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WHAT MAKES US ENVIRONMENTALLY FRIENDLY?

SOCIAL PSYCHOLOGICAL STUDIES ON ENVIRONMENTAL CONCERN, COMPONENTS OF MORALITY AND EMOTIONAL CONNECTEDNESS TO NATURE

Ann Ojala

ACADEMIC DISSERTATION

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Abstract

Most environmental problems are caused by human behaviour. It is important to better understand what may make people more environmentally friendly.

The main theoretical framework of this dissertation was based on the assumption that environmental friendliness belongs to the moral domain. The dissertation was based on three studies. The first study was a continuation of the discussion of self-centred and other-centred motives of environmental concern. The main question was: What is the difference between self-centred and other-centred environmental concerns and how are these concerns related to environmentally friendly behaviour intentions? The second study was about the relationship of different components of morality (with an emphasis on moral judgment and empathy) on environmentally friendly behaviour. The main question was: What is the role of empathy and moral judgment development in environmentally friendly behaviour? In the third study the main question was: How is emotional connectedness to nature related to an ecological worldview?

These three studies were based on two representative samples of the Estonian population, using the Omnibus data collection method. In Study one, respondents were asked about their personal environmental concerns in general and in relation to their health. They were also presented standardised measures of egoistic, altruistic and biospheric environmental concerns and environmentally friendly behavioural intentions. In Study two, a new measure of environment-related moral judgment "The Jaan Dilemma" was developed on Rest's Defining Issues Test. The second study examined the role of empathic concern, perspective-taking and moral judgment of self-reported environmentally friendly behaviour after such predictors as socio-demographic variables, moral values and responsibility were controlled in hierarchical regression analysis. The structured questionnaire was also used in Study three for measuring interaction of leisure activities and emotional connectedness with nature to predict an ecological worldview.

The results of the first study suggested that for being more environmentally friendly, it was important to understand how environmental problems were related to one's everyday life and to personal health. Of the egoistic, altruistic and biospheric environmental concerns, the latter ones were more important factors of environmental friendliness. The results of the second study suggested that environmentally friendly behaviour involves an emotional component (empathic concern) and a rational component (moral judgment) of morality that remained significant even after the more conventional predictors (i.e., moral values, responsibility) were taken into account. The actual relationship between empathy felt towards humans and emotional connectedness to nature is an issue that deserves further attention. The results of the third study suggested that having positive emotional experiences connected with nature while visiting nature promotes an ecological worldview, especially in the older age group. In sum, moral values, pro-environmental attitudes and beliefs, empathy, responsibility, higher moral development and positive emotions in nature were related to higher environmental friendliness. Suggestions for further studies and implementations for practice are presented in the discussion.

Tiivistelmä

Useimmat ympäristöongelmat johtuvat ihmisen käyttäytymisestä. On tärkeää lisätä ymmärrystämme siitä, miten ihmiset saataisiin ympäristöystävällisemmiksi?

Väitöskirjan teoreettinen viitekehys perustui oletukseen, että ympäristöystävällisyys kuuluu moraaliin. Väitöskirja koostui kolmesta osatutkimuksesta. Ensimmäinen tutkimus liittyi keskusteluun ympäristöhuolia motivoivista tekijöistä. Pääkysymyksenä oli: miten minäkeskeiset ja epäitsekkäät ympäristöhuolet eroavat toisistaan ja miten nämä huolet suhtautuvat ympäristöystävällisiin käyttäytymisaikomuksiin? Toinen tutkimus kohdistui moraalin eri osatekijöiden (erityisesti moraalisen arvostelukyvyn ja empatian) ja ympäristöystävällisen käyttäytymisen yhteyksiin. Pääkysymyksenä oli: mikä merkitys empatialla ja moraalisen arvostelukyvyn kehitystasolla on ympäristöystävällisessä käyttäytymisessä? Kolmannen tutkimuksen pääkysymys oli: miten tunnesuhde luontoon kytkeytyy ekologiseen maailmankuvaan?

Tutkimusaineistot saatiin kahdesta Viron väestöä edustavasta otoksesta käyttäen Omnibus-aineistonkeruumenetelmää. Tutkimuksessa 1 vastaajilta kysyttiin heidän henkilökohtaisia, ympäristöä koskevia huolenaiheitaan yleensä ja omaan terveyteen liittyviä erityisesti. Itsekeskeisiä, altruistisia ja luontokeskeisiä ympäristöhuolia sekä ympäristöystävällisiä käyttäytymisaikomuksia kartoitettiin vakiintuneilla mittareilla. Tutkimukseen 2 kehiteltiin uusi ympäristöön liittyvän moraalisen arvostelukyvyn mittausväline, Jaanin dilemma, Restin Defining Issues Testin pohjalta. Tutkimus 2 selvitti hierarkkisen regressioanalyysin avulla empaattisen huolen, perspektiivinoton ja moraalisen arvostelukyvyn merkitystä yksilön itse ilmoittaman ympäristöystävällisen käyttäytymisen kannalta, kun taustatekijöiden, moraalisten arvojen ja vastuun vaikutus oli vakioitu. Myös tutkimuksessa 3 käytettiin kyselylomaketta, jolla mitattiin vapaa-ajan viettoa ja tunnesuhdetta luontoon ja selvitettiin miten niiden vuorovaikutus ennustaa ekologista maailmankuvaa.

Ensimmäisen tutkimuksen tulosten mukaan yksilön ympäristöystävällisyyttä selitti se, että hän ymmärsi miten ympäristöongelmat liittyivät hänen arkielämäänsä ja omaan terveyteensä. Minäkeskeisistä, altruistisista ja luontokeskeisistä huolista kaksi viimemainittua olivat tärkeitä ympäristöystävällisyyden kannalta. Tutkimus 2 osoitti, että ympäristöystävällisessä käyttäytymisessä on moraalinen tunnekomponentti (empaattinen huoli) ja moraalinen järkikomponentti (moraalinen arvostelukyky), jotka jäivät merkitseviksi vielä senkin jälkeen, kun tavanomaisemmat selittävät tekijät kuten moraaliset arvot ja vastuu oli tilastollisesti otettu huomioon. Lisätutkimusta ansaitsevaksi kysymykseksi nousi, miten ihmisiin kohdistuva empatia ja tunneyhteys luontoon tarkkaan ottaen liittyvät toisiinsa. Tutkimus 3 viittasi siihen, että luonnossa liikkuessa koetut myönteiset tunne-elämykset kytkeytyvät ekologiseen maailmankuvaan, etenkin vanhimmassa ikäryhmässä. Kaikkiaan ympäristöystävällisyyttä ennustivat moraaliarvot, ympäristöystävälliset asenteet ja käsitykset, empatia, vastuu, kehittynyt moraalinen arvostelukyky ja myönteiset tunnekokemukset luonnossa. Tarkasteluosassa tuodaan esiin jatkotutkimusaiheita ja ehdotuksia tulosten soveltamisesta käytäntöön.

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Helsinki, March 2012
Ann Ojala

Contents

List of original publications

This thesis is based on the following publications:

I Ojala, A. Self-Identified Environmental Issues and Their Relation to Egoistic, Altruistic and Biospheric Environmental Concerns and Behavioral Intentions. Submitted.

II Ojala, A. (in press). The Importance of Different Components of Morality in Environmentally Friendly Behaviour. In K. Helkama, (Ed.), Values, Morality, and Knowledge. Helsinki: Department of Social Research, Helsinki University Press.

III Ojala, A. (2009). The Interaction Between Emotional Connectedness to Nature and Leisure Activities in Predicting Ecological Worldview. Umweltpsychologie, 13, 10-22.

The publications are referred to in the text as Study one, Study two and Study three, accordingly.

Abbreviations

DIT	Defining Issues Test
BI	Behavioural intentions
CFI	Comparative Fit Index
EC	Empathic concern
EC issues	Environmental concern issues
ECs	Environmental concerns (egoistic, altruistic, biospheric)
EF	Environmentally friendly or environmental friendliness
e.g.	exempli gratia
EMS	Environmental Motives Scale
EPRU	Environmental Psychology and Sociology Research Unit
etc.	et cetera
GEC	General environmental concern
HEC	Health-risk related environmental concern
i.e.	id est
IRI	Interpersonal Reactivity Index
NEP	New Environmental Paradigm
NFI	Normed Fit Index
PT	Perspective taking
P-score	Principled moral reasoning
RMSEA	Root Mean Square Error of Approximation
SD	Standard deviation
TLI	Tucker-Lewis Index

1 Introduction

This dissertation is about people and environmental problems, such as ozone depletion, the greenhouse effect, and loss of resources and biodiversity, which have become part of our everyday life. Clean water, air and healthy food are becoming a luxury. Human behaviour is an important source of these problems, and as such, knowledge about human behaviour is crucial. An important question is, how do "ordinary" people develop and construct their strategies to act in an environmentally friendly (EF) manner? Most of us are living in an urban environment and the link between one's everyday behaviour and environmental problems is not directly visible. For example, we do not see how much we waste, because it is taken away, out of our sight. Furthermore, there is a lot of (often contradictory) information about how to be environmentally friendly. In this situation, there is not enough information about how people make their decisions and it is difficult to make everyday decisions concerning environmental protection.

Environmental psychology is a discipline that studies the environment as a context for different behaviours and/or human behavioural consequences for the environment. These environments could be indoor or outdoor environmental settings. There is plenty of research on, for example, working environments, architecture, environmental preferences, home environments, as well as public and private spaces. This part of environmental psychology that uses psychological theories and methods to describe human behaviour and its relation to conservation and environmental protection is called conservation psychology (some authors see conservation psychology as a completely separate field from environmental psychology, see Clayton and Myers, 2009). Conservation psychology is based on values promoting human well-being, and the relationship between humans and the natural world. The roots of conservation psychology are largely based in environmental ethics.

The questions posed in environmental ethics are: Why should we be concerned about the environment? What should we take into account when making decisions? What would be the right thing to do? Translating these questions into psychological ones, they are: What motivates EF behaviour? Why are some people environmentally concerned and some people not? Is care for the environment something different than care for other people? What promotes EF attitudes and behaviour? This study tries to answer some of these questions.

In this dissertation, emphasis is placed on environmental friendliness (EF). EF is defined broadly; it is synonymous to pro-environmentalism and includes all psychological aspects (e.g., attitudes, behaviours, worldview) that are related to improving the quality of environment or at least not harming the environment. The models used are based on affective-cognitive explanations instead of pure cognitive ones. The main theoretical framework of this study is based on the assumption that EF belongs to a moral domain (Kals & Russell, 2001; Kahn, P. H., Jr. 2006). The first study of this dissertation is a continuation of a discussion of self-centred and other-centred motives of environmental concern (Schultz, 2000, De Groot & Steg, 2007). The second study is about the relationship of different components of morality on EF behaviour (with an emphasis on moral judgment and empathy) and the third study of this dissertation is about the connectedness to nature on ecological worldview.

2 Theoretical background

There are several theoretical models that include some aspects of morality to explain EF. As an example, Schwartz's (1970) norm-activation model expanded by Stern (2000) for explaining pro-environmental behaviour has been widely used in recent studies. The norm-activation model was initially intended to explain altruism or helping-behaviour. The crucial point in this model is to recognize when help is needed and help is obligatory. To the recognition of another person's need for help, Stern (2000) added to this model the need of help of the whole nature. Several concepts that are found to be important predictors of environmentally friendly behaviours or attitudes - such as values, personal responsibility, personal moral norms, emotional affinity to nature, moral emotions towards nature degradation —refer to morality.

Many studies of morality have been based on Kohlberg's (1984) tradition. There are also some studies that have found a link between the development of moral judgment and EF. Karpiak and Baril (2008) found a significant association between moral judgment and environmental attitudes. The Neo-Kohlbergians Rest, Bebeau and Volker (1984) proposed a four-component model of morality that could be applied to explain EF decision-making better. In this model, there are four components of morality: moral sensitivity, moral motivation, moral judgment and moral character. Different from Kohlberg's model, which includes only cognitive processes, Rest and colleagues use the component of moral sensitivity, referring to the significance of "awareness of consequences" of Schwartz's (1977) and Hoffman's work on empathy (1981).

The present dissertation research is an attempt to fill some gaps that have remained from previous studies. Addressing these gaps could help develop a broader framework for studying EF from a moral point of view. This dissertation concentrates on the following topics: 1) How do people's concerns differ? Are there differences between self-centred and other-centred motives of environmental concern? 2) What is the role of empathy and moral judgment development in EF behaviour? 3) How is environmental connectedness to nature (affective part) related to an ecological worldview? These questions largely relate to the affective part of environmental friendliness, and the relationship of cognitive and affective aspects of EF.

2.1 Self-interest and other-interest

Stern, Dietz and Kalof (1993) advanced the notion that people who view environmental concern to be important, see the world in fundamentally different way than those who do not deem it important. They proposed that there are three kinds of value orientations that underlie the orientation towards environmentally friendly attitudes and behaviour: self-interest, other-interest (human welfare), and biospheric interest (such as that described and advocated in the writings of "deep ecologists", e.g., Devall, 1988; Naess, 1989).

An egoistic motivation for EF is represented in the theory of reasoned action (Ajzen & Fishbein, 1980) and the theory of planned behaviour (Ajzen & Madden, 1986). These models emphasize cost-benefit rationality in people's behaviour. In these models, self-interest is a predominant motivation for human behaviour. They assume that people are rational beings and in the case one understands the problem, one cooperates, because in

the long run it is good for oneself (e.g., Hardin, 1968; Olson, 1965). Making an example based on these rational models: a person decides to eat less meat, because the production of meat is unsustainable. He/she knows that if everybody in the world would eat as much meat as him/herself, there would be not enough resources left for food. In this case the person can only hope that others are as reasonable as s/he is and act in the same way.

Researchers have expanded previous models by adding the understanding of personal norms or feelings of responsibility in predicting environmentally friendly behavioural intentions. For example, Kaiser & Scheuthle (2003) found that moral norms (as internalized moral rules in terms of responsibility and obligation) were not supplementary predictors of behavioural intentions next to attitudes, subjective norms (normative behavioural beliefs) and perceived behavioural control. When Kaiser (2006) included anticipated guilt feeling ("I would feel guilty if I …" (did not perform certain behaviour)) to the model, the contribution of this affective aspect was significant on environmentally friendly behavioural intentions. Additionally, there was almost a perfect correlation between environmental attitudes and environmental moral norms. They concluded that people's environmental attitudes represent moral and altruistic norms, and self-interest appeared to be significantly less important on environmentally friendly behaviour.

Norms have a central role in Schwartz's (1970) norm-activation model. Norm-activation theory is about normative helping behaviour and is based on the assumption that an actor is aware of the need of helping behaviour, the actor is aware of positive consequences toward the object and the actor ascribes responsibility to himself/herself for helping. The model has three components: awareness of need, awareness of consequences and awareness of responsibility. For Schwartz (1977) altruism is motivated by personal (as opposed to social) norms.

In studies of EF, the norm-activation model is expanded by self-interest and nature-interest (i.e., deep ecologists and the value of nature). The basic ground for people's decisions can be traced back to the self-centred (egoistic), other-centred (altruistic) or nature-centred (biospheric) motivations (see Stern, 2000). First, people who believe environmental changes threaten them personally are egoists (self-interested), and are environmentally friendly if the expected benefits for the individual outweigh the expected costs. Egoists are aware of consequences for oneself and feel responsibility for those consequences. Second, people holding the social-altruistic value orientation take into account the welfare of other human beings, the awareness of consequences for other people and responsibility for changing those consequences. Finally, individuals concerned with nonhuman species or the biosphere hold the biospheric value orientation, as they are aware of the consequences for other species. They would be relatively unconcerned if the negative consequences have only effects on people.

Next, I give a more specific overview about studies relating to self-interest and other-interest effects on EF. This is divided in the subchapters of values and attitudes.

2.1.1 Values

Values are defined as the general human tendencies and motivational goals that are the basis of all kinds of human attitudes and behaviour (e.g., Schwartz, 1992). Schwartz's (1992) theory of values is used worldwide. In this theory, single value items (e.g., unity with nature, social justice, equality, etc.) form ten value types (e.g., universalism, achievement, power). These ten value types form two diametrically opposed dimensions:

openness to change versus conservation and self-enhancement versus self-transcendence. The openness to change versus conservation is about people's motivation to either follow their personal intellectual and emotional interests (i.e., self-direction, stimulation and hedonism) or to follow the certainty provided by relationships with close others, institutions and traditions (i.e., tradition, conformity and security). The dimension self-enhancement versus self-transcendent relates to people's motivation to transcend selfish concerns and promote the welfare of others (i.e., benevolence, universalism) or to enhance their own personal interests (i.e., power, achievement). See Figure 1.

