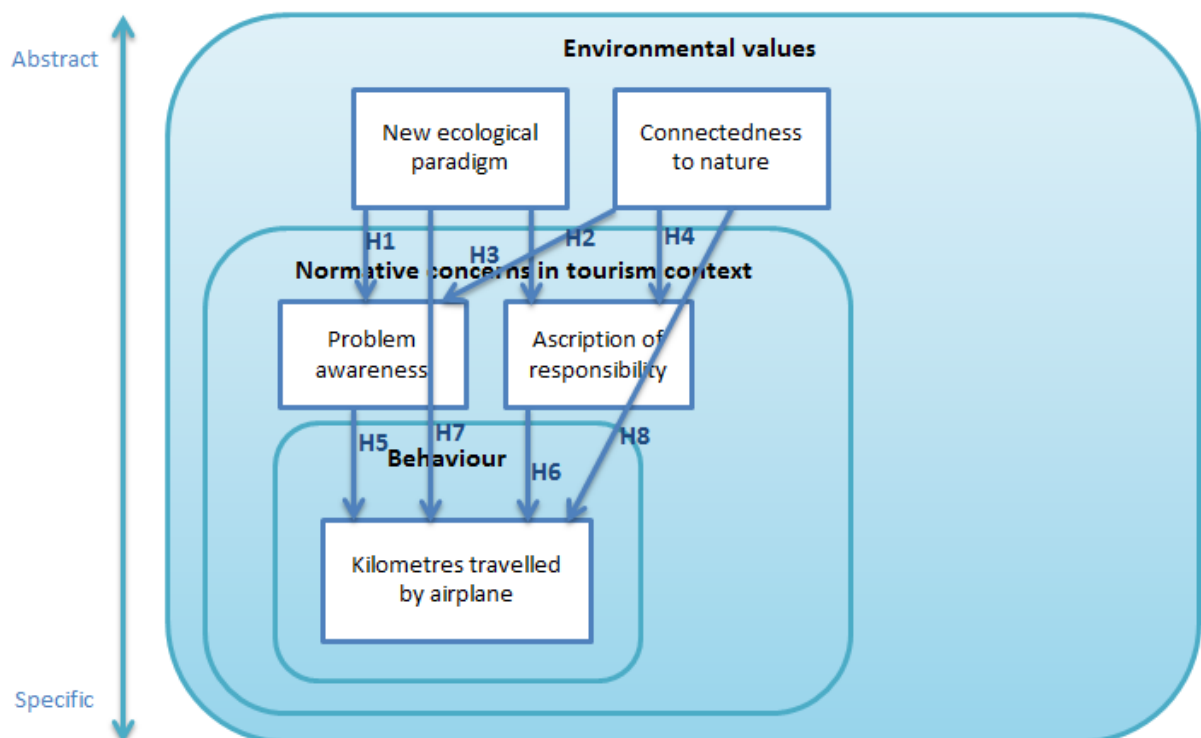

Figure 2.5: Hypotheses in conceptual framework

3. Methodology

At the end of chapter two there are eight hypotheses given which needs to be tested. This chapter describes the operationalization of the conceptual framework and how the research is carried out, also there will be explained what the variables are and how the analysis will be done. First study design and sample is explained. After the study design is clear all the variables are described and the last part of this chapter consists of the revelation of the data analysis.

3.1 Study design and sample

The main method fort his research was a survey. In appendix A you can find the questionnaire which was used to conduct the survey. There was chosen for a questionnaire to reach as many respondents in a short time frame. Another reason to do a questionnaire is to get quantitative date which can be tested for correlations. As said the data and outcomes of this study are quantitative, since the outcomes are expressed numerically. The research is done in a non-experimental way; the research is measuring data from the real world, without manipulation or controlling any variables (Kumar, 2005).

For this research basically everyone who ever has been on a holiday could join. There was no specific target sample selected. Respondents were approached through social media, such as; Twitter and Facebook. Thus basically network sampling is used, since mostly people from my own network were approached. On both social media it was also shared by other users, so a broader group was reached. However through network sampling there were not enough respondents who filled in the whole questionnaire. Therefor I also approached possible respondents via public groups on Facebook. To try to get as many respondents as possible. In total three different public groups, mainly joined by people from Wageningen and Utrecht, were asked to fill in the questionnaire. Although these groups have many members the amount of returned questionnaires was disappointing.

A large sample size is better for the research, since it is more likely to detect the differences. A relation might not be existing in a small sample because of probability chance, while the relation is significant in a bigger sample (Field, 2013). This research tried to find as many respondents as possible, although due to time and money constraints there are only 98 surveys, which were usable for analysis, completed.

3.2 Variables

The first two questions in the questionnaire were to determine the connectedness to nature and the ecological paradigm and thus the environmental values of people. These questions consisted of the statements of the new ecological paradigm and connectedness to nature scale, as shown in table 3.1 and 3.2. The answers a respondent could give was on a 5-point scale, ranging from strongly disagree till strongly agree and people had to choose the one most fitting for themselves, in the middle there was a neutral point. For every statement the respondent got 1 to 5 points and in the end the points were summed up, a higher total outcome means a person is more connected to nature, or had a higher environmental concern in the new ecological paradigm. In the tables you can also find the translation from English to Dutch, since the questionnaire was in Dutch.

To determine someone's problem awareness and ascription of responsibility the following questions were asked:

When I use the airplane when I go on holiday, I am aware of…:

- …The emission of greenhouse gasses of the airplane
- …The environmental damage the airplane causes
- …The contribution of the depletion of the fossil fuels
- …The pollution the airplane causes

These questions could be answered on a 5-point scale, where on the left side the option was unaware and on the right side very aware. The same questions were asked for responsibility; "When I use the airplane when I go on holiday, I feel co-responsible for…" Also these questions could be answered on a 5-point scale where on the left side you had the option not responsible and on the right side very responsible.

