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THE ROLE OF ENVIRONMENTAL IDENTITY IN THE DEVELOPMENT OF ENVIRONMENTALLY CONSCIOUS BEHAVIOUR

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Doctoral dissertation

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"When you've finished your own toilet in the morning,
then it is time to attend to the toilet of your planet, just so, with the greatest care"
Antoine de Saint-Exupéry

1 INTRODUCTION

The individualistic society of our modern age entails a significant change in the relationship between the individual and society. Individualism can be a novelty of and a threat to modernization at the same time. The comfort of the consumer society enables individuals not to have to depend on each other so strongly (Kiss and Pikó, 2004). Due to the loose bond of the individual self to the social environment, according to social-psychology, the reflective self (determined by Mead) cannot fully develop without social interactions. Due to the lack of sense of community we focus only on maintaining and developing ourselves but not our environment, e.g. social relations, nature or our planet.

Researches on environmentally-friendly and environmentally-harmful behaviour show a slightly positive tendency towards the strengthening of environmentally-friendly consumer behaviour (National Geographics and Globescan, 2012, 2014). These changes were initiated not only by the consumers' environmentally conscious attitude but economic changes, financial considerations and a more cost-effective household maintenance. Thus environmentally-friendly activities of a household were fostered by the increase of energy efficiency and the decrease in energy consumption.

Economic crisis affected the population from two directions. As a positive effect, saving strengthened, but as a negative effect, the importance of environmental issues, global warming, air pollution, water pollution, desertification, decline in biodiversity, waste - have decreased. Nielsen's research (2011) showed that the questions of economic prosperity and livelihood, understandably, became more important than environmental protection. In addition to indifference, the signs of the distance from the actual problems also appeared, which can be considered as a problem solving method, whereby consumers explain their lack of concern with the fact that environmental disasters and problems are the consequences of human behaviour (Nielsen, 2011). 2014 figures show the breaking of the negative trend caused by the crisis and the strengthening of environmental concern,

but the importance of environmental problems for the population does not reach the level of 2008 (National Geographics and Globescan, 2014).

Citizens are the key factors of the sustainable consumption aiming at the least possible environmental impact (WEF, 2011). Individuals are central players of economy as consumers, investors, decision makers and employees. Consumer commitment is crucial in establishing a sustainable consumption. My dissertation focuses on the establishment of consumer commitment as the essence of sustainable consumption.

My opinion is that sustainable consumption can only be reached if business models, production and consumer attitude integrate the concept of sustainability through environmental education and social marketing. For this purpose a wider range of actors should be brought together, taking the government's, corporations' and social actors' (e.g. civil organizations) responsibility into consideration.

The approaches of sustainable consumption may vary insofar as which stakeholder group concerned is more emphasized and who is brought into focus. According to the followers of structuralist approach, attitude and behaviour are driven by environmental structure. If economic environment supports sustainable consumption by regulations and supply, then consumer behaviour will change. According to the voluntaristic approach context is just one part of the whole system, and attitude and behaviour are independent of structure (Dobson, 2007). Based on this, personal attitude, personality traits and individual behaviour should be dealt with. I believe that the two approaches cannot be separated from each other. Personal commitment, as it is dealt with by complex behaviour models, require motivation, supportive environment and infrastructure. My dissertation can focus only one of the approaches, namely the personal traits.

Environmental citizen is a person (Dobson, 2007) who recognizes that the behaviour driven by individual interests is often threatening the quality of public good, as nature. Environmental citizens' sustainable consumption is caused not only by economic incentives, their motivation lies also in their commitment to common values of environment. Environmental citizen is committed to public good. Moral behaviour and its resulting satisfaction support the development of environmentally-friendly behaviour.

A commitment to environmentally-friendly behaviour can help an individual to develop a feeling of belonging to nature (Clayton, 2003). If the self-concept is expanded to the

natural world, then those behaviours which lead to the destruction of the environment will be considered as self-destructive behaviour (Mayer and Frantz, 2004), and this is why we should attempt to avoid them. The concept of environmental identity - that is the degree to how we feel that nature is an important part of the self (Clayton, 2003) - can be seen as a strong influence on the change of behaviours towards a commitment to environmentally conscious behaviour[1]. In my dissertation I will explore the significance of environmental identity and its effect on environmentally-friendly behaviour in the interest of revealing the role of environmental identity in environmentally-friendly activities and the development of sustainable consumption.

1.1 OBJECTIVE AND STRUCTURE OF THE DISSERTATION

In my dissertation I study sustainable consumption, including environmentally-friendly consumer behaviour, based on the theory of sustainable development as a framework. The concept of sustainable consumption is described in Chapter 2.

Along with consumer behaviour research, green marketing and social marketing, among others, environmental psychology also deals with the examination of the determining factors of environmentally-friendly behaviour, although the results do not always lend themselves to mutual use and interconnections. The themes of research in the different fields are strongly connected and thus – as I have continued my studies in both fields – I consider it to be particularly important and essential to use the results obtained in both fields in my dissertation.

The starting point was the interpretation of psychology trends in psycho-graphic factors explaining environmentally-friendly behaviour. In my dissertation I will demonstrate first the concepts of classical psychology schools relating to environmental awareness and personality theory (Chapter 3.1-3.5). The concepts of consumer behaviour research will be incorporated into my dissertation through the interpretation of behaviour models suitable to study environmentally-friendly behaviour (Chapter 6) These models are to study the three major categories of factors:

- external, situational factors;

[1]My dissertation focuses on the relationship between the individual and the nature. Hereinafter the following concepts will refer to this relationship: bond to natural environment, sense of belonging to environment, sense of belonging to nature, environmental identity (as a self-concept extended with nature).

- internal, psycho-graphic factors;
- demographical attributes.

The dissertation focuses on psycho-graphic factors as personality and environmental identity in particular. In the research of the development of environmentally-friendly behaviour, the examination of the role of personality (Davis et al., 2009; Dono et al., 2010; Hinds and Sparks, 2008) is justified by the existing gap (Csutora, 2012; Kraus, 1995; Vermeir and Verbeke, 2006) between attitude and actual behaviour. In order to understand the concept of environmental identity (Chapter 4), an emphasis is placed on the theory of the development of personality as well as on marketing aspects. Later, I will go on to determine in detail the possibilities of examining the relationship between individuals and nature and the concept of environmental identity (Chapter 5).