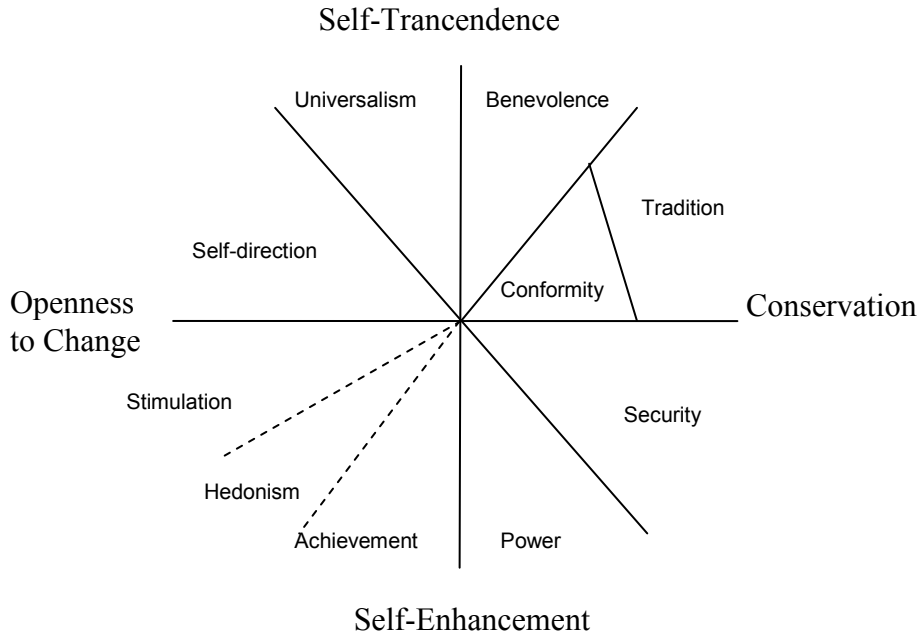

Figure 1 *Schwartz's (1992) Value Model.*

In their brief inventory of values, Stern et al. (1998) divided the value items within universalism into two new categories of values: the altruistic values (e.g., social justice) and the biospheric values (e.g., unity with nature value). They claimed that it is important to make a difference between human-centred (e.g., social justice) and environment- or bio-centred (e.g., protecting the environment) values that motivate pro-environmental attitudes and behaviour. To make this distinction they also added an extra value item to the biospheric values called "respecting the earth" to the other two values "unity with nature" and "protecting the environment" from the original Schwartz's values inventory.

There are studies showing that the dimension self-transcendence versus self-enhancement is especially meaningful for explaining other constructs of pro-environmentalism. The studies that include measures of values (e.g., a brief inventory of values by Stern et al. 1998) report that self-transcendence values are positively related to the measures of pro-environmental beliefs, attitudes and behaviour (see DeGroot & Steg 2008; Schultz et al. 2005; Hansla et al. 2008). In line with these findings, Bardi and Schwartz (2003) found that people placing high priority on universalism were reported by

their friends to use environmentally friendly products. However, in a study on the Hiiumaa island in Estonia, Raudsepp (2001) found that traditional values were an even stronger predictor of EF behaviour than universalism, as environmental protection was part of the traditional way of life of the island. The self-enhancement values show an ambiguous pattern of relations. In general, power and achievement are negatively or not significantly related to the measures of pro-environmentalism (see Stern et al. 1995; DeGroot & Steg, 2008) whereas they relate positively to the egoistic environmental concerns that supports self-interests (Schultz et al 2005; Hansla et al 2008). Thus, universalism values, in general, and biospheric values, in particular, seem to predict EF behaviour. By contrast, self-enhancement or egoistic values are negatively related to environmental friendliness (e.g. Hansla, Gamble, Juliusson & Gärling, 2008; Schultz, et al. 2005).

2.1.2 Pro-environmental attitudes

The definition of pro-environmental attitudes can be broad and sometimes confusing because pro-environmental attitudes are often also called values, beliefs or single attitudes (see Dunlap & Jones 2002). The easiest way to differentiate attitudes and values is that values are, on the abstract level, general constructs that are the basis of all human behaviour. Attitudes, on the other hand, are object-based evaluations. They are more concrete. Hence, in environmental psychology sometimes the values of nature (e.g., aesthetic, utilization, symbolic) are called values, as are the beliefs that separate people as ecocentrists and anthropocentrists. Obviously, these categories are larger than just simple evaluation (e.g., this park is beautiful). In this study, I make the distinction based on general attitude theory that divides attitudes into affective and cognitive component. The cognitive component of attitudes can be the belief system. People's belief systems can be driven from their understanding of the relationship of human and nature. The affective part of environmental attitudes is about the emotions related to the environment.

2.1.2.1 Beliefs

A belief system or a worldview represents a complex understanding about the environment and human nature relationship, which is a cognitive aspect of environmental attitudes (Dunlap et al, 2000; Stern, 2000; Heidmets & Raudsepp, 2001). In many studies, people are distinguished as anthropocentrists and ecocentrists (see Thompson & Barton, 1994; Grendstad & Wollebaek, 1998; Kortenkamp & Moore, 2001). This means that the environmental attitudes people hold are based either on valuing people or attributing intrinsic values to nature, referred to the land ethic (Stern & Dietz, 1994). These general underlying factors are related to more specific environmental attitudes. For example, anthropocentrism refers to the utilization of forest but biocentric value orientations refer to the worth of forest regardless its usefulness for humans (McFarlane & Boxall, 2000).

The ecological worldview is considered to be an important indicator for showing people's beliefs toward ecosystem. The main idea behind the division of anthropo-ecocentrism is whether humans are an integral part of nature or alienated from it (Dunlap, Van Liere, Merting & Howell, 1992; Dunlap, Van Liere, Merting & Jones, 2000). A person needs to think that the world's ecosystems are fragile before s/he can feel

environmental concern or act consciously in an environmentally friendly way (Dunlap & Jones, 2002).

The best-known measure of an environmental belief system (an environmental worldview) is the New Environmental Paradigm (NEP) scale. The revised NEP scale (Dunlap et al., 2000) consists of fifteen items and has five sub-scales: limits to growth, antianthropocentrism, the fragility of nature's balance, rejection of exemptionalism, and the possibility of an eco-crisis. The authors of the NEP scale use it as an internally consistent composite scale but often the scale is factor-analyzed for use in different cultural contexts, and/or just one of the subscales is chosen to be used depending on the research question and research interests. Dunlap and Jones (2002) proposed that if two or more distinct dimensions emerge which are not highly correlated with one another, they could be used as separate variables. There are studies showing that the ecological worldview measured by the NEP scale is associated with more specific beliefs, norms, intentions, and behaviours towards the natural environment (Stern, Dietz & Guagnano, 1995). The NEP scale has been used to predict, together with other variables, self-reported and observed behaviours (Schultz & Zelezny, 1998; Poortinga, Steg & Vlek, 2004), concern about global warming (Poortinga et al., 2004), and participation in the green electricity program (Clark, Kotchen & Moore, 2003). The NEP scale has also been used to predict environmental activism (e.g., participation in environmental demonstrations, nonactivism behaviours in the public sphere (e.g., voting, donating money), private-sphere environmental behaviour (e.g., travel choices, consumption choices), and other environmentally significant behaviours (e.g., influencing the actions of organizations to which they belong) (Stern, 2000). There is also evidence that endorsement of the NEP is related to emotional connectedness to nature (Mayer & Mc Pherson Franz, 2004; Raudsepp, 2005).

2.1.2.2 Affective aspect of pro-environmental attitudes

Schultz, Shriver, Tabanico and Khazian (2004) define environmental concern as "the affect (i.e., worry) associated with beliefs about environmental problems" (p. 31). Schultz (2000) proposed that people who have similar values can still have different objects of environmental concern. Similarly to Stern & Dietz (1994), Schultz (2000) was interested in different motives behind environmental concern and asserts that they can be based on valued objects such as oneself, other people or other living things. A biospherically concerned person should be more interested in varied and broad issues of environmental problems, an altruistically concerned person should be more concerned with problems related to other humans, whereas an egoistically concerned person would concentrate on the direct dangers for him/herself, that is, local problems. Additionally, a person who is more biospherically concerned will include nature more into his/her cognitive representation of self, whereas a person less biospherically concerned includes nature less into his/her cognitive representation of self (Schultz, 2000).

The scale that measures these environmental concerns is called the Environmental Motives Scale (EMS) and has been validated among samples of college students (Schultz et al., 2005), as well as in some country-level representative samples (e.g., Hansla et al., 2008). Some studies based on this instrument for measuring environmental concerns indicate that not all three environmental concerns are positively related to other measures of pro-environmentalism.

Studies of how environmental concerns are related to other measures of pro-environmentalism indicate that biospheric concerns are positively related to EF behaviour and self-transcendence values, and negatively to self-enhancement values accordingly (Schultz 2000, Schultz 2001). Environmental activism is correlated with all environmental concerns positively in a study by Steg, De Groot, Dreijerink, Abrahamse & Siero (2011). However, different EF behaviours (e.g., recycling, walking instead of using a car) are positively related to biospheric environmental concerns only in one another study (see Schultz, 2001). For altruistic concerns, the findings are not consistent, although they generally relate positively to self-transcendence and negatively (or sometimes not at all) to self-enhancement values. Egoistic environmental concerns are positively correlated to self-enhancement values and negatively to self-transcendence values (Schultz et al. 2005, Hansla et al. 2008) and negatively to EF behaviour (Schultz 2000, Schultz 2001). While it seems that biospheric concerns are a stable predictor of different EF behaviours, the correlations for egoistic and altruistic concerns are more situationally dependent on the target behaviour or even cultural groups (Milfont, Duckitt and Cameron, 2006).

Schultz et al. (2005) suggest that the reason for these conflicting results may be rooted in how environmental problems are presented to people. He points out that self-centred concerns are not often included in discussions of environmental friendliness. In addition, people may not always realize the connection between their behaviour and environmental problems. According to Schultz and colleagues, this is evident when people rate general environmental concerns to be more important than some local environmental issues.

2.2 Components of morality and environmental friendliness

Environmental friendliness belongs to the moral domain (Kahn, 2006; Kaiser & Shimoda, 1999). Biospheric values (e.g., protecting the environment, unity with nature; Stern, 2000) are part of a larger set of universalism values in Schwartz's (1992) influential model of values. Universalism values are obviously moral values. When people are asked to select moral values from a number of values, universalism values are among those chosen most often (Schwartz, 2007; Vauclair, 2009). Universalism values predict moral judgment development (Helkama, et al. 2003; Myyry, Juujärvi & Pesso, 2010) and proclivity to feelings of guilt (Silfver, Helkama, Lönnqvist & Verkasalo, 2008).

This study attempts to examine environmentally friendly behaviour as moral action starting from cognitive-developmental models (Kohlberg & Candee, 1984; Rest, 1986). What makes the cognitive-developmental approach unique among the approaches to environmental action is its emphasis on the role of moral understanding. All main approaches to environmentally friendly behaviour accord an important role to norms (e.g., Kaiser, Ranney, Hartig & Bowler, 1999; Stern, 2000; Bamberg & Möser, 2007) and there is a significant amount of research showing the importance of norms in EF behaviour (De Groot and Steg, 2009; Gärling, Fujii, Gärling and Jakobsson, 2003; Kaiser, et al., 1999).

The cognitive-developmental approach focuses on qualitative differences in the justifications of moral norms. According to Kohlberg (1984), there are three levels of moral reasoning that a person can develop throughout his/her life: a preconventional, a conventional and a postconventional level. Each level consists of two stages. The preconventional level is about self-interest. The very first stage of preconventional morality is based on punishment and obedience. A child in this level tries to avoid

punishment. Being "good" is being obedient to the authority. At stage two "good" is based on the notion that everybody has their own interests, including oneself. People can make short-term deals exchanging favour to favour. Adult people develop at least to this stage. The conventional morality is based on the other-interest. On this stage "good" is somebody who lives according to the expectations of the family or community members. You have to be nice and you will make friends. Stage four concentrates on maintaining the social order. In this stage people are trying to establish some scheme of cooperation for society in general. Society can be organized by formal, public, categorical law and by secondary institutions. The postconventional morality is based on the general rules of morality. Stage five is about social contract and individual rights. A good society is a social contract into which people freely enter to work toward the benefit of all. The stage six is about visions of an ideal society. This stage is theoretical and it is usually not coded in field studies (Colby & Kohlberg, 1987).

These kinds of justifications can also be made for EF action. Take the moral obligation, for instance, to buy an energy-efficient new washing machine or, more generally, protect the environment. Why is it a moral obligation? Drawing on Kohlberg's stages, we could arrange the justifications for this question in terms of their cognitive sophistication. For instance, the statement that "It is in my economic interest in the long run" could be considered to be in the second stage, that is the instrumental perspective, while "Estonians are ecologically oriented people, and as a good Estonian it is my duty to behave in an environmentally friendly way" would be stage three, the in-group member perspective. "If we want to keep our country and its natural environment as a good place to live for the future generations, then it is everyone's obligation to save energy as much as we can" would be a stage four justification, the good citizen perspective and the "Right to a clean environment is a universal human right and it is my duty to promote that right as well as I can" would be stage five, the postconventional civil and human rights perspective. These hypothetical examples illustrate developmental steps that individuals take into adulthood, at least up to age 50. The major determinants of moral judgment development are education, role-taking propensity and role-taking opportunities (Armon & Dawson, 1997; Helkama, 2004).

In the model of Kohlberg and Candee (1984) moral action is a function of judgment stage and responsibility (or moral obligation).

2.2.1 Responsibility

Many models of environmental friendliness have found responsibility to be an important factor of environmentally friendly behaviour.

While Kohlberg believed that the moral force in personality is cognitive, he added responsibility to his judgment-action model (Kohlberg & Candee, 1984) as a bridge from moral judgment to moral action. Responsibility refers to a consistency between self and action, a strict personal obligation (Blasi, 1983). Although judgments of responsibility are by definition cognitive, they are largely determined by feelings of responsibility and guilt (e.g., Berndsen & Manstead, 2007; Kaiser & Shimoda 1999). Responsibility implies also causal influence; I can be responsible for the quality of air only if I can influence it by my actions. Responsibility and freedom of choice are conceptually associated in the sense that where there is no freedom of choice, there is no responsibility. Kaiser and Shimoda (1999) used responsibility as a key concept in explaining ecological behaviour in a sample of

members of Swiss transportation associations. The feeling of personal obligation toward the environment (i.e., the responsibility feeling) has been found to be an important determinant of EF behavioural intentions (Kaiser, et al., 1999) and EF behaviour (Stern, 2000).

2.2.2 Rest's Four Components of Morality

Rest's (1986) four component model of moral behaviour has been widely applied to various topics (Thoma, 2006), including professional ethics (Myyry, 2003; Myyry, Juujärvi & Pesso, 2010; Rest & Narváez, 1994). The components, in addition to moral judgment development (component two), involve moral sensitivity (component one), moral motivation (component three), and moral character (component four). These four components do not represent any temporal order in moral behaviour. The model is rather a logical analysis of what it takes to behave morally.

2.2.2.1 Moral sensitivity

The first component, moral sensitivity, refers to the interpretation of situations and an awareness of how our actions affect other people. It involves empathy and social perspective-taking skills (Bebeau, 2002). In applying Rest's model to environmental friendliness, we have to define moral sensitivity, more broadly, as an encompassing awareness of the consequences of our actions not only on people but also on nature. In misusing water, a person may think of diminishing a common natural resource, which also affects other people, other living beings and nature in general.

One straightforward way of measuring moral sensitivity is in terms of dispositional empathy. A widely used instrument to measure empathy is Davis's (1996) IRI, the Interpersonal Reactivity Index, which divides empathy into four dimensions. Two are relevant in the present context. Empathic concern (EC) is the tendency to experience feelings of sympathy and compassion for needs of other people. Perspective taking (PT) is the tendency to take others' perspectives into account in everyday life.

Myyry, Juujärvi and Pesso (2010) used the EC and PT dimensions to measure moral sensitivity. They found that both were related to postconventional reasoning (component two), and universalism and benevolence values (component three). In a hierarchical regression analysis, both perspective taking and universalism independently predicted postconventional reasoning, which suggests that they are not reducible to one another.

Schultz (2000) suggested that empathic concern towards living beings, such as plants, animals and people, is one important base of environmental friendliness. In an experimental study, perspective taking combined with images of wild animals harmed by nature caused an increase in biospheric environmental concern; that is, harm to animals aroused concern about the environment, a finding that was replicated by Sevillano, Aragones and Schultz (2007). Schultz (2001) reported positive association of perspective taking and biospheric concern, but Sevillano et al. (2007) failed to replicate it. In another experimental study by Berenguer (2007), perspective taking combined with an image of a dead oily bird and cut trees caused an increase of environmental attitudes and willingness to behave pro-environmentally. In another experimental study (Berenguer, 2010),

participants who were led to empathize with an animal or a human being produced a higher number of ecocentric or anthropocentric moral arguments in response to ecological dilemmas.

These studies show that empathy is useful in tapping moral sensitivity. They also suggest that empathy related to human beings could be generalized to other living beings. However, the findings are not entirely consistent. In this study, the two dimensions of empathy are used as the measures of moral sensitivity towards the environment.

2.2.2.2 Moral judgment

The second component, moral judgment, refers not only to the judgment of an act as right or wrong, but also to the justification a person gives to an act or to a norm. Moral arguments advanced, for instance, to justify why we should or should not sort our waste could be arranged along a scale of developmental stages. These stages range from preconventional (egocentric point of view) to postconventional (prior-to-society perspective).