To measure the behaviour of people, there was asked about their last holiday. The respondents had to answer four questions about their last holiday. There was asked to give estimations about how much kilometres they travelled by different types of motorized transport. The types which were asked are:

- Bus;
- Car/camper/motor;
- Airplane;
- Train.

According to the European Environment Agency (see figure 1.1) the bus is most environmental friendly followed by train and then motor and car. The plain has the most impact on the environment and therefore the least environmental friendly way to travel.

The last questions of the questionnaire were the demographic questions. The demographics asked were:

- Age in years
- Highest finished education
- Sex

There was also some space for remarks. However this space was rarely used.

Table 3.1: statements in the new ecological paradigm (Dunlap et al., 2000)

Original Do you agree or disagree	Translation to Dutch In welke mate bent u het eens met de volgende stellingen	Facet
We are approaching the limit of the number of people the earth can support	We naderen de limiet van het aantal mensen wat de aarde aankan	Limit of growth
Humans have the right to modify the natural environment to suit their needs (R)	Men heeft het recht om de natuurlijke omgeving te vormen naar de behoeften van de mens	Anti-anthropocentrism
When humans interfere with nature it often produces disastrous consequences	Wanneer er mensen zich bemoeien met de natuur zijn er vaak desastreuse gevolgen	Fragility of nature balance
Humans ingenuity will insure that we do NOT make the earth unlivable (R)	De vindingrijkheid van mensen zal er voor zorgen dat we de aarde **niet** onleefbaar maken	Rejection of exemptionalism
Humans are severely abusing the environment	Men maakt ernstig misbruik van zijn natuurlijke omgeving	Ecocrisis
The earth has plenty of natural resources if we just learn how to develop them (R)	De aarde heeft meer dan genoeg grondstoffen, we moeten alleen leren ze te gebruiken	Limit of growth
Plants and animals have as much right as humans to exist	Planten en dieren hebben evenveel bestaansrecht als mensen	Anti-anthropocentrism
The balance of nature is strong enough to cope with impacts of modern industrial nations (R)	De balans in de natuur is sterk genoeg om te overleven met de gevolgen van de moderne industrialisering	Fragility of nature balance
Despite our special abilities humans are still subject to the laws of nature	Ondanks al onze vaardigheden is de mens nog steeds onderworpen aan de wetten van de natuur	Rejection of exemptionalism
The so-called "ecological crisis" facing humankind has been greatly exaggerated (R)	De zogenaamde "ecologische crisis" als gevaar voor de mensheid is sterk overdreven	Ecocrisis
The earth is like a spaceship with very limited room and resources	De aarde is als een ruimteschip; met zeer beperkte ruimte en middelen	Limit of growth
Humans were meant to rule over the rest of nature (R)	Mensen zijn bestemd om te heersen over de natuur	Anti-anthropocentrism
The balance of nature is very delicate and easily upset	De balans in de natuur is zeer gevoelig en makkelijk verstoord	Fragility of nature balance
Humans will eventually learn enough about how nature work to be able to control it (R)	Uiteindelijk zullen mensen genoeg over de werking van de natuur leren om de natuur te kunnen controleren	Rejection of exemptionalism
If things continue on their present course, we will soon experience a major ecological catastrophe	Als de dingen blijven gaan op de huidige koers, zullen we binnenkort een grote ecologische ramp ervaren	Ecocrisis

(R) = Reversed item

Table 3.2: statements in the connectedness to nature scale (Mayer & Frantz, 2004)

Original **Do you agree or disagree**	Translation to Dutch **In welke mate bent u het eens met de volgende stellingen**
I often feel a sense of oneness with the natural world around me	Ik voel me vaak één met de natuurlijke omgeving om mij heen
I think of the natural world as a community to which I belong	Ik zie de natuur als een community waar ik onderdeel van ben
I recognize and appreciate the intelligence of other living organisms	Ik herken en waardeer de intelligentie van andere levende wezens
I often feel disconnected from nature (R)	Ik voel me vaak **niet** verbonden met de natuur
When I think of my life, I imagine myself to be part of a larger cyclical process of living	Als ik aan mijn leven denk, stel ik me voor dat ik onderdeel ben van een groter cyclisch proces
I often feel a kinship with animals and plants	Ik voel me vaak verwant met dieren en planten
I feel as though I belong to the earth as equally as it belongs to me	Ik heb het gevoel dat ik evenveel toebehoor aan de aarde als de aarde toebehoort aan mij
I have a deep understanding of how my actions affect the natural world	Ik heb een uitgebreid inzicht van hoe mijn acties invloed hebben op de natuurlijke wereld
I often feel part of the web of life	Ik voel me vaak onderdeel van het web van het leven
I feel that all inhabitants of Earth, human, and nonhuman, share a common 'life force'	Ik voel dat alle inwoners van aarde, zowel mensen als niet-mensen, een gezamenlijke levenskracht delen
Like a tree can be part of a forest, I feel embedded within the broader natural world	Zoals een boom onderdeel van een bos is, voel ik me onderdeel van de natuur
When I think of my place on Earth, I consider myself to be a top member of a hierarchy that exists in nature (R)	Als ik over mijn plaats op aarde denk, voel ik mezelf bovenaan de natuurlijke hiërarchie staan
I often feel like I am only a small part of the natural world around me, and that I am no more important than the grass on the ground or the birds in the trees	Ik voel me vaak maar een klein onderdeel van de natuur om me heen, ik ben niet belangrijker dan het gras op de grond of vogels in de boom
My personal welfare is independent of the welfare of the natural world (R)	Mijn persoonlijke welzijn is onafhankelijk van het welzijn van de natuurlijke omgeving

(R) = Reversed item

3.3 Data analysis

The analysis is done in the program IBM SPSS Statistics. The data was gained in a MS Excel file, so the first thing to do was to transfer the data from MS Excel to IBM SPSS Statistics. The reversed items were corrected to fit in the scoring sheet of the new ecological paradigm and the connectedness to nature scale.