The primary goal of my research is to build environmental identity into the established models of consumer behaviour and examine the effect of environmental identity on the extent of environmentally conscious behaviour.
In chapters on empirical research (Chapters 7-10) I examine the measurement options of environmental identity by comparing the advantages and disadvantages of direct and indirect methods. Preliminary studies supported the applicability of Clayton's Environmental Identity scale (2003). Based on the results, my final empirical research was conducted on a representative national sample in 2012. In my dissertation I applied regression path analysis to confirm the medium strong direct effect of environmental identity on the extent of environmentally-friendly behaviour, as well as its indirect effect through environmental attitude, environmental concern and personal norm (Chapter 10). The practical significance of the research is that environmental identity is raised and proved to be as a new factor to be introduced in the focus of social marketing campaigns aiming at developing environmentally-friendly activities. It determines the nature and focus of marketing interventions through its measurement, determining factors, effects and connections.

2 SUSTAINABLE CONSUMPTION

This dissertation does not aim to study sustainable development in detail. Though a short summary is essential as I consider sustainable development as a research framework based on which environmentally conscious consumption can be studied by focusing on one pillar of sustainable consumption, namely the environmental pillar. The objective of the dissertation is to encourage sustainable consumption through the study of commitment to nature, therefore this chapter will briefly summarize the concept of sustainable development then there will be more focus on sustainable consumption and the stakeholders of sustainable consumption.

The achievement of sustainable development[2] during the last 20 years has generated a number of debates (Szlávik, 2014). As Kerekes (2012) states, the problem is rooted in the fact of how sustainable development can be interpreted. The interpretation of the term 'sustainability' is simpler, it means to ensure the continuous existence of something. The interpretation of the term 'development' is more complex, this can imply qualitative and quantitative growth. As Daly says (1993), a distinction should be made between growth, referring to a quantitative, size change, and development, which refers to a qualitative change in the direction of a more complex and better state.

In spite of the constant debates about this concept, some general principles can be laid down that represent constant focus (Drexhage and Murphy, 2010)

- commitment to equality and fairness meaning to ensure development for the world's poor as well as a responsible decision making mechanism for the future generation;
- long-term perspective;
- and the connection of environment, economy and society. Sustainable development involves the integration and understanding of the three pillars, and the action in this complex relationship.

The three pillars of sustainability is usually illustrated as three circles partially overlapping each other, which is a conceptually simple model. The disadvantage is that this model also implies the separation of the three sectors due to the small overlapping

[2]"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."(UN, 1987)

(Giddings et al., 2002). The model supports the concept whereby sustainable development can be treated by categories and the potential change between the sectors can be handled, the sectors can substitute each other (e.g. economic development can compensate environmental impact). As a result, economic pillar or environmental pillar during strategy creation is often over emphasized. In reality however, economy strongly depends on the society and environment (Daly, 1992 quoted by Giddings et al., 2002). Giddings et al suggest nest model to create conceptual approach for integration. In this case, the figure (Figure 1) clearly shows that economy depends on society and both depend on environment.

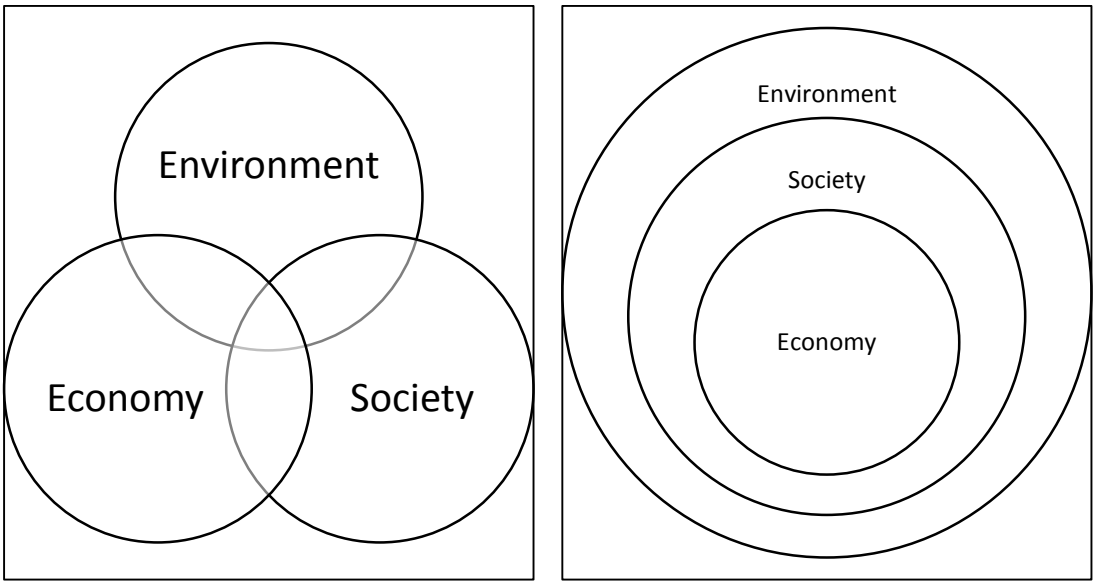

Figure 1 Connection of pillars of sustainable development
Source: own editing, Giddings et al., 2002 basis

Sustainable development can be enhanced from several directions. Such approaches are, but not limited to, the creation of responsible corporate behaviour, clean production, sustainable architecture, mobility, energy management and sustainable consumption. Sustainable consumption and production have an important role in the concept of sustainable development and in the areas of implementation. Rio Declaration (1992) underlines the following:

"To achieve sustainable development and a higher quality of life for all people, States should reduce and eliminate unsustainable patterns of production and consumption and promote appropriate demographical policies." (Bulla et al., 1993, quoted by Valkó, 2003. P. 6.).

Main steps of the institutionalisation of environmental protection and the establishment of sustainable development are summarized in Table 1.