Rest (1986) used Kohlberg's work (1984) to develop his measure of understanding and preference of moral arguments in relation to a growing differentiation and integration in the understanding of fairness. This test is called the Defining Issues Test (DIT) and consists of six different moral dilemmas. The main index of the DIT is a P-score, which is based on the relative importance a respondent gives to items representing post-conventional or principled moral reasoning. The P score is not subject to social desirability. While people are able to "fake low", they are not able to "fake high" on the DIT (Rest & Narváez 1994, p. 18).

The Neo-Kohlbergian approach (e.g., Rest et al., 1999) has abandoned Kohlberg's (1984) assumption that an individual's moral judgment is a structured whole in the sense that its developmental level is the same irrespective of the issue at stake, and now uses situation-specific schemas (e.g., postconventional schema). It is, therefore, appropriate to construct a measure to specifically gauge the development of moral reasoning related to the environment. This was one of the goals of the present study. Rest's DIT was used as a model for devising a short measure of the developmental level of environment-related moral reasoning, which would be suitable for large-scale survey studies.

There is little published research on moral judgment development and environmental issues. In one rare study, Karpiak and Baril (2008) related the principled morality score of college students on the DIT to their environmental attitudes measured by Thompson and Barton's (1994) scale. Principled morality was also positively correlated with ecocentrism (i.e., the intrinsic importance of nature), negatively related to environmental apathy and unrelated to anthropocentrism (i.e., the belief that nature is an important resource for human well-being). I have found no studies addressing the relationship between moral judgment development and environmentally friendly action.

2.2.2.3 Moral motivation

The third component in four-component model of morality, moral motivation, refers to giving moral values priority over other values. A person could see the moral relevance of

sorting waste for common good (component one) and could advance sophisticated arguments for it being the right thing to do (component two), while still preferring one's own wealth (non-moral power value) over preserving the environment.

The research cited above shows that the Schwartz's (1992) universalism and benevolence values relate to component one, moral sensitivity and universalism (and to a lesser extent, benevolence) predicts component two, moral judgment.

2.2.2.3 Moral character

Rest's fourth component is moral character. It involves ego strength, perseverance, and courage, to condense into one word, willpower. This is actually a non-moral component. An example of the necessity of this component would be a low-energy person who passes the tests of sensitivity, judgment and value priority with regard to sorting waste but dumps all waste together into the garbage because he lacks willpower (Rest & Narváez, 1994).

Note that Rest's model does not include responsibility in any explicit sense. In this dissertation an attempt is made to see whether responsibility, in the sense it has been used in previous research (Kaiser & Shimoda, 1999; Kohlberg & Candee, 1984), would add explanatory power to the prediction of environmentally friendly behaviour or whether it could be reduced to the other components.

2.3 Connectedness to nature

2.3.1 Emotional connectedness to nature

The growing distance of nature in human lives is seen as one important cause of environmental problems. The biophilia hypothesis (Wilson, 1984) defines the human-nature bond as a natural need of humans. It proposes that having a proper bond keeps humans healthy and promotes deeper understanding of the nature-human relationship. Ecopsychologists are concerned that people are losing their natural connection with nature and offer this as one of the reasons why there are so many environmental problems (Roszak, Gomes & Kanner, 1995).

The shift from purely cognitive explanations towards more affective or empathy-based explanations for the causes of EF have raised a need to study human-nature bond and its development. The human-nature bond in the literature has several names and is measured in slightly different ways. These are, for example, affinity to nature (Kals, Schumacher & Montada, 1999; Hinds & Sparks, 2008), emotional connectedness to nature (Mayer & McPherson Franz, 2004; Raudsepp, 2005), feeling oneness with nature (Williams & Harvey, 2001) and feeling empathy toward nature (Schultz, 2000). Recently the concept of environmental identity has often been used to describe the human-nature relationship. Environmental identity refers to nature as an important part of self. Connectedness to nature has been found to be an important predictor of environmentally friendly attitudes and behaviours.

In empirical studies, emotional affinity can have different aspects such as a love of nature, oneness with nature, feelings of freedom and feelings of safety (Kals et al., 1999). Hartig, Kaiser and Strumse (2007) used a part of Thompson and Barton's (1994) ecocentrism scale as a measure of psychological restoration in nature. The same scale was used by Hinds and Sparks (2008) to measure an affective connection to nature. Example of scale items that refer to positive emotions experienced in nature are: "I need time in nature to be happy"; "being out in nature is a great stress reducer for me". Environmental identity (Clayton, 2003) in turn, defined as a construct that includes the feeling of oneself as being a part of a larger natural community ("engaging in environmental behaviours is important to me"), but also the understanding of the importance of the social community ("I have a lot in common with environmentalists as a group") (Clayton, 2003). A different kind of environmental identity measure was developed by Tyrväinen, Silvennoinen, Korpela and Ylen (2007). Using their Urban-nature orientedness scale, respondents can be divided into groups based on the importance of urban or green places for them.

The empirical results show that positive emotions toward nature have an important role in restorative experiences (Hartig, Kaiser & Bowler, 2001; Korpela, Hartig, Kaiser & Fuhrer, 2001) and, in turn, psychological restoration in nature has an effect on pro-environmental behaviour (Hartig, Kaiser & Strumse, 2007). Positive emotions toward nature have also been shown to predict personal environmental concern and pro-environmental behaviour (Kals et al., 1999; Raudsepp, 2005; Hartig et al., 2007).

2.3.2 Outdoor experiences and environmental friendliness

It seems that the possibility to have personal experiences of nature have great importance in developing higher emotional connectedness. Chawla (1998) describes how childhood outdoor experiences (with parents or with children groups) or having frequent contact with a specific place in nature (Tanner, 1980; Palmer, 1993) are among the reasons people give to explain their choice to work on environmental issues and/or to have a greater environmental concern. Kals et al. (1999) found that the present and past frequency of time spent in nature (alone or with significant others) predicted emotional affinity. Further, Mayer and Mc Pherson Franz (2004) found significant correlations between time spent in nature and perceived connection with nature. Below time spent in nature is referred to as an objective connectedness to nature.

There are a variety of reasons why people decide to spend their leisure time outdoors. They may want to restore their psychological or physiological well-being, perform some social activities, or simply enjoy nature. There is evidence that the level of environmental concern depends on the type of leisure time activity, for example, photographing nature and wildlife watching are connected to a higher level of environmental concern, whereas camping, boating and hiking are connected to a lower level of environmental concern (Teisl & O'Brien, 2003). Nord, Luloff and Bridger (1998) found that people who engaged in appreciative, rather than consumptive or motor-based, outdoor recreation were more likely to behave pro-environmentally. The existing literature suggests that outdoor activities are important predictors of environmental concern and that environmental concern is higher if these activities imply nature admiration.

2.4 Environmentally friendly behaviour

Environmentally friendly behaviour is synonymous to proenvironmental, environmental, or ecological behaviour used in the literature of environmental psychology. EF behaviour is something that is significantly related to the quality of the environment (Steg & Vlek, 2009). Usually it is measured by self-reports or sometimes as behavioural intentions rather than actual behaviour.

Stern (2000) distinguishes between four types of EF behaviour, which are environmental activism, non-activist public-sphere behaviours, behaviour in organizations and private-sphere behaviours. People can participate in environmental organizations (environmental activism behaviour), they may vote for politicians or parties that support environmental protection and sustainability, or be willing to pay taxes for supporting proenvironmentalism (non-activist public-sphere behaviour). They may try to influence decisions related to the proenvironmentalism in the organizations they belong (behaviour in organizations) or support consumerism, green consumerism, and make every-day environmentally friendly decisions (private-sphere behaviours). Recycling, energy use, water-use habits, use of chemicals in household could be some examples of private-sphere EF behaviours (Kaiser, Wölfing and Fuhrer, 2009).

EF behaviour intentions show a willingness to engage in certain environmentally friendly behaviours and are strongly correlated to actual behaviour (e.g., Kaiser & Scheutle, 2003; Kaiser, 2006). There are several studies investigating the relationship between environmentally friendly behaviour or EF behaviour intentions and other psychological aspects of environmental friendliness. In this text, the key findings of previous studies between EF behaviour and the construct under discussion and are integrated into each paragraph, respectively.

2.5 Socio-demographic variables

In studying environmental friendliness, it is important to take into account socio-demographic variables. However, their relative importance is generally weak and partly contradictory (Fransson & Gärling, 1999). Studies have typically found that younger people and women are more environmentally concerned (Dietz, Kalof & Stern, 2002), but some studies have indicated that older people tend to behave in a more environmentally friendly way (Raudsepp, 2001; Shen & Saijo, 2008). It is possible that the results are dependent on culture and/or are time sensitive (e.g. Milfont, Duckitt and Cameron, 2006).

Of the components of morality, women tend to score higher on the emotional empathy measures of sensitivity (Myyry & Helkama 2001, 2007) but not on perspective-taking (Myyry & Helkama, 2007), on universalism values (Schwartz & Rubel, 2006) and on the DIT (Walker, 1991). Older people describe themselves as more sensitive on empathy (Myyry & Helkama, 2007), and universalism increases with age (Verkasalo, Lönnqvist, Lipsanen & Helkama, 2009), as does moral judgment. Moral judgment (the DIT scores) increases with level of education (Rest, 1979, p. 110) and it is noted that special training in professional ethics seems to develop higher scores in moral sensitivity (Myyry & Helkama, 2002). In Van Oudenhoven, De Raad, Carmona, and Van der Linden study (as cited in Allik, Massoudi, Realo & Rossier, 2012), in four European countries, national cultures had more impact on intersubjective moral virtues than religion or gender. The

national cultures can also have different value scores in the same country (Realo & Allik, 1999).

3 Aims of the study

The starting point of this dissertation was to combine current knowledge of morality and environmental friendliness. There are several empirical results that point to that direction, but also raise some additional questions that need clarification. Firstly, there is empirical evidence that EF attitudes, beliefs and responsibility are positively related. However, egoistic environmental concerns show a mixed pattern. The attempt in this research was to clarify the role of egoistic environmental concerns. Secondly, moral values (universalism values), empathy and moral judgment have also been found to be positively related. What is the role of empathy and moral judgment in EF behaviour? Thirdly, connectedness to nature is one aspect that is related to higher EF attitudes and belief system. However, the relationship between actual leisure time spent in nature and felt emotional connectedness to nature remained unclear. Does the actual time spent in nature, accompanied with emotional connectedness to nature, raise ecological worldview? The next figure represents the setting of this study, where the full arrows show demonstrated relationships from previous studies and dashed arrows show the questions of this study.

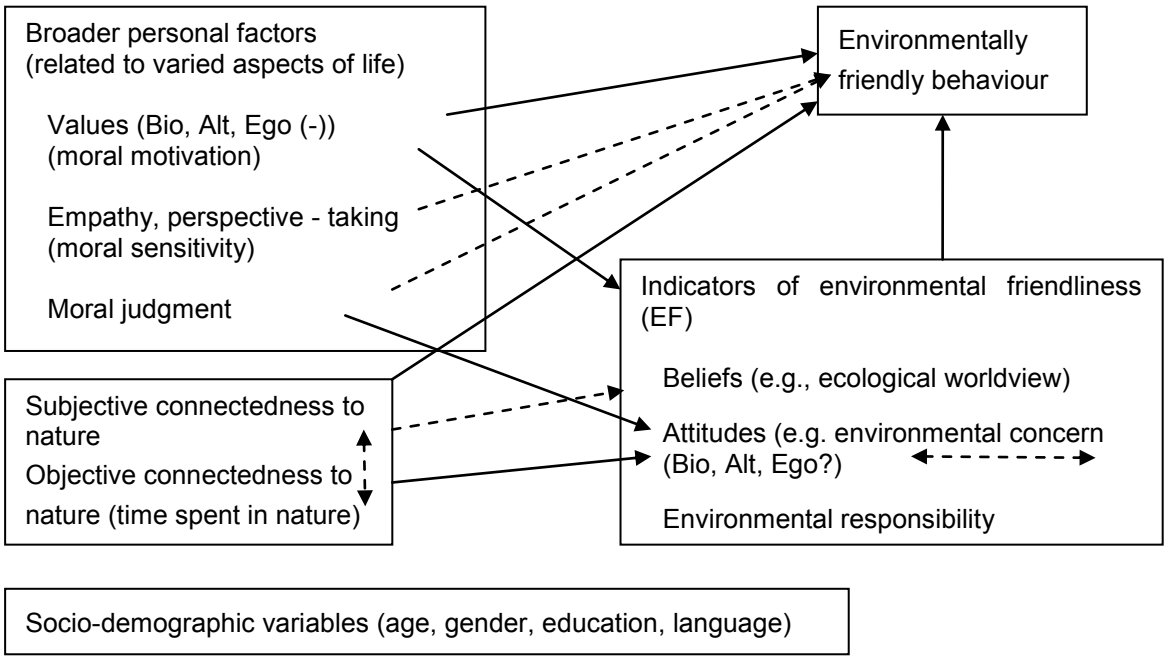

Figure 2 *Illustrative model of relationships between components of this study.*

Environmental friendliness is closely related to morality, as shown by the findings on the association of EF with morally relevant variables. Taking this into account, there are three main goals in this study. First, this study sought to clarify the importance of self-centred and other-centred motives of environmental friendliness. Second, it aimed to study the importance of different components of morality using the cognitive-developmental models

as a starting point. And third, this study sought to study the role of previous experience and connectedness to nature in one cognitive aspect of EF, ecological worldview.

Study one

There is enough data to say that environmental attitudes about sustainability and preservation are positively related. However, there is mixed evidence in regards to self-centred and other-centred environmental concern. Egoistic motivation (values) is negatively related to environmental friendliness; egoistic concerns and environmental friendliness also often share a negative or non-significant relationship. However, the starting point of this study is different. Usually, researchers predefine environmental issues and respondents evaluate their importance or the positive and negative feelings they have about these issues. It is also possible to reverse the question: What are the environmental issues people are concerned about? Following the discussion of self-interest, do people list different environmental problems when the question is directly related to one's health (self-interest) and when it is about general concern (all possible motives)? Further, what are the roles of different objects of concern for these environmental issues? Different environmental issues should have varying degrees of the three ECs and these should be visible on an individual level. The main hypotheses of the study were:

a) The first part of this study was exploratory; the objective was to identify participants' EC issues, both general and personal health-related. The emphasis was on people's own perspective. It was expected that the content of self-related issues are different from general concern issues. The self-related environmental concern should be concrete and more concentrated to local problems. It was also proposed that self-related environmental concern is not well represented in people's minds and this is one reason why there are no correlations between egoistic ECs and other measures of environmental friendliness (Schultz et al. 2005).
b) The second part of this study presented an attempt to combine qualitative and quantitative materials. This method was expected to increase the external validity of existing research by showing converging results between qualitative and quantitative data, and will complement available findings. The hypotheses were: (1) EC issues are differently related to the amount of egoistic, altruistic or biospheric ECs held by participants. It was expected that respondents' issues about the immediate environment would be related to a higher egoistic ECs, more egoistic concerns would be related to self-interest and biospheric and altruistic ECs would be more represented in general concern issues (e.g., problems with the decrease of species or natures condition in the whole world); and (2) Environmentally friendly behavioural intentions are related to the corresponding environmental concern issues (e.g., problems with water are related with everyday pro-environmental behaviour).

Study two

Attitudinal and behavioural indicators of EF have been predicted by variables measuring moral sensitivity, moral judgment development, moral motivation and moral responsibility. Evidence is weakest for the role of moral judgment development, which is

one focus of this study. The empirical support for moral sensitivity has also not been very strong. Measures of moral judgment and moral sensitivity differ from value and responsibility measures used in previous EF behaviour studies, in that they are not directly linked conceptually to environmental friendliness. Moral judgment development refers to the ability to reason about moral issues, including environmental issues, in a sophisticated way and a preference of high-level arguments over low-level ones. Moral sensitivity refers to the proclivity to interpret situations from other people's points of view and identify with their emotions. Nature or the environment is not even mentioned in the items measuring these variables.

The main hypothesis of study two was:

a) Moral judgment and moral sensitivity are important predictors of EF behaviour and their importance is not reducible to other components of morality (motivation (biospheric and altruistic values) and responsibility).

Study three

Study three focused on the interaction between emotional connectedness to nature and leisure activities in predicting ecological worldview. The ecological worldview is a belief system about humans' relation to environmental problems— that is, can humans influence the ecosystem? Ecocentrism (opposite to anthropocentrism) claims that humans can and have a role in current environmental problems. Are positive experiences related to this belief? Previous studies suggest that emotional affinity for, and positive emotional experiences in, nature are positively related to measures of pro-environmentalism. Positive emotional experiences in nature promote environmental concern and pro-environmental behaviour (e.g., Kals et al., 1999; Hartig et al., 2007). These studies also suggest that outdoor activities involving appreciation or admiration of nature increase environmental friendliness (Teisl & O'Brien, 2003; Nord et al., 1998). The goal of this study is to examine the question whether emotional connectedness to nature can moderate the relationship between visiting nature and the individual's ecological worldview.

In study three, it was hypothesized that:

a) Emotional connectedness to nature moderates the relation between visiting nature and ecological worldview.
b) If visiting nature is accompanied by emotional connectedness to nature, then this emotional connectedness to nature serves as a motivator to develop a more ecological belief system. This means that visiting nature, in general, is related to ecological worldview, but this relationship is stronger for individuals who have higher level of positive emotions to nature.