First of all the variables descriptive statistics and reliability analyses will be done, these can be found in in chapter 4. The reliability analyses shows whether a set of items produces results which have consistent answers overall to the questionnaire (Field, 2006; p. 708). Reliability analyses were done for the new ecological paradigm, the connectedness to nature scale, the problem awareness of consequences and the ascription of responsibility of the respondent.

First hypotheses 1 till 4 will be checked to see whether there is a correlation between values and norms. For the four hypotheses regression will be done. After these test there will be tested if the norms influences the specific behaviour, as described in hypothesis 5 and 6. The last regressions which will be done are hypothesis 7 and 8, where will be tested whether values influences the behaviour. As an extra option also there will be tested if there is a relationship when new ecological paradigm, connectedness to nature, problem awareness and ascription of responsibility all are used as predictor variable together.

In the end, also some regressions with the demographic variables will be done. These variables are nominal an ordinal and in order to be able to do regression these variables must be converted to continuous or dichotomous variables. These conversions can be found in table 3.3, there is chosen for conversion towards dichotomous variables.

Table 3.3: New dichotomous variables for regression

	0	1
Sex	Male	Female
Education	Primary School - MBO	HBO & WO

4 Results

In this chapter the results of the data analysis are presented. First the reliabilities are tested for the different constructs. The second part of this chapter will consist of the sample characteristics. Thirdly the hypothesis are tested with regression analyses.

4.1 Reliability analysis

With the reliability analysis the consistency between constructs are tested (Field, 2014).For this research there are different constructs measured, namely: connectedness to nature; new ecological paradigm; problem awareness and ascription of responsibility. So for these four constructs reliability analysis are conducted. As said in chapter 2 and can be seen in table 3.1 the new ecological has 5 different facets, for these facets also a reliability analysis was done. Reliability analysis is done to check whether the different statements measure the same construct. If the outcome of the reliability analysis is above .60 for Cronbach's alpha the constructs can be used as one variable during analysis.

The results of the reliability analysis can be found in table 4.1 up to table 4.4. In general all reliability analyses have a relatively high Cronbach's alpha, which means a strong reliability. All the constructs scored above the minimum of .60 for Cronbach's alpha. The connectedness to nature scale has a Cronbach's alpha of .883; the new ecological paradigm scored .713 for Cronbach's alpha, the different facets scores can be found in table 4.2. For the connectedness to nature Cronbach's alpha increases when item number 14 will be deleted. Item 14 in the connectedness to nature scale is: "My personal welfare is independent of the welfare of the natural world". But even with this item Cronbach's alpha is really high and therefore I will not delete this item for analysis.

Both the Cronbach's alpha for problem awareness (.913) and ascription of responsibility (.937) are very high. Results can be found in tables 4.3 and 4.4. For the new ecological paradigm, problem awareness and ascription of responsibility Cronbach's alpha will not increase by deleting any items.

Table 4.1: Connectedness to nature reliability

	Reliability analysis		
	Item total correlation	Alpha if item deleted	Cronbach's alpha
Connectedness to nature			**.883**
Item number			
1	.698	.869	
2	.618	.872	
3	.646	.871	
4	.629	.971	
5	.503	.878	
6	.699	.868	
7	.583	.874	
8	.501	.878	
9	.591	.874	
10	.515	.877	
11	.722	.867	
12	.304	.887	
13	.521	.877	
14	.308	.887	

Table 4.2: New ecological paradigm reliability

Facets	Reliability analysis		
	Item total correlation	Alpha if item deleted	Cronbach's alpha
Item number			
Limits of growth			**.616**
1	.384	.581	
6	.409	.541	
11	.496	.435	
Anti-anthropocentrism		.	**.742**
2	.533	.699	
7	.595	.625	
12	.576	.648	
Fragility of nature's balance			**.687**
3	.576	.500	
8	.455	.653	
13	.477	.625	
Rejection of exemptionalism			**.639**
4	.417	.584	
9	.399	.609	
14	.535	.419	
Ecocrisis			**.691**
5	.578	.501	
10	.418	.716	
15	.533	.569	
Total new ecological paradigm			**.713**

Table 4.3: Problem awareness reliability

	Reliability analysis		
	Item total correlation	Alpha if item deleted	Cronbach's alpha
Awareness of impact			**.913**
Item			
Emission of greenhouse gasses	.781	.895	
Environmental damage	.808	.885	
Depletion of fossil fuels	.805	.886	
Pollution	.815	.883	

Table 4.4: Ascription of responsibility reliability

	Reliability analysis		
	Item total correlation	Alpha if item deleted	Cronbach's alpha
Awareness of impact			**.937**
Item			
Emission of greenhouse gasses	.861	.915	
Environmental damage	.856	.918	
Depletion of fossil fuels	.841	.922	
Pollution	.851	.919	

4.2 Sample characteristics

Almost two third of the respondents is female (64,3%) and thus about one third (35,7%) of the respondents is male. The age of the respondents lies between 18 and 62. There is a high peek of age around 25 years old, see table 4.6 and figure 4.1, the mean age of the respondents is 33 years old. The biggest group of respondents has finished a study at the university (60,2%), followed with a HBO (middle education) degree (18,4%). The results for education can be found in table 4.7.