Date	Event
1962	Rachel Carson wrote Silent Spring on the negative impact of chemical substances.
22 April 1970	The first Earth Day event in the United States, hence the appearance of the modern environmentalist movements.
1972	Establishing the Club of Rome Dennis Meadows et al wrote the report of "The limitation of growth".
1970	UNESCO adopts the *Man and the Biosphere* Programme. The objective is to study the interaction between human activities, climate zones and living nature.
5 June 1972	United Nations World Conference on the Human Environment held in Stockholm. Result: - Declaration on Human Environment - Declaration on Guidelines - Action Plan Proposals - Decision to set-up UNEP (United Nations Environment Programme)
1984	Foundation of the UN's *World Commission on Environment and Development* Ms Gro Harlem Brundtland was elected to be its President.
1987	Report of the World Commission on Environment and Development: *Our Common Future,* also known as Brundtland report. As a result, sustainable development has become widely known.
1992	UN *Conference on Environment and Development*, Rio de Janeiro Result: - Rio Declaration on Environment and Development including 27 principles. - AGENDA 21 is a 300-page document divided into 40 chapters. These recommendations are legally non-binding. - Framework agreement on Climate Change - this document aims to reduce the emission of greenhouse gas concentration and is legally binding for all signatories. - Convention of Biodiversity - to protect living nature, legally binding. - Forest Principles - aimed to be an international agreement but remained to be a guideline. Legally non-binding The introduction of the concept of sustainable consumption in addition to sustainable development.
2002	UN World Forum on Sustainable Development, Johannesburg Result: - Johannesburg Declaration on sustainable development containing 32 points. - Execution Plan of 153 points. Dealing with the social dimensions of sustainable development, that is the integration of environmental policy and social policy.
2012	Rio-20 Conference Result: - Future We Want Final Act - Debated final act without expected agreements, undertakings

Table 1 Main stages of the formation of sustainable development concept
Source: own editing

Key elements of non-sustainable development are overconsumption and under consumption, too. Consumption as such has a positive economic impact as long as

meeting the needs does not require overexploitation of the environment. Over-consumption is present in developed societies while developing countries, poor regions represent under consumption. The goal of the sustainable consumption is to eliminate both, for this reason the enhancement of sustainable consumption should be a key issue in achieving sustainable development and in environmental politics (Valkó, 2003).

2.1 CONCEPT OF SUSTAINABLE CONSUMPTION

Brundtland report[3] focused on the possibilities to create sustainable production only; sustainable consumption was not examined (Tamás, 2006). The concept of sustainable consumption was mentioned first in AGENDA 21 drafted at the Rio Conference in 1992. The content of the concept as a definition however was not laid down.

The first definition was formulated in 1994 at the ministerial round table in Oslo:
"The use of goods and services that respond to basic needs and bring a better quality of life, while minimising the use of natural resources, toxic materials and emissions of waste and pollutants over the life cycle, so as not to jeopardise the needs of future generations." (Norwegian Ministry of Environment, 1995. p. 9.)

Initially, sustainable consumption focused on sustainable production. As Ms Istvánné Hoffmann states (2006), sustainability of production should be dealt with first as production is in the interest of meeting human needs. Regarding the implementation instruments, the Oslo Declaration called the attention to eco-efficiency relating to production, cleaner production and the use of renewable energy sources (Vadovics, 2007). The concept of sustainable consumption was not about decreasing the volume of consumption but about shifting consumption into a more efficient way and about ensuring a better quality of life (UNEP, 2001).
10 years after the Rio Summit, the next UN conference was held in Johannesburg. In Johannesburg Declaration on Sustainable Development, the framework of the establishment of sustainable consumption and production was conferred under national competence.

[3]Report of the UN's World Commission on Environment and Development, 1987

The European Union has played an active role in implementing the Marrakech process[4] started at the Johannesburg Conference (Vadovics, 2007). As determined by the European Commission, in case of sustainable consumption and production, more emphasis is put on the production side. The environmental impact on the whole life cycle of products and services should be taken into account, products should be manufactured in such a way as to minimise damage to the environment (European Commission, 2010). The objective is to meet fundamental needs by creating a better quality of life and by protecting the opportunities of the future generation.

Sustainable consumption and production serves two purposes (Valkó, 2003), in the narrow sense, the purpose is to decrease consumed products, in a wider sense, the purpose was to create a new, long term consumer attitude which takes into account the three pillars of sustainability (environment, society and economy).

Based on this, there are two possible strategic directions (Valkó, 2003):

- efficiency strategy: aiming at the improvement of environment efficiency of production, experts do not consider this strategy sufficient.
- substitution strategy: focusing on the change in consumption structure which includes the decrease in consumption, too.

Quality of life is the key element of sustainable consumption. Emphasis is put on ensuring individual and socio-economic well-being. The question, however, is what well-being really represents. Is it possible to achieve welfare while decreasing the consumption of goods? If increasing consumption is associated with well-being, how much can environmental impact be reduced with environmentally efficient production? Rebound effect can be found in several research works[5], this weakens the result of sustainable production (see more details Harangozó, 2011).

In the course of consumption, human culture also evolves (WEF, 2011), which implies that the relationship between consumption and quality of life and well-being should be studied more deeply. It has already been known that the sense of well-being does not

[4]Johannesburg Conference adopted a Plan of Implementation (UN Commission on Sustainable Development, 2002), which proposed the elaboration of a 10-year framework programme necessary to change non sustainable consumption and production, that was called Marrakech Process and was coordinated by UNEP (United Nations Environment Programme).

[5]"By improving efficiency, the demand for a given resource goes up ceteris paribus, because it gets cheaper. This phenomenon is called rebound effect (take back effect, snapback effect, backlash effect)"(Harangozó, 2011).

grow proportionally with the growth of economic welfare (Scitovsky, 1990). Concerning this question, national results are not reassuring, either (NFFT, 2010), only 10% of the population feel very happy[6] while 40% do not feel happy or just a little [7] (see Annex).
In assessing the relationship between well-being and consumption, eco-humanists believe that the actual patterns of consumption are harmful to the quality of life not only because they are harmful to environment but because they do not meet individuals' needs. Human does not need a market to feel happy (Kerekes, 2011). "Modern man is alienated from himself, from his fellow men and from nature. Modern man has transformed himself into a commodity; he experiences his life energy as an investment with which he should make the highest profit, considering his position and the situation on the personality market. Meeting all elementary needs does not lead to happiness and does not guarantee to be sane" (Fromm, 1993 quoted by Kerekes, 2011, p. 9.)
On the contrary, consumption can be examined as an evolution product, which means that consumer behaviour can be considered as a behaviour pattern formed in the course of human development. By saying so representatives of symbolic interactionism emphasize the symbolic nature of consumption and material goods (Jackson, 2009). Our goods represent ourselves, our status in society, our social relationships, even our emotions. Consumption thereby assist in the formulation of personal and group identity (Jackson, 2005a). The role and function of consumption is seemingly complex, thus this question cannot be simply answered. Well-being has undisputed material aspects, but the requirements of well-being go far beyond the scope of financial existence, it has social and psychological consequences (Jackson, 2009).