In sum, the research questions guiding this dissertation research were:

1. What is the difference between self-centred and general environmental concern issues? (Study one)
2. Is it possible to differentiate egoistic, altruistic and biospheric environmental concerns (affective aspect of environmental attitudes) directed to general and self-centred environmental concern issues? (Study one)
3. Assuming that environmental friendliness belongs to a moral domain, and that values (biospheric, altruistic) and environmental responsibility are important

predictors of EF behaviour, what is the contribution of moral judgment and moral sensitivity in explaining EF behaviour? (Study two)

4. How is the emotional connectedness to nature (affective aspect) related to visiting nature and an individual's ecological worldview (cognitive aspect)? More precisely, does emotional connectedness to nature moderate the relationship between visiting nature and an individual's ecological worldview? (Study three)

4 Methods

4.1 Participants and procedure

The whole study is based on two representative samples of Estonian population. The Environmental Psychology Research Unit at Tallinn University made two structured questionnaires called The Environment and Us (Study one, see Appendixes 1 and 3 for the questionnaire in English and Estonian) and Me, Nature and Forest (Studies two and three, see Appendixes 2 and 4). These surveys were conducted by the polling firm EMOR (Study one) and Factum Ariko (Studies two and three) using the Omnibus data collection method. The questionnaire was administered to Estonian- and Russian-speaking Estonian inhabitants by an interviewer who visited respondents in their homes and collected the questionnaires one or two weeks later after making sure that they were filled out. Both questionnaires had around 300 questions and only part of this data is used in this study. Several pilot studies were launched before the main studies. I am personally responsible for translating and developing the following measurement instruments: The modified Environmental Motives Scale (Schultz, 2000), the shortened Interpersonal Reactivity Index (IRI) (Davis, 1983), The Jaan dilemma (developed on the basis of Defining Issues Test (Rest, 1979, 1986) and the compound measure of sense of responsibility.

The response rate in study one was 83 per cent; 985 questionnaires are used in the analysis. The age of respondents ranged from 14 to 80 years (mean age 42.62) and 56 per cent of respondents were women.

Studies two and three were based on a representative random sample of the Estonian adult population between 15-75 years old (N=1000, mean age 42.2, 61.5% women). The general response rate was 76 per cent. The main languages spoken at home were Estonian (71% of the respondents) and Russian (25%). The sample distribution for most socio-demographic variables was almost identical with the distribution of the general population of Estonia; only the proportion of women was somewhat higher in the sample. In study two, 22 respondents were excluded based on their inconsistent answers to the moral dilemma (respondents who ranked previously low-rated items among the most important). It should be noted that many respondents were also not included in the regression analysis because they failed to answer the environment-related moral dilemma. I used only these cases in the analysis where all dilemma questions were completed.

4.2 Measures

4.2.1 Environmental attitudes

4.2.1.1 Issues of environmental concern

To identify the issues of environmental concern, two questions were presented to the respondents: "What concerns you most about the environment?" for the general environmental concern (GEC) and "In your opinion, what in the environment could pose a risk to your health?" for the health-risk related environmental concern (HEC). The ATLAS.ti 6.0 program was used for the content analysis. See Appendix 1 for questionnaire.

The responses to these open questions were mainly in the form of a word, phrase or sometimes a list of phrases about different environmental concern issues (e.g., dirtiness of water, too many cars, climate change, people do not care about the environment). In only a few cases was the response a whole sentence. Each answer was coded according to its content. Particular attention was paid to the presence of thematic words in the responses. The basic unit of coding, here called a quotation, was every meaningful word (e.g., trash) or a meaningful phrase (e.g., a lot of trash everywhere). If the respondent referred to many things in one sentence (e.g., I am concerned that people throw trash everywhere and that children are not taught to take care of the environment), the sentence was separated into two units (e.g., trash and carelessness). The compound phrases were divided into separate descriptions and synonyms combined. The basic code units were then combined into code families, that is, issues. The basis of grouping was kept very simple. For example, the issue of forest in GEC includes problems with forests (e.g., forest economy, cutting too much forest), but in case a respondent was worried about forests being full of garbage, the responses were coded under the issue of garbage, because the main issue was not the forest, but the garbage. One limitation in the data was that it was often not possible to identify the real reason for mentioning a problem, for example, "too much traffic" could mean that the respondent was disturbed by the noise of cars, or that too many cars directly influence the air quality. This is why a separate group of transportation was created.

4.2.1.2 Biospheric, altruistic and egoistic environmental concerns

The modified Environmental Motives Scale (EMS) was used to measure environmental concerns (Schultz, 2000). To find a suitable short form for a large-scale study, alternative shortened scales were tested in pilot studies. The original twelve-item seven-point Likert scale (Schultz, 2000) was given to 50 students. The items that correlated highly with each other were left out or combined. Two groups of final year psychology students (10 in each group) then filled out and commented on the wording of the full scale (first group) and the shortened five-point scale (second group). In the final version, respondents were asked to evaluate their environmental concerns with regard to eight objects of concern on a five-point Likert scale (ranging from unconcerned to extremely concerned).

In the study respondents were asked to evaluate their environmental concerns with regard to eight objects of concern on a five-point Likert scale (ranging from unconcerned to extremely concerned). The question was formulated in the following way: "People are concerned about environmental problems because of the consequences that result from harming nature. Please indicate how concerned you are about environmental problems for their consequences for: animals and birds, all people, you personally (me), plants, personal (my) future, future generations, personal (my) health, people in your (my) community" (see Appendix 1). Data analysis was performed using PASW 18.0 and for treatment of missing values the procedure proposed by Shafer and Graham (2002) was used.

4.2.2 Environmental beliefs

The environmental worldview (ecocentrism) was measured using five items from the modified NEP scale (Dunlap et al., 2002). The questions were selected based on a pilot study in which all of the original scale items were used and then factor-analyzed. Two factors were identified for the main study with one named the *anthropocentric* and the other the *ecocentric worldview*. This study focused on the determinants of ecocentric worldview and the factor measuring ecocentrism was chosen for the main analysis. ("When humans interfere with nature it often produces disastrous consequences", "Humans severely abuse the environment", "Plants and animals have as much right to exist as humans do", "The balance in nature is delicate and easily upset", "If things continue on the present course, we will soon experience major ecological crisis", ranging from completely disagreed to completely agreed on a five-point Likert scale). See Appendix 2 for the questionnaire.

4.2.3 Emotional affinity

The emotional connectedness to nature was measured by four items adapted from Kals et al. (1999) concerning of positive feelings towards nature. Respondents had to answer on a five-point Likert scale ranging from complete disagreement to complete agreement ("I find mental equilibrium from the natural environment", "I feel oneness with plants and animals", "Sometimes when I am unhappy I find comfort in nature", "I often feel admiration in nature") (see Appendix 2).

4.2.4 Components of morality

4.2.4.1 Values

Value preferences were measured using the Stern, Dietz and Guagnano's (1998) brief inventory of values. The two value types that have been found (Stern, Dietz, Abel, Guagnano & Kalof, 1999; Stern, 2000) to be the most important moral values for environmentally friendly behaviour (biospheric, altruistic) were chosen for the main analysis. These higher-order value types were based on the following values: biospheric

(i.e., harmony with other life forms, unity with nature, protecting environment) and altruistic (i.e., equality, world peace, social justice). The egoistic value (i.e., power, wealth, authority) was included in the correlation analysis in order to assure that it is not related to the morality variables positively. People had to answer the following questions: "Several values are listed below that people may find important. Please evaluate how important each of the following values is as a guideline in your life". A five-point scale, from not at all important (1) to very important (5), was used (see Appendix 2).

To correct for individual differences in the values scale use, centralized sum variables were used in the analysis. A personal mean of all 15 values was calculated for each subject separately, and the items of the sum variable were summed together and divided by the personal mean multiplied by the number of items included in the sum variable (see Verkasalo, Tuomivaara, & Lindeman, 1996).

4.2.4.2 Responsibility

Sense of responsibility was measured by the following three questions ranging a five-point scale: There are different opinions on the extent to which the individual is responsible for environmental problems. What do you think? ("I do not consider myself responsible at all" to "I consider myself completely responsible"), How much each person and family can promote environmental protection? ("We cannot do much to We can do a lot") and Do you feel an inner motivation to do something for the environment? ("I do not feel at all" to "I feel very much"). The responsibility measure was factor analysed and found to be unidimensional.

4.2.4.3 Moral sensitivity

Moral sensitivity was measured by two dimensions (empathic concern and perspective-taking) from the original Interpersonal Reactivity Index (IRI) (Davis, 1983). Three items for measuring empathic concern (e.g., "when I see someone being treated unfairly, I feel kind of protective toward them") and three items measuring perspective taking (e.g., "before criticizing somebody, I try to imagine how I would feel if I were in their place") were chosen. The choice was based on the scale statistics after a pilot study performed among 32 social science students. The respondents had to identify how well the items described them (1 = does not describe me at all to 5 = describes me very well).

The responsibility scale, the short IRI scales for empathic concern and perspective taking, as well as the value measures were subjected to scale consistency analysis. One reverse item from the perspective-taking scale was removed. The reliabilities of the measures are shown in Table 4.

4.2.4.3 Moral judgment

A new environment-related moral dilemma was developed based on the DIT. The original DIT (six dilemmas) and even the short version of DIT (three dilemmas) are time-

consuming tests; as such, they are not suitable for questionnaire studies of the general population. This dilemma was based on the original Heinz and the Drug dilemma. The new measurement instrument in study two (the Jaan dilemma for measuring environment-related moral judgment), was pilot tested two times. The first time the pilot test was administered to 32 social science students. The participants of the second pilot study were 97 degree students of humanities and social sciences who completed the internet based questionnaire, aged 18-22.

In the first pilot study, the questionnaire consisted of the self-made dilemma based on Heinz and the Drug dilemma, the Escaped Prisoner dilemma and the Webster dilemma. The test reliability was controlled by Cronbach's alphas. The alphas were tested level by level so that all items from all dilemmas measuring level two, three four or five accordingly, were entered to the analysis separately. Cronbach alphas for the ratings for stage levels across the three dilemmas (Jaan included) were: stage two, .24, stage three, .59, stage four, .60 and stage five, .35. All items had relatively similar range, so if the alpha was low, all items had low scale reliabilities and vice versa. The respondents commented on the wording and readability of the items. Based on the comments received, the instructions of the dilemma were altered. The importance of personal opinion was emphasized (instead of "when making a decision, Jaan has to consider …" the wording was changed to a more personal one "If I were Jaan…").

The second pilot test included the new dilemma and the short version of the DIT with three dilemmas. The participants were 97 degree students of humanities and social sciences, aged 18-22. The correlation between the overall P score from the DIT and with P score for the Jaan dilemma was .27 ($p < .05$). The Cronbach alphas for the ratings for stage levels across the four dilemmas (Jaan included) were stage two, .26, stage three, .59, stage four, .65 and stage five, .46. In comparison, the internal consistency of the original three stories test for stage two was .30, stage three, .32, stage four, .27 and stage five, .53 (Rest, 1979, p. 229). Since the correlation between dilemmas was not very high, the data was split into tertiles to see how many people received high scores in one test and low in another. The analysis showed that only four per cent of respondents' scores were in the lowest tertiles in the Jaan dilemma and in the highest tertiles in the DIT, and five per cent of respondents had scores in the lowest tertiles in DIT and highest in Jaan dilemma. Thus, the Jaan dilemma could be regarded as a satisfactory measure of environment-related moral judgment development.

In the main study, environment-related moral judgment was assessed using the Jaan dilemma. Respondents were asked to rate the relative importance of each item on a five-point scale (1 = not important to 5 = very important), and to then rank the three most important items. The score was calculated by summing the number of times that items in the different stages were chosen as the first, second, or third important consideration, weighting these ranks by three, two and one, respectively. For instance, if a person ranked the two stage five postconventional items first and second, and the stage four item third, his/her score would be (3x5 + 2x5 + 1x4) 29, which is the maximum. The range of the environment-related P score was from 12 to 29.

The final version of environment-related moral dilemma is following:

Please read through the following story and consider what you would take into account while making the decision.

Jaan's wife is seriously ill and Jaan needs a big sum of money urgently to get good medical care for his wife. Jaan is thinking of selling his forest. He has an emotional attachment to the forest, it is an important recreational area for local people and a home for many wild animals. The only buyer Jaan finds wants to fell all trees. Moreover, certain legalities must be cut to close the sale quickly. Jaan could sell the forest or refuse to do so, based on these conditions. If you were Jaan, how important would the following considerations be when making the decision?

If I were Jaan, the important thing would be (1=not at all important… 5=very important)
…what is most beneficial to me <Stage2>
…that my responsibility is to assure the well-being of my family members <Stage3>
…that it is necessary to take into account laws in society, but still follow one's own conscience in making a decision <Stage5p>
…if I sell the forest only for calming down my own conscience or I am really thinking about helping the other person <Stage3>
…whether the chance the treatment really helps outweighs gaining disapproval by the local people and breaking rules <Stage4>
…which behaviour brings about more total good for the whole society <Stage5p>

Please mark which one from the following statements is most important for you: ….
Second most important:
Third most important:

4.2.5 Environmentally friendly behavioural intentions and environmentally friendly behaviour

In study one, environmentally friendly behavioural intentions were measured by a fourteen-item block of questions of everyday behaviour (adapted from Kaiser , Wölfing & Fuhrer, 1999). These self-reported assessments were measured on a five-point Likert scale (see Appendix 1). Using the principal component factor analysis with varimax rotation, these items formed four factors with 61 per cent of total variance explained. For further analysis, four summated indices were calculated. The first group (four items) was about consumption behaviour, such as buying energy saving domestic appliances even when they were more expensive. The second group was about transportation preferences (three items) including statements such as "In town I would use public transport or walk instead of taking the car even if it turns out to be less comfortable". The third group (three items) was about activism behaviour such as donating money to organizations who work

on environmental protection and the fourth group was formed based on domestic behaviour (four items) including items such as consuming less water to protect the environment. To perform group comparisons between these behaviours and environmental concern issue groups, all behaviour groups were divided between high and low rating groups based on the mean.

In study two, environmentally friendly behaviour was measured by a six-item block of questions about everyday behaviour on a five point Likert scale (from never to all the time), validated in Estonian samples by EPRU in previous study. The items for EF behaviour were the following: sorting waste, using environmentally friendly washing powder, paying attention to water-use, diminishing package, buying local goods even if they are more expensive, recycling (e.g., furniture, clothes, tools).

4.2.6 Visiting nature

The frequency of outdoor leisure activities ("Walking in nature" and "Hiking or guided nature tours") was measured with a five-point rating scale (never, rarely, a few times per year, a few times per month, more often).

4.2.7 Socio-demographic variables

The socio-demographic variables were age, gender (1 - male, 2 – female), language spoken at home (1 – Estonian 2 – other language) and education. For the analyses education was coded as 1 for primary education (17% of the respondents) and 2 for at least secondary education. The changes in education system over the years did not allow a more specific scale that could be used in the regression analysis.

5 Results

5.1 Study one

The aim of the first study was to describe the differences between general and self-centred environmental concern issues.

In total, 71 per cent of respondents gave at least one answer to the question about the general environmental concern (GEC) and 64 per cent responded to health risk related environmental concern (HEC). Most respondents named one (38% vs. 34%) or two (23% vs. 22%) different environmental concern issues. Fifty-five per cent of respondents provided at least one answer to both questions, 21 per cent gave no answers, 16 per cent only answered the GEC question and 8 per cent responded to the HEC question only. There was no gender difference of answering or not answering to the open questions (for GEC, $t(987) = .04$, $p > .05$ and for HEC, $t(987) = -1.62$, $p > .05$). While there was no age difference for HEC ($t(973) = 1.41$, $p > .05$), those answering the GEC question were younger than those who did not answer it ($t(973) = 2.86$, $p < .05$), the mean ages being 42 and 45, respectively).

For reliability, the first 100 responses were co-coded by another person. For GEC, the agreement was 76 percent, with disagreements occurring mainly in coding answers such as "the forests are full of trash" (which was grouped finally into garbage, not forest), pollution (where in the final version pollution in water was coded as water and not pollution). For HEC, the agreement was 92 per cent. This high agreement reflects the less complex responses to this question.

For further analysis, the qualitative data was quantified using dummy coding, where 0 meant that a respondent did not have a single quotation in a particular group and 1 referred to having at least one quotation falling into a particular group. If a respondent gave more than one quotation to the same issue, his/her code was still 1 (like if s/he mentioned many problems in the forest; in the case of claims such as less forest and not enough new forest, s/he was coded as 1). In case s/he wrote "not enough forest" and "garbage near roads", s/he was coded as 1 for forest issue and 1 for the garbage issue, and in total s/he has two different issues. The total amount of concern issues per person ranged from 1-6 for GEC and 1-5 to the HEC.

5.1.1 General Environmental Concern Issues

The coded answers were classified into 11 environmental issue groups. The environmental concern issues were based on different biophysical facets of the environment (such as air, water, forest), on general environmental problems (such as pollution, garbage and climate change) and human carelessness (towards nature and other species). The issues related to transportation formed a separate group. There were also two groups that can be considered non-environmental, because they were not related to the natural environmental problems. These were human environment and the well-being of society (see Table 1).