Table 4.6: Age classes

	Frequency	Valid percent
0-19	4	4,1
20-29	65	66,3
30-39	12	12,2
40-49	6	6,1
50-59	10	10,2
60+	1	1,0
Total	98	100

Table 4.7: Education level

	Frequency	Valid percent
Primary School	2	2,1
Secondary School	12	12,2
MBO	6	6,1
HBO	18	18,4
University	59	60,2
Other	1	1,0
Total	98	100

The new ecological paradigm consists of 15 statements which could be answered on a 5 point scale, so the respondents could score between 15 and 75 points in total. The connectedness to nature scale has the same system, only difference is that the connectedness to nature scale has 14 statements to answer, so possible scores for the connectedness to nature scale lies between 14 and 70. The higher the score the more environmental concerned or connected to nature someone is. To be able to make a better and easier comparison the total scores are divided by the number of items. So the score of a respondent lies between 1 and 5.These scores are divided in three different groups: low; middle; high. All end scores below 2,5 are in the group low, scores between 2,5 and 3,5 are in the group middle and scores of 3,5 and above are high scores. These scores can be found in table 4.8.

Not only the scores for the new ecological paradigm and connectedness to nature scale can be found in table 4.8, but also the scores for awareness impact and ascription of responsibility for air travel impact. Both these constructs consisted of 4 items which also had to be filled in on a 5 point scale, which means that a respondent could score between 4 and 20 points. Also these scores are divided by the number of items, to be able to compare them and they will be divided in the same three groups of low, middle and high. The reason to make these three groups is to get a quick overview on how the respondents scored on the different constructs. During further analysis the three groups are not used. Also not the means of the respondent are used but the outcome scores

on the new ecological paradigm, connectedness to nature, problem awareness and ascription of responsibility. Thus table 4.8 just gives an overview of the scores of the sample and is meant as illustration. During further analysis the total scores of the respondents are used and the respondents are not divided in these three groups.

Table 4.8: Cognitions scores

Construct	Mean (range 1-5)	Standard deviation	Low		Middle		High	
			Freq.	Valid percent	Freq.	Valid percent	Freq.	Valid percent
NEP	3,43	.405	2	2	54	55	42	43
CNS	3,11	.546	12	12	62	63	24	25
Awareness	3,06	.933	30	31	30	31	38	38
Responsibility	2,87	.856	28	29	49	50	21	21

NEP = new ecological paradigm | CNS = connectedness to nature scale

There was also a question about the distances travelled with motorised vehicles during the respondents last holiday. The minimum travelled distances for motorized transportation is zero kilometres, in the remark these two respondents added that they had a biking holiday as their latest holiday, thus they did not used any motorized vehicles. The maximum distance is 41.000 kilometres as travel distance. The mean distance travelled is 3587 kilometre. In table 4.9 frequencies can be found for travel distances. In table 4.10 till 4.13 frequencies of travelled distances per mode of transport can be found.

Table 4.9: Travel distance total

	Frequency	Valid percent
0-999	23	23,5
1000-1999	23	23,5
2000-2999	25	25,5
3000-3999	5	5,1
4000-4999	3	3,1
5000-5999	7	7,1
6000-6999	1	1,0
7000-7999	3	3,1
8000+	8	8,1
Total	98	100

Table 4.10: Travel distance bus

	Frequency	Valid percent
0	67	68,4
1-99	14	14,3
100-499	6	6,1
500-999	7	7,1
1000+	4	4,1
Total	98	100

Table 4.11: Travel distance car

	Frequency	Valid percent
0	31	31,6
1-499	24	24,5
500-999	4	4,1
1000-1499	9	9,2
1500-1999	6	6,1
2000-2499	12	12,2
2500-2999	4	4,1
3000-3499	1	1,0
3500-3999	1	1,0
4000+	6	6,1
Total	98	100

Table 4.12: Travel distance airplane

	Frequency	Valid percent
0	57	68,2
1-999	7	7,1
1000-1999	12	12,2
2000-2999	6	6,1
3000-3999	4	4,1
4000-4999	0	0
5000-5999	1	1,0
6000-6999	2	2,0
7000-7999	1	1,0
8000+	8	8,2
Total	98	100

Table 4.13: Travel distance train

	Frequency	Valid percent
0	72	73,5
1-499	17	17,3
500-999	3	3,1
1000-1999	3	3,1
5000+	2	2,0
Total	98	100

4.3 Testing the hypotheses

Next step is to test the hypotheses, as defined in chapter 2, for significance. First the correlations between new ecological paradigm or connectedness to nature and problem awareness are tested, as described in hypotheses 1 and 2. Also the correlation between new ecological paradigm or connectedness to nature and ascription of responsibility is tested, hypotheses 3 and 4. After these correlations the influences of the problem awareness and ascription of responsibility is tested on the behaviour, also the influence of the new ecological paradigm and connectedness to nature is tested. These are hypotheses 5 till 8. In the last part of this paragraph there is tested whether demographics influences the outcomes.

4.3.1 Correlations between different cognitions

First there is tested whether there is a relation between the new ecological paradigm, connectedness to nature scale and the norm activation theory (awareness of impact and ascription of responsibility

(H1 – H4)). According to the theory the values of a person, which are tested with the new ecological paradigm and connectedness to nature scale influences the norms and attitudes of a person, in this case tested with problem awareness and ascription of responsibility (norm activation theory).

As can be seen in table 4.14 there is a significant relationship for all four hypotheses. First the new ecological paradigm was used as the only independent variable and checked for correlation with problem awareness and ascription of responsibility as dependent variables. After these first two tests the same was done for connectedness to nature scale, thus all constructs are measured separately.

The relationship between connectedness to nature scale and the ascription of responsibility (H4) is the highest with a β of .500, the relationship between connectedness to nature scale and the problem awareness (H2) has a lower β (.353), but both have a very high significance. Both the relationships of the new ecological paradigm and the norm activation theory (H1 & H3) are not really big, nevertheless there is a significant relationship. This means that indeed there is a correlation between someone's values and norms, values influences norms of a person. In this case the connectedness to nature scale is a better predictor of someone's norms, because the β is both for problem awareness and ascription of responsibility higher than with the new ecological paradigm.