In summary, my opinion is that sustainable consumption should take both the production and the consumer side into consideration. I find it important to emphasize the wider concept of sustainable consumption (Valkó, 2003), that focuses not only on a more efficient production and on reducing consumption but on transforming consumer values and the concept of well-being. The process of alienation from community and nature should be reversed for the sake of sustainable and environmentally conscious consumption on long term. Stakeholders should be extensively involved and a well-thought-out cooperation is needed to help complex processes and social transformation.

[6]Assessment of 6 or 7 was given on the 7-point Likert scale where 1: not at all happy, 2: somewhat happy, 3: little happy, 4: happy, 5: quite happy, 6. very happy, 7: fully happy
[7]Assessment 1, 2, 3 was given on the 7-point Likert scale

2.2 STAKEHOLDERS OF SUSTAINABLE CONSUMPTION

In case of sustainable consumption, four stakeholder groups should be highlighted (see Figure 2): government, companies, civil associations and the representatives of society, that means all citizens (Sustainable Consumption Roundtable, 2006; WEF, 2011).

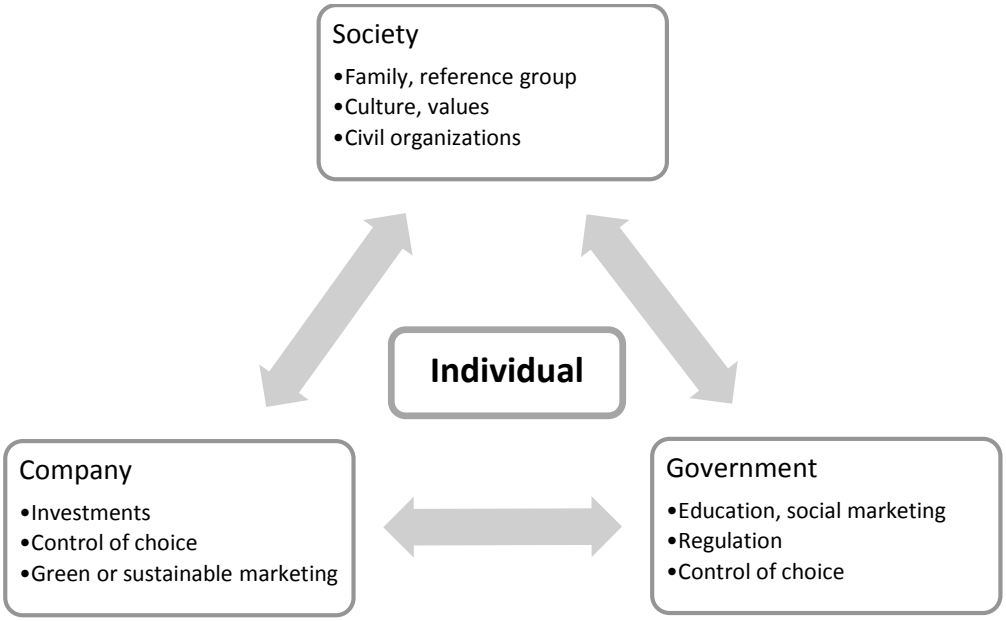

Figure 2 Stakeholders of sustainable consumption

Source: own editing, based on WEF 2011 and Sustainable Consumption Roundtable, 2006

Corporations mean the building blocks of economy based on sustainable development for their investments and developments. Life cycle concept applied in product developments enhance the transformation of business models and value chains (WEF, 2011). Corporate interests and environmental regulation may enforce the saving of material and energy consumption (NFFT, 2010). The application of sustainability concept means that companies should take the capacity of market and resources into consideration. Market capacity means the level of actual consumption, whether the next generation will be able to reach this level, while the capacity of resources implies the problem resulting from the ever growing population of Earth and narrowing resources (Achrol & Kotler, 2012). Companies are responsible for creating responsible consumption by product development and proper marketing mix (Sheth et al., 2011), as well as for avoiding over consumption by consumer information and education. Companies may draw consumers' attention to social dimensions of consumption by social marketing campaigns and education. It is a

corporate responsibility to create common value through value chain; consumers' preference could be influenced by developing proper product portfolio if products meeting the sustainability standards will dominate the market (WEF, 2011).

Government lays down the basis of sustainable consumption by establishing a regulatory framework for sustainable consumption. Markets are driven by public policy guidelines based on which stakeholders consider their actions (WEF, 2011). Government should maintain macroeconomic stability which is based on continuous growth. In contradictory fashion, government is responsible to achieve long-term goals and to protect social and ecological goods on long term. Government participates in shaping the culture of consumption, the government can transform its structure thus influencing human behaviour (Jackson, 2009). By education, market regulation and determining public interests government can create an environment in which consumer decisions in the interest of sustainability are supported.

Citizens of the society, the consumers are key actors of sustainable consumption. Not only because they have an impact on environment by their choice of products but because they are members of the community, they are global citizens. The role of community and its effect on individual behaviour is inevitable. Instead of the socially accepted norm of overconsumption a new norm should be introduced, which is based on real values and not on the importance of ownership (Valkó, 2003). The ratio of consumers committed to sustainable consumption is still too low to lead the economy into the right direction, but its supportive effect is already visible. The commitment of consumers to sustainability is the responsibility of the other stakeholders (WEF, 2011). Concerning shopping behaviours, the choice of consumers is usually influenced at the venue of buying. For long term commitment, however, consumers' values should be changed, which is a slow process. By changing values, consumers should identify with a wider community. Identification with a wider group community, even with nature itself, can help to have a stronger influence on consumer behaviour. In order to commit, consumers should become the community of "Us" instead of "Self" (Doppelt, 2012).