The largest categories of concern were issues related to forest, waste management, general pollution, and problems with air and water. Fewer people mentioned carelessness

of humans, bad environmental conditions for humans and for other species, and climate change. Human well-being and transportation were the least frequently mentioned.

The importance of forests is not surprising because forests covers nearly half of the Estonian mainland and is an important natural resource. After the re-independence of Estonia in 1991, the land and forests were given back to the owners who lost their property after Estonia lost its independence to the Soviet Union in 1940. Approximately four per cent of inhabitants and their family members are private forest owners. However, during the 1990s, some forest was destroyed in the new liberal market conditions, which might partly explain the great concern for forests.

5.1.2 Health Risk Related Environmental Concern Issues

The coded responses were classified into ten health risk related environmental concern (HEC) issues groups. The groups were labelled similarly to the previous ones, but the content was somewhat different. Most respondents gave only one-word answers like air, drinking water or pollution. Of the respondents who answered the HEC question, 25 per cent mentioned both air and water problems, while only 27 per cent did not mention water or air at all. Pollution and the quality of the environment were the second most often mentioned issues. Food and climate were the third most mentioned. Concern about food (e.g., fertilizers, trash food and use of chemicals) formed a separate group. Forest and carelessness of people were mentioned by very few people, when compared to GEC (see Table 1). Some people mentioned also stressful life conditions and stress as an environmental risk for their health, which was coded into the category of human environment. Again, the groups of quality of the environment (which referred to man-made environment) and human environment were non-environmental.

The second part of the study concerned how these EC issues are related to the egoistic, altruistic and biospheric environmental concerns, and environmentally friendly behavioural intentions.

Table 1 *Self-reported environmental concern issues.*

General environmental concern				Health risk related environmental concern			
Group name	Group description	Total number of quotations	At least once mentioned (% in sample)	Group name	Group description	Total number of quotations	At least once mentioned (% in sample)
Forest	Deforestation, forest economy, planting new forest	199	28	Air	Air pollution (e.g., fumes), lack of green areas to improve air quality	410	63
Garbage	Too much garbage, people's illegal practices (a lot of garbage in the forest, near cities, next to the roads), sorting waste, dangerous waste, wastelands	175	22	Water	Water pollution, drinking water	211	34
Pollution	Environmental pollution, polluting nature, use of chemicals, wasting nature and resources	172	22	Pollution	General pollution, chemicals, land pollution.	109	17
Air	Air pollution, fumes	134	18	Quality of environment	Noise, vibration, diseases, problems with homeless animals (diseases), dangerous buildings (gas stations, factories)	93	15
Water	Water pollution (lakes, see, rivers, drinking water)	130	18	Food	Quality of food, use of fertilisers, chemicals in food	65	9
Carelessness of humans	Carelessness and greediness of humans, lack of environmental education, lack of responsibility, need for better control system	117	16	Climate	Climate change, catastrophes, ozone depletion, intensive sun	57	8
Climate	Climate changes, ozone depletion, too active sun, end of the world, catastrophes	78	9	Garbage	Waste, dangerous waste	40	4
Human environment	Dirty city environment, no recreational areas, homeless people, countryside life dying out, social problems	66	9	Forest	Deforestation	26	4
Other species	Carelessness towards animals, decrease of different species of animals and birds	62	8	Carelessness	Not caring about the laws of nature that affect people in turn, care towards animals	11	2
Transportation	Too many cars, cars that are too old, trade	34	5	Human environment	Lifestyle, stress	9	1
Well-being of society	Health of people, health of children, concern toward future, unclean food	29	4				
	N=	1196	1187		N=	1048	626

1 - % in sample

*p < .10, **p < .05, *** p < .01

5.1.3 The Relationship between Environmental Concern Issues and Environmental Concerns

The mean scores of all items were rather high, varying from 4.03 (myself) to 4.39 (future generations). The mean scores are high also in other samples in different countries (see Schultz et al. 2005). The three-factor model proposed by Schultz (2000, 2001, Schultz et al., 2005) was tested using confirmatory factor analysis. The factors of tripartite environmental concerns were: egoistic environmental concerns (i.e., me, my future, my health), altruistic environmental concerns (i.e., all people, future generations) and biospheric environmental concerns (i.e., plants, animals and birds). The item concerning "people in my community" was correlated more strongly with egoistic concerns and, as such, it was left out from the final analysis (similar to Steg, De Groot, Dreijerink, Abrahamse & Siero, 2011).

Maximum likelihood estimates were used for the models. The three-factor model showed acceptable fit in this study (Chi-square = 151.0, df = 11, Chi-square/df = 13.7, $p < .0001$; RMSEA = .114, NFI = .957, TLI = .897, CFI = .958). The correlation between egoistic and altruistic concern was .80, the correlation between egoistic and biospheric concern was .61, and the correlation between biospheric and altruistic concern was .87. Summated indices were calculated based on the three-factor model, and named biospheric, altruistic, and egoistic environmental concerns (see scale statistics in Table 2).

Table 2 *Descriptive statistics and correlation coefficients.*

Scale statistics				Corre-lations						
Items	Mean	SD	Cron α	1	2	3	4	5	6	7
1. Egoistic att.	4.12	.79	.87	(1)						
2. Altruistic att.	4.24	.69	.69	.62**						
3. Biospheric att.	4.09	.68	.79	.51**	.65**					
4. Consumption BI	4.13	.64	.74	.13**	.28**	.28*				
5. Transportation BI	3.67	.90	.72	.11**	.22**	.19*	.42*			
6. Activism BI	3.20	.86	.70	.19**	.33**	.32*	.47*	.40*		
7. Domestic BI	3.86	.86	.68	.17**	.27**	.26*	.49*	.28*	.40*	
8. GEC total[1]				.06	.13**	.13**	.02	.07	.05	.06
9. HEC total[1]				.06	.15**	.20**	.15**	.01	.08*	.10*

* $p < .05$
** $p < .01$
1 – Total number of answers by group (yes/no) among the ones who answered that question

To see how the three environmental concerns (ECs) are related to the environmental concern issues, respondents were divided between high and low groups of egoistic, altruistic and biospheric ECs by the mean. In this dissertation I discuss these results, where the statistically significant difference level was smaller than .10.

There were some statistically significant differences between high/low ECs and GEC issues. People who mentioned air as an issue of concern had higher scores on egoistic ECs ($\chi^2(1, N = 695) = 5.95, p < .05$) and altruistic ECs ($\chi^2(1, N = 696) = 6.99, p < .01$). Those who mentioned the carelessness of humans were lower on egoistic ECs ($\chi^2(1, N = 695) = 5.88, p < .05$). Biospheric ECs was higher for respondents who mentioned more often other species ($\chi^2(1, N = 693) = 6.22, p < .01$) and lower on those who mentioned climate change ($\chi^2(1, N = 696) = 3.60, p < .05$).

There were more statistically significant differences between high/low ECs and HEC issues. There was a small group difference between high egoistic concerns and pollution ($\chi^2(1, N = 622) = 3.12, p < .10$) and a statistically significant difference between egoistic concerns and garbage ($\chi^2(1, N = 623) = 6.67, p = .01$). Higher altruistic concerns were related to forest ($\chi^2(1, N = 623) = 4.89, p < .05$) and carelessness ($\chi^2(1, N = 623) = 2.75, p < .01$). Higher biospheric concerns were related to food ($\chi^2(1, N = 624) = 3.15, p < .10$), carelessness ($\chi^2(1, N = 624) = 5.56, p < .05$) and garbage ($\chi^2(1, N = 624) = 7.16, p < .01$). See Table 3.

Table 3 *Significant relationships between environmental concern issues, environmental concerns (egoistic, altruistic, biospsheric) and behavioural intentions (conservation, transportation, activism and domestic).*

General environmental concern issues	ECs, χ^2			BIs, χ^2				Health-related environmental concern issues	ECs, χ^2			BIs, χ^2			
	Ego	Alt	Bio	Cons	Transp	Activ	Dom		Ego	Alt	Bio	Cons	Transp	Activ	Dom
Forest					**	**		Air				*			*
Garbage								Water							**
Pollution				*				Pollution	*						
Air	**	***						Quality of environment							
Water								Food			*	***			**
Carelessness of humans	** (neg)							Climate							
Climate			** (neg)					Garbage	***		***				
Human environment								Forest		**		**		***	
Other species			**					Carelessness		*	**				
Transportation					**			Human environment							
Well-being of society															

*p < .10, **p < .05, *** p < .01

5.1.4 The Relationship between Environmental Concern Issues and Environmentally Friendly Behavioural Intentions

The results indicate that there were groups of environmental concern issues that were related to high and low behavioural intentions. Respondents who mentioned forest in general environmental concern (GEC) were more ready to change their transportation behaviour ($\chi^2(1, N = 686) = 4.08, p < .05$) and were more ready for activism ($\chi^2(1, N = 681) = 4.26, p < .05$) than those who did not. People whose concern was related to pollution were slightly more ready to change their conservation behaviour ($\chi^2(1, N = 681) = 3.04, p < .10$), and finally people whose concern issue was transportation were more ready to change their transportation behaviour ($\chi^2(1, N = 686) = 4.23, p < .05$).

The issue of food in HEC was related to higher scores on consumption ($\chi^2(1, N = 609) = 7.18, p < .01$) and domestic behaviour ($\chi^2(1, N = 610) = 6.40, p < .05$). Air was also related to consumption behaviour ($\chi^2(1, N = 609) = 3.48, p < .10$) and domestic behaviour ($\chi^2(1, N = 610) = 3.19, p < .10$). The issue of water was related to higher readiness to change their domestic behaviour ($\chi^2(1, N = 610) = 5.58, p < .05$). Finally, forest was related to conservation ($\chi^2(1, N = 609) = 6.40, p < .05$) and activism behaviour ($\chi^2(1, N = 611) = 6.92, p < .01$). Transportation preferences were not related to any HEC issue.

The overall correlations between environmental concerns, EF behaviour intentions and environmental concern issues are presented in Table 2, which shows that all correlations between ECs and BIs are statistically significant. The total amount of responses for GEC and HEC were significantly related to the altruistic and biospheric ECs but not to egoistic concerns. The total amount of responses given to the GEC was not significantly and the total amount of responses given to HEC was significantly positively related to behavioural intentions (except to transportation).

5.2 Study two

Table 4 presents the correlations between the main variables. The new measure of environment-related moral judgment correlated with age and education, which is consistent with its supposed developmental nature. It also correlated with the measures of moral sensitivity (i.e., empathic concern and perspective-taking) and with the measures of moral motivation (positively with biospheric and altruistic values, negatively with egoistic ones), as one would expect based on previous studies. This measure was also associated with sense of responsibility as well as with environmentally friendly behaviour.

Moral sensitivity measures, that is, empathy and perspective taking, were associated with one another and with biospheric but—surprisingly—not with altruistic values. They also showed rather high correlations with a sense of responsibility and EF behaviour.

Moral motivation variables (i.e., biospheric and altruistic values) were negatively associated with egocentric values as anticipated but, unexpectedly, not with each other. Egoistic values were negatively associated with all moral variables, including EF behaviour.

A sense of environmental responsibility was related to all measures of components of morality, except altruistic values. It showed rather high correlations with emotional empathy and with EF behaviour.

Age correlated positively with all moral variables except for egoistic values, which was negatively correlated and perspective taking, which was not significant. Women scored lower on egoistic values and higher on altruistic and biospheric values, emphatic concern and perspective taking. Gender did not correlate significantly with moral judgment, responsibility and EF behaviour.

The main questions regarding the significance of environment-related moral judgment and the interrelations of the components of morality in EF behaviour were examined using hierarchical regression analysis (see Table 5). Egoistic values were discarded from the analysis, because of their negative correlation with biospheric values. After the socio-demographic variables, values (moral motivation) and responsibility were entered as predictors on the second step. The environmentally non-specific measures for empathic concern and perspective taking (moral sensitivity), and moral judgment were entered on the third step of the analysis. There was no collinearity within the data and the caswise diagnostics gave no reason for concern.

The socio-demographic variables explained six per cent of the total variance of environmentally friendly behaviour at the first step. After age, education, gender and language were controlled for, values and responsibility added 12 per cent of predictive power. However, biospheric values did significantly predict EF behaviour but altruistic values did not. In the third step of the analysis, moral judgment and empathic concern were significant predictors of ecological behaviour, whereas perspective taking had positive but not a significant relationship to EF behaviour. The variables of the third step raised the predictive power of the model by three per cent. In all, the demographic and moral variables accounted for 21 per cent of the total variance in environmentally friendly behaviour.

Table 4 *Descriptive statistics and correlation coefficients (Ojala, in press).*

Scale statistics				Correlations										
Items	Mean	SD	Cron α	1	2	3	4	5	6	7	8	9	10	11
1. Age	42.28	15.91		(1)										
2. Gender	1.62	.49		.01										
3. Language	1.29	.45		-.07*	.07*									
4. Education	1.83	.38		.05	.12**	.11**								
5. Biospheric values	1.05	.14	.68	.24**	.09**	-.07*	.04							
6. Altruistic values	1.09	.14	.51	.20**	.07*	-.01	-.02	.01						
7. Egoistic values	.76	.18	.54	-.16**	-.11**	.07*	-.03	-.53**	-.46**					
8. Moral judgment	22.40	2.79		.12**	.05	.09*	.08*	.08*	.14**	-.11**				
9. Empathic concern	3.56	.81	.68	.10**	.23**	-.03	.06	.17**	.06	-.16**	.11**			
10.Perspective-taking	3.65	.85	.54	.05	.11**	.13**	.07*	.17**	.06	-.17**	.12**	.49**		
11. Responsibility	3.76	.76	.72	.13**	.01	-.04	.07*	.24**	.00	-.14**	.08*	.40**	.30**	
12. Behaviour	3.23	.78	.69	.22**	.07	-.03	.15**	.28**	.05	-.18**	.17**	.28**	.21**	.33**

* $p < .05$
** $p < .01$

Table 5 *Summary of hierarchical regression analysis for environmentally friendly behaviour (Ojala, in press).*

Variable	Behaviour		
	B	*SE B*	β
Step 1			
Age	.01	.00	.18**
Gender	.12	.06	.07*
Language	-.02	.06	-.01
Education	.30	.08	.14**
R^2			.06
Step 2			
Age	.01	.00	.11**
Gender	.08	.06	.05
Language	.02	.06	.01
Education	.27	.07	.13**
Biospheric values	1.10	.21	.19**
Altruistic values	.06	.20	.01
Responsibility	.27	.04	.26**
R^2 change			.12**
R^2			.18
Step 3			
Age	.01	.00	.10**
Gender	.03	.06	.02
Language	.01	.06	.01
Education	.26	.07	.12**
Biospheric values	1.03	.21	.18**
Altruistic values	-.04	.20	-.01
Responsibility	.20	.04	.19**
Moral judgment	.03	.01	.10**
Empathic concern	.12	.04	.12**
Perspective-taking	.05	.04	.05
R^2 change			.03**
R^2			.21
N			727

*p < .05, **p < .01

5.3 Study three

The aim of the third study was to investigate if emotional connectedness to nature moderates the relationship between visiting nature and the individual's ecological worldview.

The scales were factor analysed and found to be unidimensional (Table 6). The scale statistics were acceptable (see Table 7 for descriptive - and scale statistics). The items "walking in nature" and "hiking or guided nature tours", used to measure the frequency of visiting nature, were significantly correlated ($r = .35$, $p < .01$). All of the scales used had relatively high mean scores and were significantly correlated with each other. However, the correlation between visiting nature and ecocentrism was significant only at a $p < .05$

level, which is not very high for a large sample size. The variables age, gender, and language were significantly correlated with emotional connectedness to nature (older people, women and Russian speaking inhabitants reported more emotional connectedness to nature). Younger people and women said they visited nature more often (while no significant differences between language groups were found). Of the demographic variables, age had the highest correlations with the main indicators.

Table 6 *Factor loadings for ecocentrism, emotional connectedness to nature and visiting nature.*

Scale and item	Factor loadings	h_i^2
Ecocentrism		
When humans interfere with nature it often produces disastrous consequences	.71	.51
Humans severely abuse the environment	.74	.55
Plants and animals have as much right to exist as humans do	.63	.40
The balance in nature is delicate and easily upset	.65	.42
If things continue on the present course, we will soon experience major ecological crisis	.74	.55
Total variance explained (%)	49	
Emotional connectedness to nature		
I find mental equilibrium from the natural environment	.88	.78
I feel oneness with plants and animals	.82	.67
Sometimes when I am unhappy I find comfort in nature	.83	.68
I often feel admiration in nature	.72	.52
Total variance explained (%)	66	
Visiting nature		
Walking in nature	.82	.67
Hiking or guided nature tours	.81	.67
Total variance explained (%)	67	

Extraction Method: Principal Component Analysis

Table 7 *Descriptive statistics and correlation coefficients for ecocentrism (NEP), emotional connectedness to nature (EmC), visiting nature (VN) and socio-demographic variables (Ojala, 2009).*

Descriptive Statistics	M	SD	Cron.α	NEP	EmC	VN	Age	Gender
NEP	4.29	.62	.73	(1)				
EmC	3.80	.88	.83	.29**				
Visiting nature	3.06	.90		.08*	.34**			
Age	42.2	15.9		.20**	.20**	-.19**		
Gender[1)]	1.62	.49		.03	.18**	.15**	.01	
Language[2)]	1.29	.45		.10**	.08*	-.03	-.06*	.08*

* Correlations significant at $p < 0.05$ (2-tailed).
** Correlations significant at $p < 0.01$ (2-tailed).
1) 1 = Men, 2 = Women
2) 1 = Estonian, 2 = Russian

The interaction hypothesis was tested using a moderated multiple regression approach (Aiken & West, 1991). The socio-demographic variables (age, gender and language) were included as control variables in the first step of the analysis. Age and language were positively correlated with ecocentrism whereas gender did not correlate significantly with ecocentrism.