Also the correlation between the new ecological paradigm and the connectedness to nature scale was tested, the outcome was a β of .372 (sig: $p < .001$). This means that when someone scores high on the new ecological paradigm he or she probably also will score high on the connectedness to nature scale. The same goes for the correlation between problem awareness and ascription of responsibility, where the outcome of β was .682 (sig: $p < .001$), thus when someone's scores high on problem awareness he or she will probably also score high on ascription of responsibility.

Table 4.14: Correlations CNS, NEP and norm activation

	Problem awareness β	Ascription of responsibility β
NEP	.208*	.227*
CNS	.353***	.500***

Significance: * p<.05 | **p<.01 | ***p<.001

4.3.2 Correlations cognitions and behaviour

The second part of the regression analysis is to check whether there is a relationship between someone's norms (problem awareness and ascription of responsibility) and someone's behaviour (travelled kilometres by airplane). These relations will be tested as described in hypotheses 5, 6, 7 and 8. First hypothesis 5 and 6 are tested, because when looking at the theory norms have a more direct influence on someone's behaviour. After this also the influence of values (new ecological paradigm and connectedness to nature) was tested to see to what extent values already can influence and explain behaviour. In these tests also other motorized vehicles are taken into account to see whether if there is a relationship. The hypotheses are focused on travel by airplane since airplane has the most impact and is the biggest polluter. Also the questions about problem awareness and ascription of responsibility were airplane focused, but it might be interesting to see whether when someone scores high on problem awareness or ascription of responsibility if he really travels more kilometres with cleaner transportation such as bus or train.

In table 4.15 the outcomes of all four of these correlations can be found. There is only one significant relationship and this relationship was expected to be positive but is negative. This is the relation between new ecological paradigm and the train. Someone who scores high on the new ecological paradigm and thus who has higher environmental values is expected to choose more often for a greener mode of transportation (the train). The relationship found is negative and that suggests that someone who has higher environmental values travels less with the train. In the table you can find also the non-significant outcomes and as you can see these all have a very low β, thus there are no visible relationships between cognitions and choice for transport mode for a holiday. All four hypotheses (5, 6, 7 & 8) will be rejected.

Table 4.15: Correlation values, norms and travelled kilometres

	Mode of transport			
	Bus	Car	Train	Airplane
	β	β	β	β
Awareness (H5)	-.007	.074	.032	-.032
Responsibility (H6)	-.097	-.010	.081	.010
NEP (H7)	-.052	.052	-.240*	.030
CNS (H8)	.163	.127	.009	.087

Significance: * p<.05 | **p<.01 | ***p<.001

In table 4.16 you can see the outcome when all four variables are used as predictor variable. There are hardly any significant relationships, and two of the significant relationships are the opposite of the expected relationship. The only expected relationship is the one that people who score higher on the connectedness to nature scale travel more kilometres with the bus, which is a relatively green way to travel. Here a significant relationship is found, this relation is only found when all cognitions are taken into account.

The other relations which were found are between ascription of responsibility and the bus, however, the expected relationship was positive but the found relationship is negative. This means that people who feel more responsible travel less kilometres with the bus, while the bus is a greener way of transportation. The same goes for the relation between new ecological paradigm and the train, where an expected positive relationship is a negative relationship in the real world.

The last row in table 4.16 shows the R^2, which means how well the model fits the data. These have all very low numbers and none of these R^2's has a significant outcome. An uncommon outcome is that when taking into account all the cognitions the β are a little higher. Thus, one separate cognition explains less than when taking into account all four cognitions together as independent variable. While normally when introducing more independent variables the β will decrease because it normally predicts less.

Table 4.16: Regression with all predictors for travelled kilometres by motorized vehicles

	Mode of transport			
	Bus	Car	Train	Airplane
	β	β	β	β
Awareness	.116	.147	.016	-.075
Responsibility	-.310*	-.197	.129	.006
NEP	-.126	.002	-.287**	.004
CNS	.323**	.173	.057	.110
R^2	.298	.035	.040	.012

Significance: * p<.05 | **p<.01 | ***p<.001

Because there are hardly any significant relations with linear regression there is also checked if there is a relation when just looking using airplane or not using airplane during a holiday. The variable "travelled kilometres by airplane" was changed to a dichotomous variable and a logistic regression was done between problem awareness and usage of airplane and ascription of responsibility and usage of airplane. The focus on airplane is because travelling by airplane has the most impact and the problem awareness and ascription of responsibility questions were focussed on airplane travels. For this logistic regression test there were also no relationships found.

4.3.3 Testing demographics for relations
The last relations which were checked, were whether demographics influence someone's choice of transport and whether demographics influence scores on the measurement of new ecological paradigm, connectedness to nature scale, awareness of impact and ascription of responsibility. These results can be found in table 4.17 and 4.18.

A relation was found between age and car where older people travel more with the car. Sex has a negative relationship with car, which means that it is more likely that men more often choose to travel by car, or drive further. There were not any other significant relations found and the other β are all relatively low. The outcomes of the tests between demographics and travelled kilometres by different modes of transport can be found in table 4.17.

In table 4.18 is shown that especially a higher education might have influence on the different cognitions of a person. People with a higher education level scored higher on the connectedness to nature scale, they had higher problem awareness and feel a bigger responsibility. However for the new ecological paradigm there were no significant relationships found with education. Another significant relationship found was that people who are older feel more connected to nature. Further there were no significant relations found between demographics and the concepts and all the other β are also relatively low, which does not suggest that there might be a relationship.