The next sub-chapters will describe the already committed environmentally conscious consumers and will interpret the forms of environmentally conscious consumer behaviour.

2.3 CHARACTERISTICS OF THE ENVIRONMENTALLY CONSCIOUS CONSUMER[8]

There are several definitions for environmentally conscious consumer. According to Roberts (1996) ecologically conscious consumers are defined as those who purchase products and services which they perceive to have a positive (or less negative) impact on the environment. Meffert and Kirchgeorg (1993) defined environmentally conscious consumers as natural or legal entities who take ecological consequences into consideration in their buying behaviours. Ecologically conscious consumers recognize the environmental impact and extra cost in developing, manufacturing, distributing, consuming and using a product and even further stages. Consumers tend to minimize these negative effects and extra costs (Meffert and Kirchgeorg, 1993).

Consumers demonstrating environmentally conscious behaviour are usually described with demographical attributes, as the identification of segments are usually easier based on demographical variables (Straughan and Roberts, 1999). Based on this, a typical environmentally conscious consumer has the following characteristics: young adult, mid-high income and highly educated, and urban woman. Domestic research studies reveal similar results: the issue of environmental protection is a key issue for young, educated women living in Budapest (Csurgó, 2002; Hofmeister-Tóth et al., 2012b).

Research studies found significant correlation between age, employment, gender and environmental awareness among the demographical attributes. *Women* usually have more concern about environment, and they have a more positive attitude towards environment (Anderson and Cunningham, 1972; Davidson and Freudenburg, 1996; Roberts, 1996). As far as *age* is concerned, younger people have more concern about environment (Diamantopoulos et al., 2003). There is not much contradiction regarding *education*, as a demographical attribute. Results (Anderson and Cunningham, 1972; Roberts, 1996; Schwartz and Miller, 1991) show positive correlation between education and the aspects of environmental awareness, i.e. environmental knowledge, attitude and behaviour (Diamantopoulos et al., 2003).

Earlier domestic research studies did not show significant difference by *gender* in the aspects examined, the sensitivity to environmental issues, knowledge in environmental issues and in the use of environmentally-friendly products (Valkó, 2003). Our own results

[8]Parts of this chapter have already been published in articles (Hofmeister-Tóth et al., 2012b)

on the frequency of environmentally-friendly behaviour, however, show that women in general performed more environmentally conscious behaviour than men in 2010 and 2012, although this significant difference was not true of all types of activities (Hofmeister-Tóth at el., 2012a; Hofmeister-Tóth et al., 2012b). Concerning the effect of *age,* the domestic sample is different from the European one. Hungarian young people show less interest in environmental issues and perform less environmentally-friendly behaviour than mid-age or older respondents. Mid-age people can be considered as the most active in environmentally-friendly activities (Hofmeister-Tóth et al., 2012b, Hofmeister-Tóth et al., 2012a, Valkó, 2003). As for *education*, domestic research (Csurgó, 2002; Hofmeister-Tóth et al., 2012b; Valkó, 2003) revealed that higher education entails a more environmentally conscious behaviour.

From another research perspective, researchers examining psycho-graphical and social factors entered the fray and these factors have more predictive power on environmentally conscious behaviour (Straughan and Roberts, 1999). Among the most common concepts examined were environmental knowledge, environmental attitude, value orientations, environmental concern and the perceived consumer effectiveness (Laroche et al., 2001; Leonidou et al., 2010). Numerous studies (Bamberg and Möser, 2007; Banerjee and McKeage, 1994; De Groot and Steg, 2008; Dunlap et al., 2000; Moisander, 2007; Schultz, 2001; Zsóka et al., 2013) linked the aforementioned factors to environmentally-friendly behaviour, on average with a strong relationship, but different researchers have found varied results.

Perceived consumer effectiveness is a measure of the subject's judgement in the ability of individual consumers to affect environmental problems (Antil, 1978 quoted by Roberts, 1996). Research studies (Ellen et al., 1991; Straughan and Roberts, 1999; Webster, 1975) find perceived consumer effectiveness as the strongest element of environmentally conscious behaviour.

The effect of environmental concern should also be taken into consideration. The more impressive the environment is, the more we worry about it which leads us to more altruistic actions (Roberts, 1996). The effect of environmental concern, however, seems to be weaker than that of perceived consumer effectiveness. It is less probable that environmental concern without the sense of effectiveness will encourage consumers to act.

Environmental attitude can be defined as the individual's belief, motivation and intention to act (Schultz et al., 2004). Based on the research on consumer behaviour, attitude itself is not sufficient to predict real behaviour (Diamantopoulos et al., 2003). Positive attitude and a change in attitude can be effective in case of simple, repetitive and low cost activities, while in case of choices requiring long term commitment or in case higher cost activities positive attitude is not reflected in actual behaviour (Gatersleben et al., 2002). Personality has been added to the group of psycho-graphic factors in the last few years (Bartels and Hoogendam, 2011; Brügger et al., 2011; Doherty, 2009; Dono et al., 2010; Hinds and Sparks, 2008; Hirsh, 2010; Sparks and Guthrie, 1998; Whitmarsh and O'Neill, 2010).

The advantage of definitions based on demographical attributes is that they are easy to handle, but psychological variables mean a stronger thus more useful basis to describe environmentally-friendly consumers (Straughan and Roberts, 1999). In spite of the fact that a significant correlation was detected between demographical attributes and environmentally conscious behaviour, the explaining power of these variables is weaker than that of psycho-graphic variables. The contradictory results of the presented research show that the examination of demographical variables is necessary but not sufficient. In the interest of long-term commitment to environmentally conscious behaviour patterns, consumer mindset is to be transformed which is based on psycho-graphic factors.

Precise interpretation of environmentally conscious behaviour is also necessary to study environmentally conscious consumer. Those behaviour patterns are considered to be environmentally-friendly behaviour whose aim is to minimize the negative effects of the individual's activity on environment (Kollmuss and Agyeman, 2002). This definition is in accordance with Meffert's and Kirchgeorg's definition of environmentally conscious consumer, mentioned earlier. In this context, environmentally-friendly behaviour is goal-oriented, individuals are doing it to improve environment. Due to the logical relation between the motivation to act and the real behaviour Kaiser and Wilson (2004) suggest that exclusively these goal-oriented behaviours should be treated as environmentally-friendly behaviour.