In the second step emotional connectedness to nature and visiting nature were entered, and the interaction between emotional connectedness to nature and visiting nature was added in the third step of the analysis (see Table 8). The variables for testing the interaction effect were centred before performing the hierarchical regression analysis. The second step shows that performed leisure activities were not significantly correlated with ecocentrism. However, the moderated multiple regression with the interaction between emotional connectedness to nature and visiting nature (step 3) gives a higher (and significant) correlation than the non- moderated multiple regression. The results showed a moderately significant interaction effect between emotional connectedness to nature and visiting nature in predicting an environmental worldview ($\beta = .07$, $t = 2.10$, $p = <.05$). The interaction effect was further subjected to simple slope analyses using conditional values for emotional connectedness to nature, calculated to be one standard deviation above and below the mean of emotional connectedness to nature. The control variables were included into the analysis. The analysis showed that, as expected, the slope between visiting nature scores and ecological worldview scores was high for individuals with high emotional connectedness to nature ($\beta = .11$, $p = .02$) while there was no difference for individuals with low emotional connectedness to nature ($\beta = -.02$, $p > .05$). Figure 1 illustrates the regression slope predicting ecological worldview for visiting nature plotted at low and high ends of emotional connectedness to nature.

Table 8 *Summary of hierarchical regression analysis for ecocentrism (Ojala, 2009).*

Variable	*B*	*SE B*	β	
Step 1				
Constant	3.74	.10		
Age	.01	,00	.21	**
Gender	.01	.04	.01	
Language	.14	.05	.10	**
R^2			.05	**
F			15.74	**
Step 2				
Constant	3.93	.11		
Age	.01	.00	.17	**
Gender	-.05	.04	-.04	
Language	.12	.04	.08	*
Emotional connectedness to nature	.16	.03	.24	**
Visiting nature	.03	.02	.04	
R^2			.11	**
R^2 *change*			.06	**
F			21.92	**
Step 3				
Constant	3.91	.11		
Age	.01	.00	.17	**
Gender	-.04	.04	-.03	
Language	.12	.04	.09	*
Emotional connectedness to nature	.17	.03	.25	**
Visiting nature	.03	.02	.05	
Emotional connectedness to nature × visiting nature	.05	.02	.07	*
R^2			.12	**
R^2 *change*			.004	*
F			19.07	**

Note. N= 887; Independent variables were centred by substracting sample mean from each score (Aiken & West, 1991).
* *p*< .05. ** p< .01.

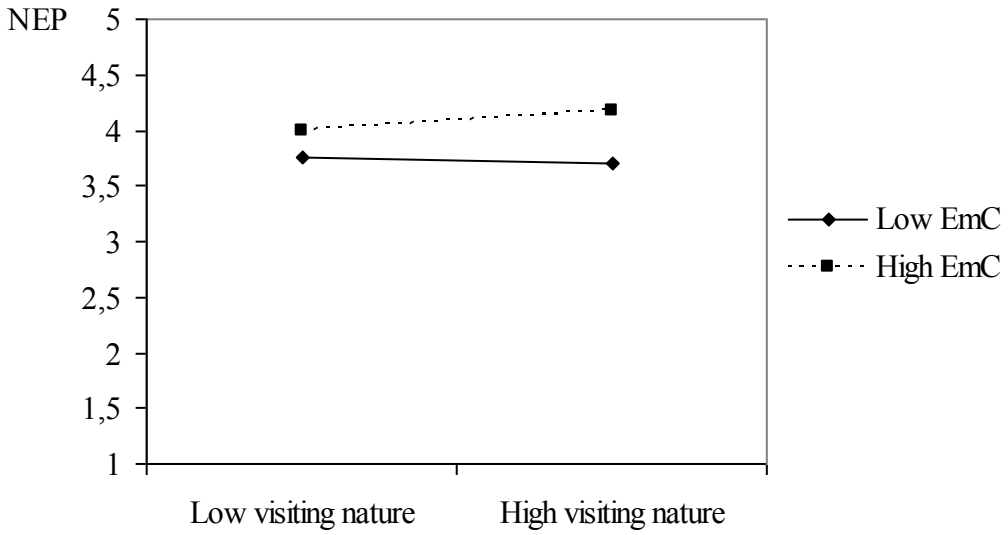

Figure 3 *The moderating effect of emotional connectedness to nature on the association between visiting nature and an environmental worldview (Ojala, 2009).*

The original sample was then divided into three age groups: 15-24, 25-49, and 50+, as visiting nature could be more difficult for older people and their limitations might have affected the results.

The original multiple regression analysis was calculated in all three age groups separately. Age was still used as a control variable because of the variation within the age groups. The interaction effect was not significant in the age group 15-24 ($N = 152$, $\beta = .14$, $t = 1.55$, $p > .05$) and in the age group 25-49 ($N = 430$, $\beta = -.01$, $t = -.13$, $p > .05$). A statistically significant interaction effect was found in the age group 50+ ($N = 305$, $\beta = .17$, $t = 2.72$, $p < .01$). The simple slope analysis above the mean was $\beta = .15$, $p < .05$ and below the mean was $\beta = -.16$, $p = .08$. This shows that visiting nature has an indirect significant effect on ecocentrism through emotional connectedness to nature, particularly among older people.

6 Discussion of the main results

6.1 Environmental concern issues and environmental concerns (Study one)

The starting point of this study was people's environmental concerns. It was found that different environmental problems were listed when the question was directly related to one's health (i.e., self-interest) than when it was on a general level concerning all possible motives.

Air, water and pollution were among the top five listed in general environmental concern (GEC) and health risk related environmental concern (HEC). Forest and garbage, that were most important categories in GEC, were among the last important issues in HEC. Problems with forest as health risks were mentioned only by four per cent of people. Climate change, an important environmental problem, was in sixth and seventh places in both cases. Other species and transportation only figured into GEC, while food issues appeared only in HEC. The content of the same issue category was typically more varied in GEC than in HEC. For example, forest in GEC included sustainable forest management and economy, whereas forest in HEC referred only to deforestation. Pollution in GEC referred more to people's behaviour while in the context of HEC, it was related to dangerous waste. The carelessness of humans was well represented in GEC, but not represented in HEC. In all, GEC showed more variation. However, even though there were significant correlations between the different environmental concern issues mentioned (GEC and HEC), and altruistic and biospheric ECs, significant correlations between behavioural intentions and EC issues were only found in HEC. This suggests that even though EC issues people mentioned varied more in GEC, a behaviourally significant link was found only when people found more ties between their own health-risk and environmental problems. In other words, a deeper understanding of the relationship between one's own health and environmental problems leads to higher readiness to act in an environmentally friendly manner.

The results of study one show that it is possible to distinguish between egoistic, altruistic and biospheric environmental concerns (ECs) and four different groups of environmentally friendly behavioural intentions (BIs). As expected, all ECs and BIs were positively correlated. On an individual level, some environmental issues were related to different amounts of ECs and BIs. In total, environmental concerns and behavioural intentions were distinguished nine times in GEC issues and 14 times in HEC issues.

Egoistic concerns were related to concrete spontaneous environmental concern issues: air (GEC), as well as to pollution and garbage (HEC). The lack of mentioning human carelessness also fits in with an egoistic concern. Altruistic concerns, by contrast, were related to human carelessness in HEC and air in GEC. Altruistically concerned people were interestingly the only ones who mentioned more often forest as their health concern. Biospheric concerns were related to other species as a general concern and food as a health concern, which is consistent with their concern for animals, birds and plants, involved in the biospheric concerns scale. Garbage and human carelessness also figured into their spontaneous concerns. Of particular note, climate change was mentioned less among more biospherically concerned people. It is possible that respondents with higher biospheric concern preferred to mention specific issues like concern towards other species

and human carelessness. Environmental concern issues were related to aesthetics, human well-being and lifestyle (i.e., environmental issues that do not concern physical or natural environments) and did not differ in importance between respondents having high or low ECs or BIs. Pro-environmental attitudes were also less related to non-environmental arguments compared to ecocentric and even anthropocentric arguments in the study made by Kortenkamp & Moore (2001).

The pattern was not as straightforward as expected. In many cases there was no difference between the level of environmental concerns and environmental concern issues. On the other hand, different ECs were sometimes related to the same EC issue, which supports Schultz's (2000) proposal (the same environmental problem might be related to different ECs).

The second part of the hypothesis concerned the connection between ECs and local versus general EC issues. Since it was not easy to identify which EC issues were local and which were broader, the second part of the hypothesis could not be confirmed. Hence, the claim that people who are concerned about bigger problems (e.g., climate change and general pollution) are more biospherically concerned was not supported in this study. Contrary to expectations, people who mentioned climate problems (in GEC) had fewer biospheric ECs. Hence, more biospherically concerned people mentioned specific EC issues, such as other species, human carelessness and food issues. This result may indicate that these people are more aware of environmental problems, and mentioning more specific problems is their way to make a link between nature and humans and other species.

The associations of spontaneous concerns with behavioural intentions reflected, to a great extent, the correspondence of behaviours and concerns, transportation being the most explicit example. What stands out in the results was the centrality of forest as a symbol of environmental concern: People who mentioned forest as their general environmental concern issue were inclined to use public transportation more often and donate money for environmental protection. Also those for whom forest was a health concern favoured that kind of activism and said they would be ready to change their consumption habits. Those who were concerned with water were more likely to say that they use less water at home, concern about pollution was related to a higher readiness for conservation behaviour and concern about food was related to conservation and domestic behaviour. Indeed, it seems that there is a link in between spontaneous environmental concern issues and behavioural intentions.

The relationships found between EC issues and BIs support the hypothesis that EC issues are related to a higher level of appropriate BIs. There were more results in between BIs and EC issues related to one's health. This could mean that, if people understand the link between environmental problems and their behaviour, they are also more ready to act. For example, the biggest concern issues of HEC (air and water) were related to a higher readiness to perform more EF behaviour on an everyday basis.

6.2 Different components of morality on environmentally friendly behaviour (Study two)

This study examined EF behaviour by means of Rest's four-component model of morality, as well as environmental responsibility. In line with previous research, both the moral

motivation component (in this case biospheric and egoistic, but not altruistic values) and a sense of responsibility were associated with EF behaviour in the expected manner. Two other components of morality have been less investigated in the context of EF behaviour, moral sensitivity and moral judgment. Of the two measures of sensitivity, empathic concern was more clearly related to other components and EF behaviour than was the other, perspective taking. In the hierarchical regression analysis, empathic concern predicted EF behaviour even after values and responsibility were taken into account. This is remarkable in view of the non-specific nature of the measure, which taps emotional reactions to situations involving other people, and not the environment. This finding supports the idea that emotional factors play an important role in EF behaviour.

A measure of environment-related moral reasoning was purposely devised for this study. It followed the format of Rest's (1979, 1986) DIT in presenting a value conflict to respondents. In this case, the value of life was pitted against environmental values. Jaan, the protagonist, could save the life of his wife only by selling, by means of a shady deal, his forest to a person who would fell it down. The woods represented not only cherished personal memories to Jaan but also important recreational opportunities for local people. Respondents were offered six arguments to assess in terms of personal importance. Two arguments were postconventional, one stage four, two stage three, and one stage two on Kohlberg's developmental scale. The wording of the postconventional items did not favour either choice (i.e., saving life vs. protecting environment) but referred to such principles as following one's conscience while considering society's laws. The test measured preference and understanding for abstract moral principles in an environmental context and not the preference for environmental values over other values. This means that the Jaan dilemma (as the original DIT) should measure the structure of moral development independently of the content of the moral dilemmas. Whether environment-related moral judgment is the same or something different from general moral judgment is an empirical question and should be studied further.

The present findings are consistent with results from American samples, where DIT scores increase with age and education; in non-Western samples the correlation is not as strong (Rest, Deemer, Barnett, Spickelmier and Volker, 1986). The construction validity of the test used in this study is supported by its correlations with age, level of education and all components of morality, sensitivity, motivation (positive for altruistic and biospheric values, negative for egocentric values), as well as sense of responsibility. The finding that the principled morality score predicted EF behaviour even after most of the other components were taken into account suggests, first, that the test measured something that other scales did not capture, and second, that this something could be advanced moral reasoning structures that contribute to moral behaviour in a way Kohlberg and Candee (1984) outlined. Cognitive factors also seem to be important in environmental action.

One striking feature about the results of this study is that most of the components of morality, with the exception of perspective taking and altruistic values, contributed to the prediction of EF behaviour. The findings suggest that emotion and cognition are not reducible to one another in this context. Both may have a dynamic of their own. Another interesting result was that altruistic values failed to predict EF behaviour. The hypothesis that moral values—in this case altruistic and biospheric values, both part of the universalism value type—predict EF behaviour was not supported. There are studies that report similar results. In the study by De Groot and Steg (2008), altruistic values did not significantly predict attitudes and responsibility towards energy saving. The altruistic values failed to predict personal norm towards pro-environmental transportation in five

European countries (i.e., Austria, Czech Republic, Italy, Netherlands and Sweden), and altruistic values predicted awareness of consequences for car use only in Sweden (De Groot & Steg, 2007). The authors suggest that altruistic and biospheric values have their own contribution to prosocial behaviour, whereas altruistic values are more related to people, and biospheric values are more related to the nature. In the current study, the results might also be sample-specific because the altruistic values did not correlate significantly with empathic concern or perspective taking.

6.3 The importance of connectedness to nature on ecological worldview (Study three)

The results of this study supported its first hypothesis, which indicated that emotional connectedness to nature moderates the relationship between visiting nature and an ecological worldview (even after the socio-demographic variables were controlled). The simple slope analysis showed that ecological worldview increases as a function of visiting nature only for those high in emotional connectedness to nature. Emotional connectedness to nature was not associated with ecological worldview for those low in emotional connectedness to nature. These results confirm the second hypothesis.

Because the interaction effect was moderate in a large sample size and because there was a possibility that the age of respondents could have an effect on the results (for example older people might not visit nature as often), the sample was split into three age groups (15-24, 25-49 and 50+). This further analysis showed that instead of the possible impact of age, there was a meaningful finding concerning the content of the original results. The original results were confirmed only in the age group 50 years and older.

Previous studies indicate the importance of emotional connectedness to nature and outdoor experiences for promoting pro-environmental attitudes and behaviour (e.g., Kals et al., 1999; Raudsepp, 2005; Hartig et al., 2007). Pro-environmental behaviour is related to restorative experiences, that is, getting something positive from nature (Hartig et al., 2001), as well as positive feelings towards nature (Mayer & McPherson Frantz, 2004). Outdoor activities that involve nature observation in some way are also connected with higher environmental concern (Nord et al., 1998; Teisl & O'Brien, 2003). In general, the findings of this study are in the line with the previous research confirming that positive emotional experiences connected to nature and visiting nature for leisure activities are connected with higher environmental friendliness. This trend is particularly significant among older people; it is possible, for example, that this kind of human-nature interrelationship develops over time. Further, the promotion of positive feelings in nature, while visiting nature, might increase an ecological worldview among the population in the long run. It is important to study further why and how some people develop a high emotional connectedness to nature, whereas others, who also visit nature relatively often, do not.

The direction of causality, derived from the correlations in this study, is based on previous research. However, it is possible that there are several ways to develop ecological worldview, for example through environmental education in classrooms. Would it be possible to develop ecological worldview without nature experiences? Would high ecological worldview promote nature visits and positive nature experiences? That would be an empirical questions for the further studies.

6.4 Methodological concerns

6.4.1 Study one

This is the first study with a representative sample to use a free response format to identify respondents' concerns of environmental problems. A high response rate adds to the value of the findings. One limitation of this study is that the answers given by respondents were not very specific, often expressed by a word or a short phrase. This makes it difficult to understand the deeper meaning of certain responses and might cause some problems in coding. In the end, the more specific the EC issues groups were, the more links were found with other scales. Another methodological difficulty was that the mean scores of EMS were high, which means that the differentiation of people into high and low groups of ECs or BIs could be marginal. However, this is a challenge common to most studies of environmental friendliness. People tend to be very concerned when asked these questions. Combining qualitative and quantitative data is demanding but valuable.