Table 4.17: Correlations demographics and mode of transport

	Mode of transport			
	Bus	Car	Train	Airplane
	β	β	β	β
Education	.129	.103	.109	.138
Sex	-.162	-.399***	.173	-.017
Age	.155	.428***	-.170	.186

Significance: * p<.05 | **p<.01 | ***p<.001

Table 4.18: Correlations demographics and cognitions

	Values and norms			
	NEP	CNS	Awareness	Responsibility
	β	β	β	β
Education	.095	.236*	.318**	.235*
Sex	-.037	-.080	.104	.155
Age	.068	.359***	.069	.087

Significance: * p<.05 | **p<.01 | ***p<.001 | n.s. = not significant

5. Conclusion and Discussion

The final part of this report consists of the conclusion and discussion. The aim of this research was to find a relation between someone's psychological antecedents and travelled kilometres in motorized vehicles during holiday. The research was operationalized by measuring different cognitions of a person and quantifying his or hers travelled kilometres during his or hers last holiday. This chapter will first interpret the result and after this compare the outcomes of this study with other studies. There is also a reflection on the methods and this chapter will end with an overall conclusion.

5.1 Interpreting the results

According to the theory of the cognitive hierarchy more abstract cognitions influences more specific cognitions, thus values influences norms and norms influences behaviour. In hypotheses 1 till 4 this is measured and relationships were found. This means that in this case environmental values influence someone's problem awareness and ascription of responsibility in context of using the airplane during a holiday. The next step was to check whether this also influences someone's behaviour by measuring travelled kilometres by motorized vehicles during the last holiday.

Hypotheses 5 till 8 were about whether cognitions predict behaviour, in this research there are not really convincing relationships found. This means in this research there is no relationship found between psychological antecedents (norms or values) and the actual behaviour of a person. Also when behaviour was transformed in a yes or no variable (yes travelled with airplane during last holiday or no not travelled by airplane) there was not a relationship found. This means for air travel during leisure and tourism time cognitions does not predict behaviour.

While doing the multiple regression with the four independent variables (new ecological paradigm, connectedness to nature scale, problem awareness and ascription of responsibility) the β's were higher than when there was just one single cognition used as variable (see table 4.15 and 4.16). This is an uncommon outcome for multiple regression, where often more predictors mean lower β. There could be different reasons why this uncommon phenomenon occurs, where the β's are higher when including more independent variables. First and most logical explanation is that the data used is not normal distributed. Small samples are hardly ever normal distributed, but during analysis it was assumed that the data was normal distributed. Another reason could be that there is not a linear correlation but another type of correlation. Therefore curve estimation was done between the cognitions (problem awareness and ascription of responsibility) and the travelled kilometres by airplane. For this curve estimation were no significant relation found with any of the curves. However, when excluding the zero's there were some significant relations, but that means that the people who do not travel by airplane were excluded. And those might be the people who do not travel by airplane because of environmental concern reasons. Thus by excluding them the theory does not fit the analysis anymore.

An interesting result in this research is that higher education seems to mean that someone scores higher on connectedness to nature scale, feels more responsible and have a higher ascription of responsibility, but this cannot be seen in their behaviour. This means people with higher education know that what they are doing in respect to travelling by airplane has a negative influence on the ecological and natural world, but they do not take any action to reduce their impact. It might be

important to stimulate people more to change their behaviour, to reduce human impact on the environment.

There are also other studies who tried to find relationships between values or attitudes and behaviour. In the next part of the discussion the results of some of these studies will compared with the results of this study.

5.2 Comparing findings with literature

There is quite some research done about relations between attitude, values and behaviour (Kaiser, Wölfing & Fuhrer, 1999). This thesis adds to existing literature on how cognitions might influence human behaviour during leisure time.

The findings in this research are not really convincingly that cognitions of a person influences behaviour in form of travelled kilometres of motorized vehicles. A research done by Tarrant and Green (2010) which focused on environmental attitude and outdoor recreation, showed that there was an attitude-behaviour relationship. People who scored higher on environmental attitude undertook more outdoor recreation activities. This research shows that (environmental) attitude definitely can have influence on someone's leisure time. Although another research done in Norway, where there was searched for a relationship between the new ecological paradigm and the interest in different outdoor activities did not found a convincingly relationship (Bjerke, Thrane & Kleiven, 2007). So values and attitudes in specific context influences behaviour, however this research did not find any influence of pro-environmental values and norms on pro-social behaviour of a person.

In this research demographics shows some significant relationships, especially age and sex show relations with travelled distance by car. Also the research of Balderjahn (1988) and Gardenne (2011) show interesting relationships between demographics or social status and patterns of ecological behaviour instead of the (environmental) attitude of people. Both researchers claim that environmental attitude is less important, but that it also has to do with the price someone has to pay, whether he can pay it or not and what the expectations of their social group is. On top of this Kaiser, Wölfing and Fuhrer (1999) say in their research about ecological attitude and behaviour that often attitudes are not able to predict behaviour. They found that environmental knowledge and environmental values explained 40 per cent of the variance in ecological behaviour, and the behaviour intentions predicted 75 per cent of the variance in general ecological behaviour (Kaiser, Wölfing & Fuhrer, 1999).This research does not find any of the expected relationships. It even gave a negative relationship between ascription of responsibility and the usage of the bus as mode of transportation while there was a positive relationship expected. While demographics showed relationships with values and norms. This suggest that people adapt their values to their social status, but that in the actual behaviour they still choose based on other factors than their values and norms.

In general, literature shows different outcomes for relationships between (environmental) values or attitudes and environmental friendly behaviour. Unfortunately this research did not show many expected significant relationships. When choosing for a holiday people do not let their environmental attitude influence the mode of transport they use.