In another approach, Steg and Vlek (2009) find those activities environmentally-friendly which are least damaging to the environment, or even are having a positive effect on it (Steg and Vlek, 2009). In this context, those activities may be considered environmentally-friendly which are not necessarily driven by environmentalist

motivation. Even those activities can be considered environmentally-friendly, which are done for other, for example financial or health related purposes, or by habit.

It is important to mention, however, that environmentally-friendly behaviour does not necessarily entail real effect even if it was intended to have environmentally-friendly purposes (see more details Csutora, 2012). The definition of environmentally-friendly consumer is still uncertain. Who can be considered environmentally-friendly consumer: the one who does more environmentally-friendly activities or the one whose environmental effect is better? Literature uses both approaches depending on research objectives. In my dissertation I apply Kaiser's and Wilson's scale and their suggested concept of a narrower activity.

Environmentally-friendly activities may take various forms such as buying environmentally-friendly products, energy saving, selective waste collection or even political activity for a given cause. It is clear that there is a wide variation in the possible activities that can be grouped differently.

Meffert and Kirchgeorg (1993) for example defined five types of environmentally conscious behaviours out of which most consumers select one or two, not utilizing all the options. The five types of behaviours are the following (Meffert and Kirchgeorg, 1993):

1) reduction of the consumption of traditional products,
2) change in demand to shift to buying environmentally-friendly products,
3) consumption of environmentally efficient products,
4) participation in recycling, selective waste collection
5) environmentally conscious complaint or protest

Due to the significant differences between the activities literature usually consider environmentally-friendly activities multidimensional. It was not possible to confirm the spillover effect among the different activities. A person performing environmentally conscious behaviour in one area might not want to be committed to environment in other areas (Thøgersen and Ölander, 2003). Research studies therefore highlight only one specific activity as different behaviour types entail different motivation background (McKenzie-Mohr et al., 1995). Focusing on one specific behaviour type only means that no integrated theory could be developed in the area of environmental protection.

By contrast, Kaiser and Wilson (2004) suggest unidimensional concept which differentiates environmentally conscious behaviours based on the difficulty of performing that behaviour and not based on the motivation. It is assumed that activities are driven by

cost-effectiveness therefore activities done by many individuals are considered easy activities while activities done by few individuals are considered hard activities which requires strong environmentally-friendly attitude. The concept supported by Kaiser and Wilson assumes a strong relationship between attitude and environmentally-friendly behaviour (Gatersleben, 2012).

The aforementioned description shows that the study of psycho-graphic factors (eg.: value, attitude, personality) may bring valuable results in the course of the examination of environmentally-friendly consumer and environmentally-friendly behaviour. I will focus on these factors when analysing further literature and research.

3 INTERPRETATION OF PSYCHOLOGY SCHOOLS IN THE RESEARCH OF ENVIRONMENTALLY CONSCIOUS BEHAVIOUR

My dissertation emphasizes the applicability of results of psychology on the area of consumer behaviour and links the two areas when studying environmentally-friendly consumer behaviour. Psychology as a discipline had/has an influence on several aspects of marketing but in case of consumer behaviour these two areas are strongly linked. Let's just think of those well-known concepts, such as motivation, attitude, perception, persuasion which are all rooted in psychology but are also necessary to understand consumer behaviour and the success of certain marketing activities.

Environmentally-friendly behaviours presented in Chapter 2.3 may be considered as decision making situations when buying a product or a service. Therefore the link between consumer behaviour models and the stages of purchase decision process can be applied for the examination of environmentally-friendly activities. These models (see for example: Engel – Blackwell – Miniard – model, 1990) are vary in their complexity but all contain the following elements:

- *variables effecting decision process*: several trends in psychology have contributed to understand individual factors (motivation, values, lifestyle, personality) and social factors (culture, group, family), such as psychoanalysis by introducing irrational decisions and the unconscious as well as social psychology by analysing social relationships.

- *information process*: perception, attention, understanding, memory and learning whose studies refer to the relevant results of gestalt psychology (its research on sensation and perception) and cognitive psychology (information process, memory).

- *decision process*: it usually examines five steps (1) problem recognition, (2) searching (3) evaluating alternatives (4) purchase (5) final result. When examining these steps, individual inner factors and group effect are important

analysing aspects, therefore we can rely on the results of cognitive psychology and social psychology.

Psycho-graphic factors examined in my dissertation are rooted in social psychology therefore in this chapter I will detail the interpretation of personality by social psychology and the relevant factors relating to environmental awareness. As a closure of the chapter I will outline the fundamentals of ecopsychology as the interpretation of environmental identity in Chapter 5 is realized in the framework of ecopsychology.

3.1 SOCIAL PSYCHOLOGICAL PERSPECTIVE

Marketing research is usually based on the results of social psychology. This perspective provides a foundation and help in developing encouraging environmentally-friendly behaviour. An activity affecting environment is not an isolated individual activity, but is influenced by social effects (Koger and Scott, 2007).

Research studies on environment sustainability particularly focus on attitude (Cook et al., 2002; Grob, 1995; Kaiser et al., 2010; Kellert, 1993; Rauwald and Moore, 2002), persuasion (Davis, 1995; Gonzales et al., 1988), commitment (Davis et al., 2009; Davis et al., 2011; Hinds and Sparks, 2008; Werner et al., 1995), normative influencing (Aronson and O'Leary, 1982; Cialdini et al., 1990), motivation (Levitt and Leventhal, 1986; Stern et al., 1985).

Early studies put the focus on certain local environmental issues such as household energy consumption or waste management while today's studies shift from specific approach towards a wider one to re-interpret the relationship between nature and individual (Mayer and Frantz, 2004), for example cultural values (Banerjee and McKeage, 1994; Dutcher et al., 2007; Schultz et al., 2005; Schultz and Zelezny, 1999; Schwartz, 1999; Stern and Dietz, 1994; Stern et al., 1999), environmental concern (Hirsh, 2010; Schuett and Ostergren, 2003; Schultz, 2001; Schultz et al., 2005), and the role of identity influenced by nature (Clayton, 2003). I will list below the key issues and concepts to help with putting environmental identity into a model.