6.4.2 Study two

The fact that all measures, including the environmentally friendly behaviour measure, were self-reports is one notable limitation. The desire to appear consistent, as well as a social desirability bias, may inflate value-behaviour correlations (see Bardi & Schwartz, 2003; Podsakoff, McKenzie, Lee & Podsakoff, 2003). However, the moral judgment measures are less susceptible to social desirability (people are able to "fake low" but not able to "fake high", Rest & Narváez, 1994). Also, the rather strong associations of measures of moral sensitivity (i.e., empathic concern and perspective taking) with environmental friendliness are of note, as they cannot be accounted for by consistency.

One strength of this study is that a nationally representative sample makes the results more generalizable. The present findings show that age is a surprisingly strong predictor not only of EF behaviour but also of components of morality. Egoistic values seem to diminish and universalism values increase in importance with age. Further empathy, a sense of responsibility, and moral judgment develop with age, in line with findings from non-representative samples (e.g., Myyry, Juujärvi & Pesso, 2010; Myyry & Helkama, 2007). In highlighting the importance of age in environmental thinking and action, this study supports the arguments advanced by Spini, Elcheroth and Figini (2009) regarding the importance of taking the temporal aspects of social phenomena into account.

The Jaan dilemma measures preference and understanding for abstract moral principles in an environmental context and not the preference for environmental values over other values. This means that the Jaan dilemma (as the original DIT) should measure the structure of moral development independently of the content of moral dilemmas. It would have been best to propose multiple similar dilemmas in a pilot study to ensure that the answers reflect the stage and not some specific aspects of the question. Whether the environment-related moral judgment is the same or something different from the general moral judgment is an empirical question and should be studied further.

6.4.3 Study three

One possible methodological concern is related to the instrument measuring leisure-time activities. There were two questions used to measure leisure-time activities in this study, but if possible, there should be three or more questions to get more detailed information about this issue.

The strength of this study is that it is based on a nationally representative sample. But these results need to be confirmed in other studies, preferably in other cultures. The replication of this study would be necessary partly because the moderate interaction effect, but also because the conclusions might not be directly applicable to other areas in the world. Specifically, the importance of socio-demographic variables on environmental friendliness may vary in other contexts (see literature review).

6.5 Practical implications

The results of this dissertation can be used for planning environmental campaigns and to develop educational programs.

Study one shows the usefulness of targeting arguments used in campaigns to different environmental concerns. For example, people who named human-nature-animal relationship had more altruistic or biospheric environmental concerns. This means, that in case we want to raise human care for homeless animals, or responsibility to nature, we should stress the consequences for other people and other living beings. On the other hand the results show that the egoistic concerns are not related to care arguments.

A further example concerns problems with garbage, which were related to higher egoistic and biospheric environmental concerns. This result shows that littering and garbage in general is related to egoistic concerns, for instance, no littering in my backyard, and that garbage that is harmful for the whole natural environment. The egoistic environmental concerns are usually weakly related to other aspects of environmental friendliness. The positive correlation between total number of answers given to the health risk related environmental concern (HEC) and behavioural intentions suggests that it is possible to raise awareness about environmental problems when emphasizing the link between self-interest and environmental problems. Maybe the discussion about what are the environmental problems and how we can solve them has been too vague. People may behave in a more environmentally friendly way if they had a better understanding of their behavioural consequences for themselves, as well as to other people and nature in general.

Based on the three studies in this dissertation, it is clear that the link between emotional aspect and EF is very important. Environmental campaigns should be specific when the goal is to bring about a specific behaviour, as the effect may be stronger if there is a link made to some emotional aspect of environmental concern. In study one, many respondents mentioned care towards animal and the nature. In study two, empathic concern was one important predictor of environmentally friendly behaviour and in study three, emotional affinity to nature moderated EF beliefs.

There are studies that support the importance of emotions connected to nature as a motivational basis for the protection of nature (Kals, Schumacher & Montada, 1999). Campaigns that emphasize emotional and cognitive aspects could be more efficient for raising environmental friendliness than campaigns that emphasize only reasoning and

cognitive aspects related to the topic. This also applies to education. In schools, for example, it is possible to teach pro-environmentalism through knowledge, but also through care.

Study three shows, additionally, that visiting nature for leisure activities (in this study walking in nature, hiking or guided nature tourism) promotes environmental concern if it is accompanied by positive emotional experiences. In the case that there are no positive emotional experiences with nature, general environmental concern (i.e., ecocentric worldview) does not increase, even if one visits nature relatively often. Promoting positive emotions in nature and at the same time knowledge about processes in nature, human impact and personal care, as well as responsibility of consequences would hopefully raise general environmental friendliness.

7 General discussion and future studies

Environmental concern was the starting point of this study. In particular, egoistic environmental concerns, were related to more general environmental problems (i.e., air pollution, general pollution, garbage and littering), whereas biospheric and altruistic concerns were related to more specific environmental problems (i.e., climate change, problems with food, other species, carelessness of humans and forest). The most interesting finding in this context was that carelessness towards nature and concern towards other species was related positively to altruistic and biospheric environmental concerns as one could expect, but the order of these categories were in the middle or in the end of the list of environmental concern issues. This shows that care towards the environment does not have a very important place in people's minds. There has been a constant struggle to find reasons why people, who are environmentally concerned, do not act accordingly. Now there is a growing amount of literature showing that there is a contradiction. It is possible that people do not see the link between their actions and environmental problems, because they separate natural environment and human environment even if they consider themselves as part of nature (e.g., Vining, Merrick & Price, 2008). In this case, it would be worthwhile to have more public discussions about environmental problems that affect human health and well-being as well as environmental condition in general, and to emphasize how environmental problems are related to individual human behaviour.

In terms of *values*, people are environmentally friendly based on other-oriented motives (i.e., altruistic environmental values such as equality, social justice) or on nature oriented motives (i.e., biospheric environmental values: unity with nature, harmony with other living beings). Self-interest has been shown to be negatively related to pro-environmentalism (e.g., Hansla et al., 2008; DeGroot & Steg, 2007) and the other-oriented motivation is not coherent (Hansla et al., 2008; DeGroot & Steg, 2007; Schultz et al, 2005; Stern et al, 1994). The reason why egoistic values are not related to pro-environmentalism is theoretical; egoistic values are not moral values and, thus, they cannot be positively related to pro-environmentalism. Surprisingly, in some countries altruistic values are not related to pro-environmentalism either as shown previously by De Groot and Steg (2008) and study two in this thesis. But why do altruistic values (clearly moral ones) not predict pro-environmentalism in some countries? One explanation could be that people in different countries might not understand the content of values in a similar way. Schwartz's theory of values assumes that the meaning of values is approximately the same to different individuals in different cultures (Schwartz, 1992). Still, Schwartz (2007) proposes that people with a narrow, exclusive moral universe may understand even universalism value items as applying only to their group. This suggests that people with a narrow moral universe have less complex understanding about values, whereas people with a broad moral universe imply more complex understanding into values. Additionally, culture may moderate the complexity of moral understanding and the meaning of values. For example, altruistic values predicted awareness of consequences for car use significantly positively in Sweden, but not in Italy, Austria, Netherlands and Czech Republic (De Groot & Steg, 2007). The authors suggest that altruistic and biospheric values contribute to prosocial behaviour, whereas altruistic values are more related to people and biospheric values concern the nature.

Despite an extensive body of research on values, there is relatively little knowledge on the way individuals conceive values. The content of values is usually assessed through their inter-correlations in ready-made scale questionnaires. Few studies have investigated the associations people connect with different value labels. There is one study by Myyry (2008), which showed that in Finland associations were congruent with Schwartz's values explanatory phrases, but there is no material for comparison with another country. In addition, we do not know if and how these different values meanings are related to pro-environmentalism. It would be interesting to make cross-cultural studies on this topic.

According to Rest (1986), *morality* in psychology, is a particular type of social value that is about how humans cooperate and coordinate their activities, as well as how they solve conflicts among individual and other-oriented interests. In the long run, morality is in the service of furthering human welfare. It seems reasonable to include morality to the models that explain pro-environmentalism as an altruistic or other-oriented (humans, animals, nature) topic. This study considered *moral judgment* as an additional important predictor of pro-environmentalism. *Moral judgment* (Kohlberg, 1984; Rest, 1986) shows what course of action from the possible alternatives ought to be chosen in a particular situation. This study showed that morality is an important predictor of pro-environmental behaviour. I expect that moral judgment helps clarify how values are related to pro-environmental behaviour; that is, whether differences are explained by culture or by differences in an individual's moral universe. The finding that environmentally friendly behaviour is associated with moral judgment, in addition, shows that EF is a life-long developmental process. People who have higher scores on moral judgment are also more environmentally friendly.

Initially in the studies of environmentalism from a psychological perspective, explanatory models of pro-environmentalism were based on knowledge and obligation. It was assumed, that when people know more about processes in nature and are aware of environmental problems, their behaviour will change. The knowledge and sense of obligation were important predictors of environmentally friendly behaviour, but adding feelings of responsibility or feelings of regret, the exploratory power of these models raised (e.g., Kaiser 2006).

Moral sensitivity (i.e., empathic concern and perspective taking) is a component that needs more attention in studies of pro-environmentalism. Rest (1986) proposed that cognition and affect are different slides of the same coin. Moral sensitivity, in terms of Rest, is an awareness of consequences of one's behaviour. Social intuitionists (e.g., Haidt 2001) have documented the independent role emotions play in our moral cognition (for a brief review see Helkama, 2009, pp. 191-194). Greene, Sommerville, Nystrom, Darley and Cohen (2001) claim that there is a functional difference between cognition and affect in moral decision-making. One might argue that moral sensitivity is primarily affective. Narváez (2008), in her Triune Ethics Theory, focuses on motivational orientations that are rooted in unconscious emotional systems. Her ethic of engagement seems conceptually closest to moral sensitivity. The ethic of engagement is rooted "in the mammalian emotional systems that drive us toward intimacy, such as play (…) and care…" (Narváez, 2008, p. 100). Narváez (2008) claims that empathy and engagement is a primary force behind moral behaviour. High emotional connectedness with nature could be one example of engagement. As shown by this dissertation, visiting nature for leisure activities without having high emotional connectedness to nature does not promote an ecological worldview. The ability to imagine is strongly related to empathic concern and perspective taking as

well. One is not able to feel sympathy or imagine her/himself in other shoes without these abilities.

Given this, a natural question to pose is: whether we can find support for the idea that *emotional connectedness to nature* is part of moral sensitivity, the most emotionally loaded component of Rest's four-component model of morality. As emotional connectedness to nature was measured in the same sample as moral variables in the present dissertation, it allowed a small additional analysis. The correlations between emotional connectedness to nature and other variables were the following: with empathic concern .37 ($p < .01$), perspective taking .29 ($p < .01$), moral judgment .07 ($p < .05$) and responsibility .43 ($p < .01$). Indeed, emotional connectedness to nature had high correlations with empathic concern and perspective taking (to remind the reader that these components were human-related), and responsibility towards environmental conditions (e.g., inner motivation to do something for the environment). The lowest correlation was between emotional connectedness to nature and moral judgment. Thus, both conceptually and empirically, it seems justified to place emotional affinity with nature under moral sensitivity. There is evidence that empathy toward humans and empathy toward animals are closely related (Paul, 2000). The actual relationship between empathy felt towards humans and emotional connectedness to nature is an issue that deserves further attention.

The results of this dissertation show that people who are more empathetic also perform more EF behaviours. The development of empathy during childhood needs a good parent-child dyad for proper formation (Hoffman, 2000). Relationships to other people are the bases of formation of attachment and moral feelings. Notably, Chawla (1998) found that in environmentalists life-stories, visiting nature together with important others, played a significant role in choosing a nature-related profession. Thus, other people are crucial for developing the human-nature relationship.

In the end, moral values, pro-environmental attitudes and beliefs, empathy, responsibility, higher moral developmental and positive emotions in nature are related to environmental friendliness. What can we do to promote a better quality of life for all? We could organize outdoor meetings, seminars, workshops in a natural environment and point out to participants the positive influences that nature has on us. Being aware of nature and its positive influences hopefully helps develop higher environmental friendliness. Like good attachment relationships are important for developing empathy, positive emotions in nature raise environmental friendliness. Secondly, environmental problems should be related to each of us personally. Everybody should personally understand and feel responsibility to be more environmentally friendly and make environmentally friendly decisions, as in this study, self-related environmental issues were related more to everyday behaviour. Finally, in this thesis, older people were more EF than younger ones. Since awareness of environmental problems, moral judgment development and connectedness to nature rise with age, environmental friendliness seems to be a process that is related to development. This is a very interesting matter that can be the basis for many new studies. See Figure 4 that illustrates the results of this study and future perspectives.

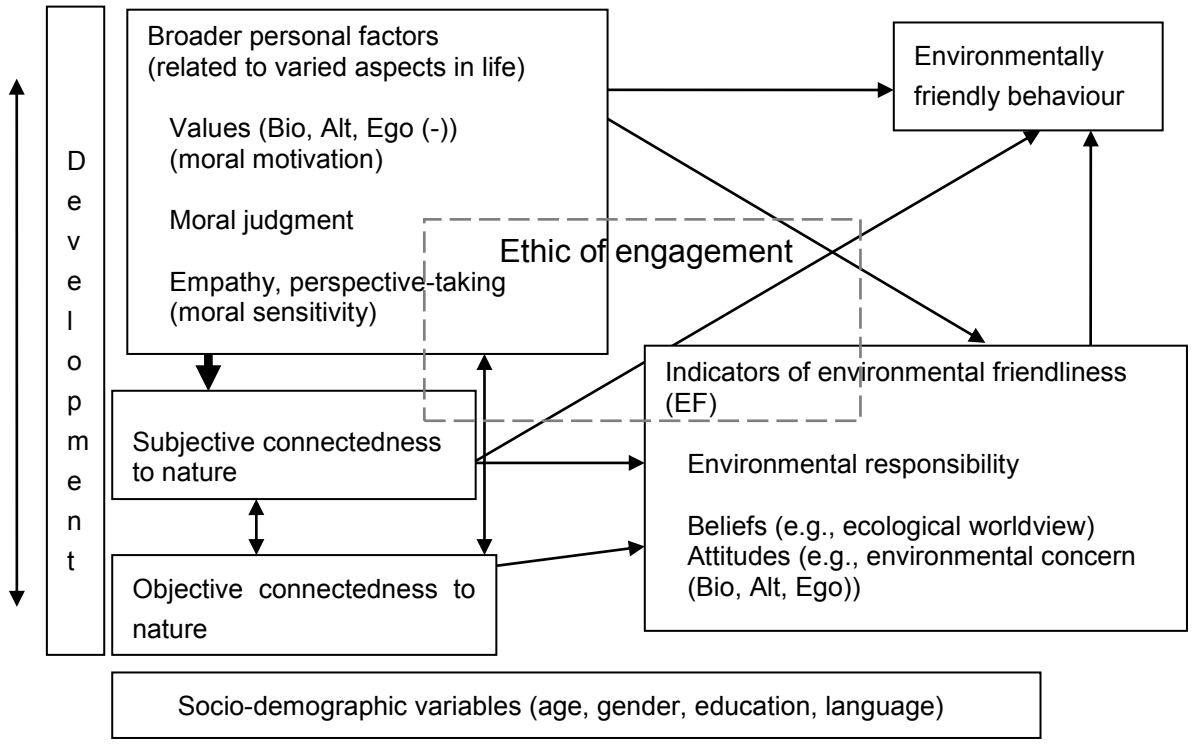

Figure 4 *Illustrative model of results between components of this study and future perspectives.*

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Appendixes

Appendix 1. *Questions from the study "Environment and Us" used in Study one.*

199. What concerns you most about the environment?

.....
.....

People are concerned about environmental problems because of the consequences that result from harming nature. Please indicate how concerned you are about environmental problems for their consequences for: ...

1 – unconcerned 2 – relatively not concerned 3 – difficult to say 4 – relatively concerned 5 – extremely concerned

200.	Animals and birds	1	2	3	4	5
201.	All people	1	2	3	4	5
202.	Me	1	2	3	4	5
203.	Plants	1	2	3	4	5
204.	My future	1	2	3	4	5
205.	Future generations	1	2	3	4	5
206.	My health	1	2	3	4	5
207.	People in my community	1	2	3	4	5

209. In your opinion, what in the environment could pose a risk to your health?

.....

How willing and prepared are you for the following activities?
1 – not ready at all, 2- rather not ready, 3- difficult to say, 4 – rather ready, 5 – completely ready

282. Sorting everyday waste (plastic, glass, paper and batteries) if there were special containers.	1	2	3	4	5
283. Buying the products produced in the companies harming nature.	1	2	3	4	5
284. Paying a certain fee if I really knew that this money is going to the environment protection.	1	2	3	4	5
285. Consuming less water to protect the environment.	1	2	3	4	5
286. In town I would use public transportation or walk instead of taking the car even if it turns out to be less comfortable.	1	2	3	4	5
287. Supporting the establishment of car-free areas in the city-centres.	1	2	3	4	5
288. For the longer distances using rather trains instead of car or buses .	1	2	3	4	5
289. Diminishing everyday waste.	1	2	3	4	5
290. Choosing products produced in Estonia	1	2	3	4	5
291. Buying energy saving domestic appappliances even when they were more expensive.	1	2	3	4	5
292. Using environmentally friendly building and retouch materials.	1	2	3	4	5
293. Using economical fuel at home.	1	2	3	4	5
294. Donating more money to organizations who work on environmental protection.	1	2	3	4	5
295. Taking part in the events organized for environmental protection.	1	2	3	4	5

You are: a man 1 a woman 2
How old are your?..... years old.
Questionnaire fulfilled in (coded as): 1 - Estonian, 2 - Russian

Appendix 2. *Questions from the study "Me, Nature, and Forest" used in Study two and three.*

Please think on your everyday life. Please mark, how much do you perform the following activities at your home :

1 - never, 2 – very rarely, 3 – sometimes, 4 – often, 5 – always, all the time

15.	We sort everyday waste (plastic, glass, metal) and bring it to special containers.	1	2	3	4	5
16.	We buy foor produced in Estonia, even if it is more expensive.	1	2	3	4	5
17.	We try to use wasching products that are harmless to nature.	1	2	3	4	5
18.	We consume less water to protect the environment.	1	2	3	4	5
19.	We try to find a new user for the clothes, furniture, tools, etc., that we do not need any more.	1	2	3	4	5
20.	In the supermarket we prefer products without pacakges or with a package that is harmless for nature.	1	2	3	4	5

Do you perform the following activities and, if so, how often?