5.3 Reflection

The aim of the research was to find relationships between values or norms and behaviour in tourism setting. To be able to study these relationships there was a conceptual framework made with concepts and theories already discussed in existing literature. The literature and theories used for this research and the conceptual framework is in the end a good fit. At the start of the research there were some troubles that different literature had a different degree of abstraction. For example the new ecological paradigm is more abstract the norm activation theory. And the variable which was object to measure was behaviour, travelled kilometres by motorized vehicles, which is very specific. However when putting it on a scale, the cognitive hierarchy in this case, it became more clear what was missing. The gap from very abstract measurements to very specific measurements is filled with the norm activation theory. The theories and concepts used for this study are coherent and really suitable for the research. Although of course also other theories could have this research, such as the theory of planned behaviour, which is also discussed in chapter 2.

The research is done through means of a questionnaire to get as many respondents as possible. Unfortunately, due to money and time constraints, there were only 98 questionnaires completely filled out. The sample size is very small, thus it would be beneficial for literature to do the same research again with a bigger sample size. Another disadvantage of the small sample size is that not all age classes are well represented. There are actually two age groups which are dominant in this research, which were youth around 25 years old and there is a big group of respondents which are about 50 years old. This is therefore not a representative sample and this might have an influence on the non-significant outcomes of most hypotheses.

Some of the respondents made a remark on the questionnaire that they did not use any motorized vehicles during their last holiday, they went on a cycling trip. This was unfortunately not covered in the questionnaire. Thus for a next time it would be good to add the category "other, specify" where they had to fill in the amount of kilometres travelled with different types of transportation.

A remarkable outcome is that respondents with a higher score on the new ecological paradigm had a negative relationship with taking the train. While of course the expectation is that people who score high on the new ecological paradigm would choose for a greener type of transportation. The reason for this remarkable outcome is unclear.

A big assumption was made in order to do the data analysis. The assumption was, that when people did not give an answer about how many kilometres the travelled with a specific transportation mode, I assumed the travelled kilometres were zero instead of giving it a missing value. Respondents who did not fill in any kilometres by all four types of transport were taken out of the research. Therefore this assumption that a missing value was zero kilometres travelled is acceptable. However next time, it is good to ask if the respondent could give a zero as answer when that type of transport was not used during his or hers holiday.

Overall the choice to do a quantitative research trough the means of a survey with a questionnaire was a good fit for the purpose of the study. This research was about finding relations between different variables and not about the stories and reasoning behind choices. The relation can be calculated with the help of quantitative data, which was obtained with the questionnaires.

5.4 Final conclusion
The relations between values and norms which were focussed on environmental concern do have significant relations. This was also in line with the theory, where in the cognitive hierarchy it is said that cognitions influences each other. However when we go from psychological antecedent to behaviour there is no relation. So people might be environmental concerned, see the problem and feel responsible for their actions, they do not show it when they have to choose a mode of transport for their holiday.

Thus the overall conclusion of this research is that psychological antecedents which show pro-environmental values or norms do not reduce the travelled kilometres by polluting motorized vehicles. All four hypothesis (H5, H6, H7 & H8) connected to this relationship did not show any significant outcomes. When all cognitions were used as independent variable the relations were a little higher, but they were still very small till non-existing. Therefore you can conclude that environmental values or norms are not important enough for people to choose to travel with a greener mode of transport. Environmental values or norms do not influence a person's holiday transport choices. Other factors might be more important, such as time, money or maybe convenience, further research could investigate whether there is a relation between one of these variables and mode of transport. Next to this, this sample was really small, thus it might be that in future research there will be found some significant relationships between values or norms and mode of transport for a holiday destination.

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Appendix A: Questionnaire

Uw gedrag op vakantie

Een volledig ingevulde vragenlijst helpt mij om een onderzoek uit te voeren naar gedrag op vakantie, dus ik hoop dat u de tijd wilt nemen om mij te helpen. Het invullen zal 5 tot 10 minuten duren. Het is belangrijk om alle vragen te beantwoorden, onder de vragen staat een korte antwoordinstructie. Er zijn geen goede of foute antwoorden en natuurlijk is het invullen en de uitkomsten geheel anoniem.

Alvast hartelijk Bedankt!

De eerste vragen gaan over uw verbondenheid met de natuur.

In welke mate bent u het eens met de volgende stellingen?
[Kruis achter elke stelling het antwoord aan wat het meeste van u op toepassing is]

	Antwoordmogelijkheden				
	Helemaal niet mee eens	Engiszins mee oneens	Weet niet	Enigszins mee eens	Helemaal mee eens
Ik voel me vaak één met de natuurlijke omgeving om mij heen	☐	☐	☐	☐	☐
Ik zie de natuur als een community waar ik onderdeel van ben	☐	☐	☐	☐	☐
Ik herken en waardeer de intelligentie van andere levende wezens	☐	☐	☐	☐	☐
Ik voel me vaak **niet** verbonden met de natuur	☐	☐	☐	☐	☐
Als ik aan mijn leven denk, stel ik me voor dat ik onderdeel ben van een groter cyclisch proces	☐	☐	☐	☐	☐
Ik voel me vaak verwant met dieren en planten	☐	☐	☐	☐	☐
Ik heb het gevoel dat ik evenveel toebehoor aan de aarde als de aarde toebehoort aan mij	☐	☐	☐	☐	☐
Ik heb een uitgebreid inzicht van hoe mijn acties invloed hebben op de natuurlijke wereld	☐	☐	☐	☐	☐
Ik voel me vaak onderdeel van het web van het leven	☐	☐	☐	☐	☐
Ik voel dat alle inwoners van aarde, zowel mensen als niet-mensen, een gezamenlijke levenskracht delen	☐	☐	☐	☐	☐
Zoals een boom onderdeel van een bos is, voel ik me onderdeel van de natuur	☐	☐	☐	☐	☐
Als ik over mijn plaats op aarde denk, voel ik mezelf bovenaan de natuurlijke hiërarchie staan	☐	☐	☐	☐	☐
Ik voel me vaak maar een klein onderdeel van de natuur om me heen, ik ben niet belangrijker dan het gras op de grond of vogels in de boom	☐	☐	☐	☐	☐
Mijn persoonlijke welzijn is onafhankelijk van het welzijn van de natuurlijke omgeving	☐	☐	☐	☐	☐

Volgende stellingen gaan over uw houding tegenover de natuurlijke omgeving.