3.1.1 SELF-CONCEPT OF SOCIAL PSYCHOLOGY

Social psychology focuses on the examination of interaction, group effects and group behaviours. In the examination of self-concept the main question is how an individual can create a coherent self-concept in a group environment. Self-concept is influenced by personal experiences, interaction with others and cultural effects. Self-concept consists of a stable and organized structure of personal experiences. Thus self is an object inside us, the sum of who "I" am (Bordens and Horowitz, 2008).

Self-concept represents the totality of the individual's thoughts and feelings that have reference to him- or herself as an object of thought. As an object individuals need to step out and observe himself or herself as an outsider (Owens and Samblanet, 2013).

From social psychological aspect self-concept can originate from three sources (Bordens and Horowitz, 2008): (1) reflected appraisal (2) group comparison and (3) introspection.

- *Reflected appraisal*: seeing the self through the eyes of the other (Cooley, 1902, quoted by Bordens and Horowitz, 2008). This is the main element of symbolic interactionism proving that self is a social product as how others reflect on the individual. This is the basis of Mead's self-theory and Cooley's looking-glass self-concept.
- *Social comparison*: the process of how we see our reactions, capabilities and attributes in comparison with our social environment (Festinger, 1954). Comparison aims to get more precise information and to make life more predictable. Comparison may be based on two aspects: *criteria*, if we see ourselves better or worse based on a certain aspect, or *normative*, if the difference or conformity, harmony with others matter (Owens and Samblanet, 2013).
- *Introspection:* inner observation of our behaviour. Its importance lies in the fact that we usually cannot justify our behaviour, and we can deduce motivation from our behaviour based on the presumed consistent relationship between motivation and behaviour.

These three principles are supplemented by the theory of psychological centrality (Owen and Samblanet, 2013). According to this concept self is formed of hierarchically organized, linked units. These units consist of such attributes and identities that are important for that person. Parts are responsible for protecting individual's self-concept by shifting the potentially dangerous self attributes to periphery in a given situation, while placing strengthening attributes and identities into the centre.

In this paradigm, self-concept consists of our ideas, beliefs and personal attributes (for example: woman, mother, catholic, artistic etc.). Those attributes are mentioned often that can differentiate individuals from others. In addition, if individual is part of a smaller, less dominant group, distinctive attributes of the group will strongly become part of the self-concept (McGuire and McGuire, 1988). According to self-concept theory, based on their observations and evaluations individuals draw conclusions on their self. The individual aims to protect and maintain the actual self-concept (Owens and Samblanet, 2013). Self-concept has importance from three aspects (Swann et al., 2007):

- directs individual behaviour
- enables to predict others' reaction to self-behaviour
- helps to organize the view on individual reality.

Self-concept in psychology is closely related to sociological approach as self and society both had been considered twins in Cooley' and Mead's symbolic interactionism theory. Self-concept as a *social product* originates from social interactions and is formed by several social factors, such as the individual's social position and its place in the cultural and social structure.

Self-concept is also a *social influence* because it has significant consequences both on personal behaviour and on group behaviour (Owens and Samblanet, 2013). Self-concept affects individuals' thoughts, emotions and behaviour. Secondly, it forms the group where the individual belongs to, also the society through the manifestation of social problems. Thus self-concept as a product and as an influencing power is manifested in the individual's life.

3.1.2 APPLICATION OF SOCIAL PSYCHOLOGY IN THE UNDERSTANDING OF ENVIRONMENTALLY-FRIENDLY ACTIVITIES.

In researching consumer behaviour, personal factors influencing behaviour have major importance. Consumer behaviour models and the ones used to study environmentally-friendly behaviour are rooted in social psychology therefore this chapter tends to demonstrate the concepts in detail to adapt them in my empirical study.

VALUE

Values are conceived as life goals or principles (Olson and Zanna, 1993; Rokeach, 1973). Values operate as guiding principles for attitudes and beliefs, and can be considered as factors determining attitude.

Closer and wider cultural environment determines the values being important in terms of consumption. Cultural values mean "beliefs accepted by social environment on what is proper and what is expected" (Székely, 2003, p. 285.). Values have a lasting nature and control the assessment of events. Values are abstract and do not refer to specific objects (Hofmeister-Tóth and Törőcsik, 1996), thus they are above situation. Values remain even if their goals have already been accomplished (Schwartz, 2007), Main features or values are the following (Groot and Steg, 2010):

- they are based on beliefs;
- abstract;
- guiding principles of activities, they affect our decisions in assessing and selecting people and events;
- organized in hierarchical structure.

The research focus on values is justifiable with their significant role in the explanation of beliefs and behaviour patterns, and can predict attitude and behaviour intention (Kamakura and Novak, 1992; Stern, 2000). Individuals take relatively few values into account therefore they are useful explanatory factors in the interpretation of the differences between individuals, cultures, nations and groups (Groot and Steg, 2010).

When studying the link between values and environmentally-friendly behaviour, values in general and with environmental focus should also be studied. General values are incorporated into the individual during socialization and they determine the individual's attitude, norms and behaviour. Environmental value includes all values that can be linked to nature or that correlate with a certain environmental attitude or concern (Schultz et al., 2004). Environmentally-friendly values influence the development of environmentally-friendly behaviour, while only a limited number of general values are linked to environmentally-friendly values. The relationship between values and behaviour have already been confirmed reliably (Thøgersen and Ölander, 2002), the activation of certain values may influence specific beliefs, norms, behaviour intention and behaviour of environmentally-friendly behaviour (Thøgersen and Ölander, 2006).

Studies of general value

Rokeach value survey (RVS)

In the early stage of marketing research, values were mostly analysed with Rokeach value survey (Székely, 2003). Rokeach system consists of two sets of 18 goal and 18 instrumental values. Instrumental values refer to preferable modes of behaviour, while

terminal values refer to desirable end-states of existence, the goals that a person would like to achieve during his or her lifetime (Neulinger, 2001). The majority of the values are self-centered (e.g. self-esteem), some of them are society-centered (e.g. world peace) (Beatty et al., 1985).