		Never	*Very rarely*	*A few times per year*	*A few times per month*	*More often*
24.	Walking in nature.	1	2	3	4	5
26.	Hiking or guided nature tours.	1	2	3	4	5

Several values are listed below that people may find important. Please evaluate how important each of the following values is as a guideline in your life

Not at all important *Very important*

30.	Equality (equal opportunity for all)	1	2	3	4	5
31.	Authority (the right to lead or command)	1	2	3	4	5
34.	Harmony with other species	1	2	3	4	5
35.	Wealth (material possessions, money)	1	2	3	4	5
36.	A world at peace (free of war and conflict)	1	2	3	4	5
39	Unity with nature (fitting into nature)	1	2	3	4	5
41.	Social justice (correcting injustice, care for the weak)	1	2	3	4	5
42.	Protecting the environment (preserving nature)	1	2	3	4	5
43.	Influencial (having an impact on people and events)	1	2	3	4	5

The natural environment can be related to different emotions. Please indicate, how much the following statements apply to you?

		Not at all like me				*Very much like me*
60.	I find mental equilibrium from the natural environment	1	2	3	4	5
61.	I feel oneness with plants and animals	1	2	3	4	5
62.	Sometimes when I am unhappy I find comfort in nature	1	2	3	4	5
65.	I often feel admiration in nature	1	2	3	4	5

Please read through the following story and consider what you would take into account while making the decision.

Jaan's wife is seriously ill and Jaan needs a big sum of money urgently to get good medical care for his wife. Jaan is thinking of selling his forest. He has an emotional attachment to the forest, it is an important recreational area for local people and a home for many wild animals. The only buyer Jaan finds wants to fell all trees. Moreover, certain legalities must be cut to close the sale quickly. Jaan could sell the forest or refuse to do so, based on these conditions. If you were Jaan, how important would the following considerations be when making the decision?

If I were Jaan, the important thing would be ...	*Not at all important*				*Very important*
124. …what is most beneficial to me.	1	2	3	4	5
125. …that my responsibility is to assure the well-being of my family members.	1	2	3	4	5
126. …that it is necessary to take into account laws in society, but still follow one's own conscience in making a decision.	1	2	3	4	5
127. …if I sell the forest only for calming down my own conscience or I am really thinking about helping the other person.	1	2	3	4	5
128. …whether the chance the treatment really helps outweighs gaining disapproval by the local people and breaking rules.	1	2	3	4	5
129. …which behaviour brings about more total good for the whole society.	1	2	3	4	5

130. Please mark which one from the following statements is most important for you: ….....
131. Second most important: .....
132. Third most important: .....

Even experts do not agree on how much human activities harm nature and that must something be done in these matters. How much do you agree with the following statements?

	Completely disagreed				*Completely agreed*
279. When humans interfere with nature it often produces disastrous consequences.	1	2	3	4	5
280. Humans severely abuse the environment.	1	2	3	4	5
281. Plants and animals have as much right to exist as humans do.	1	2	3	4	5
285. The balance in nature is delicate and easily upset.	1	2	3	4	5
286. If things continue on the present course, we will soon experience major ecological crisis.	1	2	3	4	5

297. There exist different opinions about how much the individuals are responsible for environmental problems. What is your opinion?

I do not consider myself responsible at all 1 2 3 4 5 *I consider myself completely responsible*

298. How much each person and family can promote environmental protection?

We cannot do much 1 2 3 4 5 *We can do a lot*

300. Do you feel an inner motivation to do something for the environment?

I do not feel at all 1 2 3 4 5 *I feel very much*

Please indicate how well each sentence describes you ?

		1 – does not descibe me well				*5 – describes me very well*
321.	I often have tender, concerned feelings for people less fortunate than me.	1	2	3	4	5
322.	I try to look at everybody's side of a disagreement before I make a decision.	1	2	3	4	5
323.	When I see someone being treated unfairly, I feel kind of protective toward them.	1	2	3	4	5
324.	If I'm sure I'm right about something, I don't waste much time listening to other people's arguments.	1	2	3	4	5
325.	I am often quite touched by things that I see happen.	1	2	3	4	5
326.	Before criticising somebody, I try to imagine how I would feel if I were in their place.	1	2	3	4	5

In the end we would like to ask come questions about yourself

You are:

a man 1 a woman 2

How old are you? ..... years old.

What is your educational level?

1- Less than primary education
2- Primary education
3- Vocational education without secondary education
4- Secondary education, gymnasium
5- Vocational education with secondary education
6- College
7- Higher eduaction (university)
8- Scientific degree
9- Other .....

Questionnaire fulfilled in (coded as):

1- Estonian
2- Russian

Appendix 3. *Questions from the study "Environment and Us",in Estonian**
Küsimused uuringust "Keskkond ja meie"

199. MIS TEEB TEILE KÕIGE ENAM MURET SEOSES KESKKONNAGA?

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INIMESED TUNNEVAD MURET ERINEVATE KESKKONNA KAHJUSTAMISEST TULENEVATE TAGAJÄRGEDE PÄRAST. PALUN HINNAKE, KUIVÕRD MURETSETE TEIE KAHJULIKE TAGAJÄRGEDE PÄRAST .....

1- ei muretse üldse 2- pigem ei muretse 3- raske öelda 4 – pigem muretsen 5- muretsen väga

200.	Loomadele ja lindudele	1	2	3	4	5
201.	Kõigile inimestele	1	2	3	4	5
202.	Iseendale	1	2	3	4	5
203.	Taimedele	1	2	3	4	5
204.	Oma tulevikule	1	2	3	4	5
205.	Tulevastele põlvkondadele	1	2	3	4	5
206.	Oma tervisele	1	2	3	4	5
207.	Oma kodukandi inimestele	1	2	3	4	5

209. MILLISED KESKKONNATEGURID VÕIVAD TEIE ARVATES OHUSTADA TEIE TERVIST?

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KUIVÕRD VALMIS JA NÕUS OLETE TEIE ISE JÄRGNEVATEKS TEGEVUSVIISIDEKS?

1 – ei ole üldse 2 – pigem ei ole 3 – raske öelda 4 – pigem olen 5 – olen selleks täiesti valmis

282. Eraldama oma kodusest prügist plastesemeid, paberit, klaasi ja patareisid, kui nende kogumiseks on välja pandud spetsiaalsed konteinerid.	1	2	3	4	5
283. Loobuma ostmast selle firma tooteid, mis kahjustavad keskkonda.	1	2	3	4	5
284. Maksma spetsiaalset maksu, kui ma kindlalt tean, et seda kulutatakse looduse kaitsele.	1	2	3	4	5
285. Tarbima vähem vett, et säästa ja kaitsta keskkonda.	1	2	3	4	5
286. Liikuma linnas auto asemel bussiga või jalgsi, isegi kui see on ebamugavam.	1	2	3	4	5
287. Toetama autovabade piirkondade loomist.	1	2	3	4	5
288. Tegema pikemaid sõite pigem rongiga kui bussi või autoga.	1	2	3	4	5
289. Vähendama igapäevaseid jäätmeid.	1	2	3	4	5
290. Eelistama eestimaiseid tooteid.	1	2	3	4	5
291. Ostma energiasäästlikumaid koduseadmeid, isegi kui need on kallimad.	1	2	3	4	5
292. Kasutama keskkonnasõbralikke ehitus- ja viimistlusmaterjale.	1	2	3	4	5
293. Kasutama säästlikku kütust eluruumide kütmisel.	1	2	3	4	5
294. Annetama raha keskkonnaorganisatsioonidele.	1	2	3	4	5
295. Osalema keskkonnakaitse üritustel.	1	2	3	4	5

JA KÕIGE LÕPUKS VEEL MÕNED KÜSIMUSED TEIE ENDA KOHTA.

342. TE OLETE…
mees 1 naine 2
343. KUI VANA TE OLETE?……aastane

*Questionnaires in Russian available at request

Appendix 4. *Questions from the study "Me, nature, and forest", in Estonian**
Küsimused uuringust "Mina, loodus ja mets"

Nüüd aga palun mõelge oma igapäevasele elule. Märkige, kuivõrd on Teie kodus kombeks teha järgmist:

1 – üldse mitte 2 – väga harva 3 – mõnikord 4 – sageli 5 – alati, pidevalt

15.	Sorteerime oma kodust prügi (plastmass, klaas, plekkpurgid) ja viime vastavatesse kogumispunktidesse).	1	2	3	4	5
16.	Ostame Eestimaiseid tooteid, isegi kui need on välismaistest kallimad.	1	2	3	4	5
17.	Püüame kasutada loodusele kahjutuid pesemisvahendeid.	1	2	3	4	5
18.	Pöörame tähelepanu sellele, kui palju vett me kulutame.	1	2	3	4	5
19.	Püüame leida uut kasutajat oma vanadele tarbeasjadele (mööbel, riided, tööriistad jne.)	1	2	3	4	5
20.	Poes eelistame osta pakendamata tooteid või valime sellise pakendi, mis looduses laguneb.	1	2	3	4	5

Kas ja kui sageli tegelete järgnevate tegevustega?

		Üldise mitte	Väga harva	Mõned korrad aastas	Mõned korrad kuus	Palju sageda-mini
24.	Jalutuskäigud looduses.	1	2	3	4	5
26.	Matkamine või juhendatud loodusretkedel käimine.	1	2	3	4	5

Allpool on loetletud mitmeid väärtusi, mis võivad inimeste jaoks olla olulised. Palun hinnake iga väärtuse puhul, kuivõrd see on OLULINE PÕHIMÕTE TEIE ELUS.

1 - ei ole üldse oluline……5 – väga oluline

30.	VÕRDSUS (võrdsed võimalused kõigi jaoks)	1	2	3	4	5
31.	VÕIM (teiste suunamine, juhtimine)	1	2	3	4	5
34.	KOOSKÕLA TEISTE ELUSOLENDITEGA	1	2	3	4	5
35.	JÕUKUS (vara omamine, raha)	1	2	3	4	5
36.	RAHU MAAILMAS (sõdade ja konfliktide puudumine)	1	2	3	4	5
39.	ÜHTEKUULUVUS LOODUSEGA (oma koha tunnetamine looduses)	1	2	3	4	5
41.	SOTSIAALNE ÕIGLUS (ebaõigluse heastamine)	1	2	3	4	5
42.	KESKKONNA HOIDMINE (looduse kaitsmine)	1	2	3	4	5
43.	MÕJUKUS (inimestele ja sündmustele mõju omamine)	1	2	3	4	5

Looduskeskkond võib olla seotud erinevate tunnetega. Palun märkige, kuivõrd on järgmised tunded Teile omased?

		Ei ole üldse omane				*On täiesti omane*
60.	Ma leian loodusest hingelist tasakaalu.	1	2	3	4	5
61.	Ma tunnen ühtekuuluvust taimede ja loomadega.	1	2	3	4	5
62.	Kui ma olen õnnetu, leian ma vahel looduses lohutust.	1	2	3	4	5
65.	Loodus tekitab minus sageli imetlustunnet.	1	2	3	4	5

Järgnevalt on esitatud üks lugu. Palun lugege see läbi ja mõelge, mida Teie otsustamise juures arvestaksite?

Jaani naine on raskesti haige ning Jaan vajab koheselt väga suurt summat raha, et tagada oma naisele õigeaegne ravi. Jaan kaalub oma metsa müüki. See mets on talle emotsionaalselt tähtis, oluliseks puhkealaks kohalikele elanikele ning koduks paljudele metsaelanikele. Ainus ostja, kelle Jaan on leidnud, soovib peale metsa müüki kogu metsa maha võtta ning pealegi peaks tehingu kiireks toimumiseks kasutama mõningaid ebaseaduslikke võtteid. Jaanil on võimalus sellistel tingimustel mets müüa või seda mitte teha.
Kui Teie oleksite Jaan, siis kuivõrd võtaksite otsustamise juures arvesse järgmisi asjaolusid?

	Kui mina oleksin Jaan, siis minu jaoks oleks oluline arvesse võtta seda, …	*Ei ole üldse oluline*				*Väga oluline*
124.	... mis mulle endale kõige kasulikum on.	1	2	3	4	5
125.	... et minu kohus on tagada oma perekonnaliikmete heaolu	1	2	3	4	5
126.	... et tuleb arvestada ühiskonnas kehtivate seadustega, kuid siiski otsuste tegemisel lähtuma oma südametunnistusest.	1	2	3	4	5
127.	... kas ma müün metsa ainult enda südame rahustuseks või ma tõesti mõtlen ainult teise inimese aitamise peale.	1	2	3	4	5
128.	... kuivõrd võimalus selleks, et see ravi tõesti aitab, kaalub üles võimaluse sattuda kohalike elanike meelepaha alla ning seadusega pahuksisse.	1	2	3	4	5
129.	... milline käitumine toob kogu ühiskonnale kokkuvõttes suuremat kasu.	1	2	3	4	5

130. Palun märkige, milline eelnevatest väidetest on Teie jaoks kõige olulisem (*märkige küsimuse number*):
……..
131. Milline on teisena kõige olulisem: ……..
132. Milline on kolmandana kõige olulisem: ……..

Isegi kõik asjatundjad ei ole ühel nõul selles, kui tõsiselt inimtegevus loodust ohustab ja kas seetõttu peaks midagi ette võtma. Kuivõrd Teie nõustute järgmiste seisukohtadega?

		Ei ole üldse nõus				*Täiesti nõus*
279.	Inimeste tegevusel on sageli looduse jaoks ohtlikud tagajärjed.	1	2	3	4	5
280.	Inimkond käib loodusega väga halvasti ümber.	1	2	3	4	5
281.	Taimedel ja loomadel on samasugune õigus olemas olla kui inimestel.	1	2	3	4	5
285.	Looduse tasakaal on väga õrn ja kergesti rikutav.	1	2	3	4	5
286.	Kui inimkond endist viisi jätkab, jõuame varsti suure ökoloogilise katastroofini.	1	2	3	4	5

297. On olemas erinevaid arvamusi selle kohta, kuivõrd üksikisikud kannavad vastutust keskkonnaprobleemide eest. Mida arvate Teie?

Ma ei pea end üldse vastutavaks	1	2	3	4	5	Ma pean end suurel määral vastutavaks

298. Kuivõrd iga inimene ja pere saab oma igapäevaelus kaasa aidata keskkonna hoidmisele?

Me ei saa suurt midagi teha	1	2	3	4	5	Me saame ise väga palju ära teha

300. Kas Te tunnete, et Teil on sisemine vajadus keskkonna heaks midagi teha?

Üldse ei tunne	1	2	3	4	5	Tunnen väga

Palun valige, mil määral järgmised laused Teid iseloomustavad?

1 – ei iseloomusta mind hästi…….5 – iseloomustab mind väga hästi

321.	Ma muretsen tihti inimeste pärast, kel on elus vähem vedanud kui minul.	1	2	3	4	5
322.	Lahkarvamuse korral püüan enne otsuse tegemist arvestada kõikide seisukohtadega.	1	2	3	4	5
323.	Kui näen, et kedagi kasutatakse ära, tahaksin tema kaitseks välja astuda.	1	2	3	4	5
324.	Kui olen kindel, et mul on millegi suhtes õigus, ei raiska ma teiste põhjenduste kuulamisele aega.	1	2	3	4	5
325.	Tihtipeale olen üpris liigutatud asjadest, mida näen juhtumas enda ümber.	1	2	3	4	5
326.	Enne kui kedagi kritiseerima hakkan, katsun kujutleda, kuidas mina ennast tema asemel tunneksin.	1	2	3	4	5

Ja kõige lõpuks veel mõned küsimused Teie enda kohta.

351. Te olete…

mees 1 naine 2

352. Kui vana Te olete?……aastane

348. Milline on Teie haridustase?

1- Algharidus
1- Põhiharidus
2- Kutseharidus (ilma keskhariduseta)
3- Keskharidus (keskkool, gümnaasium)
4- Kutsekeskharidus
5- Rakenduslik kõrgharidus
6- Kõrgharidus
7- Teaduslik kraad
8- Muu .....

Kodune keel kodeeritud:
1- Küsimustik täidetud eesti keeles
2- Küsimustik täidetud vene keeles