In welke mate bent u het eens met de volgende stellingen?
[Kruis achter elke stelling het antwoord aan wat het meeste van u op toepassing is]

	Antwoordmogelijkheden				
	Helemaal niet mee eens	Engiszins mee oneens	Weet niet	Enigszins mee eens	Helemaal mee eens
We naderen de limiet van het aantal mensen wat de aarde aankan	☐	☐	☐	☐	☐
Men heeft het recht om de natuurlijke omgeving te vormen naar de behoeften van de mens	☐	☐	☐	☐	☐
Wanneer er mensen zich bemoeien met de natuur zijn er vaak desastreuse gevolgen	☐	☐	☐	☐	☐
De vindingrijkheid van mensen zal er voor zorgen dat we de aarde **niet** onleefbaar maken	☐	☐	☐	☐	☐
Men maakt ernstig misbruik van zijn natuurlijke omgeving	☐	☐	☐	☐	☐
De aarde heeft meer dan genoeg grondstoffen, we moeten alleen leren ze te gebruiken	☐	☐	☐	☐	☐
Planten en dieren hebben evenveel bestaansrecht als mensen	☐	☐	☐	☐	☐
De balans in de natuur is sterk genoeg om te overleven met de gevolgen van de moderne industrialisering	☐	☐	☐	☐	☐
Ondanks al onze vaardigheden is de mens nog steeds onderworpen aan de wetten van de natuur	☐	☐	☐	☐	☐
De zogenaamde "ecologische crisis" als gevaar voor de mensheid is sterk overdreven	☐	☐	☐	☐	☐
De aarde is als een ruimteschip; met zeer beperkte ruimte en middelen	☐	☐	☐	☐	☐
Mensen zijn bestemd om te heersen over de natuur	☐	☐	☐	☐	☐
De balans in de natuur is zeer gevoelig en makkelijk verstoord	☐	☐	☐	☐	☐
Uiteindelijk zullen mensen genoeg over de werking van de natuur leren om de natuur te kunnen controleren	☐	☐	☐	☐	☐
Als de dingen blijven gaan op de huidige koers, zullen we binnenkort een grote ecologische ramp ervaren	☐	☐	☐	☐	☐

De volgende vragen gaan over uw laatste vakantie en welke vervoersmiddelen u hebt gebruikt.

> **Vakantie** betekent dat u één of meer nachten van huis bent weggeweest voor uw <u>plezier</u>. Hieronder vallen dus geen overnachtingen en reizen die u voor uw werk heeft ondernomen.

Denk terug aan uw laatste vakantie.

Hoeveel kilometer heeft u ongeveer afgelegd met de volgende vervoersmiddelen?
[Geef een schatting van het aantal kilometers dat u per voertuig heeft afgelegd]

- ☐ Bus: …………………. Kilometer
- ☐ Auto/camper/motor: …………………. Kilometer
- ☐ Vliegtuig: …………………. Kilometer
- ☐ Trein: …………………. Kilometer

De volgende vragen gaan over uw bewustzijn en verantwoordelijkheidsgevoel tijdens u reis naar uw vakantiebestemming.

Als ik met het <u>vliegtuig</u> op vakantie ga ben ik me <u>bewust</u> van…
[Kruis achter elke stelling het antwoord aan wat het meeste van u op toepassing is, waarbij links onbewust is en rechts heel erg bewust]

<div align="center">Antwoordmogelijkheden</div>

	Onbewust				Heel erg bewust
…De uitstoot van broeikasgassen van het vliegtuig	☐	☐	☐	☐	☐
…De milieuschade die het vliegen veroorzaakt	☐	☐	☐	☐	☐
…De bijdrage aan het opmaken van de fossiele brandstoffen	☐	☐	☐	☐	☐
…De vervuiling die het vliegtuig veroorzaakt	☐	☐	☐	☐	☐

Als ik met het <u>vliegtuig</u> op vakantie ga voel ik me <u>mede-verantwoordelijk</u> voor…
[Kruis achter elke stelling het antwoord aan wat het meeste van u op toepassing is, waarbij links u zich niet verantwoordelijk voelt en rechts u heel erg verantwoordelijk voelt]

<div align="center">Antwoordmogelijkheden</div>

	Niet verant-woordelijk				Heel erg verant-woordelijk
…De uitstoot van broeikasgassen van het vliegtuig	☐	☐	☐	☐	☐
…De milieuschade die het vliegen veroorzaakt	☐	☐	☐	☐	☐
…De bijdrage aan het opmaken van de fossiele brandstoffen	☐	☐	☐	☐	☐
…De vervuiling die het vliegtuig veroorzaakt	☐	☐	☐	☐	☐

Om de vragenlijst compleet te maken zijn er nog een aantal algemene vragen.

Wat is uw leeftijd in jaren? .... Jaar

Wat is u hoogst afgeronde opleiding?
[Kruis aan wat van u op toepassing is]

- ☐ Basisonderwijs
- ☐ VMBO/MAVO/LBO
- ☐ HAVO/VWO
- ☐ MBO
- ☐ HBO
- ☐ WO

Bent u man of vrouw?   ☐ Man   ☐ Vrouw

Hebt u nog andere opmerkingen?

Dit is het einde van de vragenlijst, <u>heel erg bedankt voor het invullen</u>. Voor vragen of opmerkingen kunt u contact met mij opnemen via e-mail: inge.vandasselaar@gmail.com