This system has been criticized for being too general, unhistorical and abstract, since individual values are more linked to specific and not global values (Füstös and Szalma, 2010). Another criticism mentioned that it is difficult to complete as ranking 18-18 values is difficult and time consuming, and may enhance the need of social compliance (Beatty et al., 1985).

Environmental protection is not listed directly, but the "beauty of world" and "comfortable life" appear among the terminal values. Simmons, Binney and Dodd (1992) added the value of "clean environment" to the scale and found that it cannot be considered as an independent value (Simmons et al., 1992).

List of value (LOV)

A widely known method to study values is the LOV, list of value. This list was developed by researchers of Michigan University, based on the work of Feather, Maslow and Rokeach. The list originally consisted of 9 values (sense of belonging, warm relationships with others, self-fulfilment, being well-respected, fun and enjoyment of life, security, self-respect, sense of accomplishment, excitement), but Kahle later applied an 8-value list during his research by merging *fun and enjoyment of life* with *excitement* due to the latter one's low prevalence. Values fit into Maslow's motivation hierarchy and can be linked to major roles in life (marriage, work, free time). Respondent either have to select two values that are the most important for them or rank the values (Kahle et al., 1986).

LOV values are self-centered (Beatty et al., 1985), which is emphasized by the authors as self-centered values have more relevance in certain roles and situations of life than society-centered values. Therefore it is better applicable in consumption research since consumers' decisions are usually linked to individual goals and not to social goals.

Values can be differentiated based on their internal or external orientation[9]. External values are sense of belonging, being well-respected and security. Internal values are the rest of them (Kahle et al., 1986). Values can be fulfilled through personal relations (sense

[9]Internal control is defined as reinforcement depending on our own skills or capabilities, while in case external control, reinforcement depends on external circumstances or luck (Fröhlich, 1996).

of belonging, warm relationships with others), individual factors (self-respect, being well-respected, self-fulfilment) or impersonal factors (sense of accomplishment, security, excitement, fun and enjoyment of life).

LOV	**Rokeach**
Fun and enjoyment of life	Pleasure
Excitement	Exciting life
Warm relationships with others	True friendship
Self-fulfilment	Inner harmony
Being well-respected	Social recognition
Sense of accomplishment	Sense of accomplishment
Security	Family security, National security
Self-respect	Self-respect
Sense of belonging	

Table 2 Comparison of the original LOV and Rokeach value system
Source: own editing, based on Beatty et al, 1985

There are common values or values relating to similar concepts in LOV and Rokeach value system (see Table 2). Compared to Rokeach value system, the advantage of LOV lies in the following facts: it is easier to apply, respondents complete it more easily and values can be more easily linked to consumer behaviour or buying behaviours (Beatty et al., 1985).

Schwartz's values

Schwartz's values scale is based on the aforementioned Rokeach value system and Kahle's LOV. Schwartz defined 10 motivation types on individual level by general classification of 56 values and by studying the data of 44 countries (Schwartz, 1992, 1994). Schwartz has put little emphasis on individual evaluation of values in his theory, he examines the relationship between values because motivation content can be understood from value clusters and value orientations.

10 value types can be put into a two-dimensional space, where the dimensions are as follows:

- openness to change vs. conservatism
- self-transcendence vs. self-enhancement

The latter one is usually used to study environmentally-friendly behaviour. Self-transcendence means the respect of others' interest including values such as universalism and charity. Self-enhancement reflects the respect of own interests including values such

as performance and power (Lányi, 2008). People characterized with self-transcendence tend to have more environmentally-friendly behaviour compared to individuals representing individualistic values (Schwartz, 1992; Stern and Dietz, 1994). Karp's (1996) research confirms that self-transcendence and openness to change are in positive relationship with environmentally-friendly behaviours, while self-enhancement and conservatism show negative correlation to environmentally-friendly behaviours. This trend is explained with the fact that most environmentally-friendly activities require to reduce egoistic attitude (De Groot and Steg, 2008).

Measurements to study environmental awareness

In the course of studying the relationship between nature and individual, that is, his or her bond to nature, environmental values are considered to determine the strength of relation (Clayton and Opotow, 2003; Gosling and Williams, 2010; Mayer and Frantz, 2004; Olivos and Aragonés, 2011; Olivos et al., 2011; Perrin and Benassi, 2009).
According to their orientation, studies differentiate three value orientations: the first focuses on self, the second focuses on the wider human environment, the third one focuses on biosphere (Joireman et al., 2001; Schultz et al., 2005; Stern and Dietz, 1994).

Merchant's (1992) interpretation is in line with this, whereby environment is a tripartite value for individuals: (1) what is important to oneself alone (egocentric), (2) to humans in general (anthropocentric), (3) and to the biosphere (ecocentric or biocentric). Individuals characterized as egoistic consider personal costs and benefits when they decide about environmentally-friendly activities. The altruistic consider the community's interest, while the biospheric consider nature's interest when considering costs and benefits. All values can sometimes lead to environmentally-friendly behaviour (e.g. reduction of the use of car due to the high price of petrol), but the altruistic and the biospheric values correlate positively with environmentally-friendly beliefs, norms and attitudes (De Groot and Steg, 2008).
In the theoretical model of my dissertation values appear as factors determining and predicting environmental identity. I applied general value scale to study values so that the results are relevant to more behaviour patterns even if examining their direct effect on environmentally conscious consumer behaviour.

ATTITUDE

Attitudes are viewed as cognitive representations (Smith and Mackie, 2004), which involves the individual's evaluation concerning a given person, group, fact, activity or idea.

"Attitude is a mental and neural state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related" (Allport, 1954 quoted by Hofmeister-Tóth and Törőcsik 1996, p. 65.).

Attitude refers to a person's evaluative judgement about a particular entity (Eagly and Chaiken, 1993) with some degree of favour or disfavour. Attitude have three elements: cognitive, affective, and behavioural information (Smith and Mackie, 2004). In practice, however, attitude measures do not make distinction between the three components (Gross and Niman, 1975). The applied items may refer to emotions, beliefs and behaviour. They all form the value of the attitude.

In other words, attitude shows the power of association between the evaluation and the object being evaluated (Fazio et al., 2008). If I hear global warming, what is my first thought? Is it a serious problem or isn't it a real problem?

The advantage of attitude is that it shows a simple way to decision-making. This is important in case environmental protection since individuals tend to feel more and more that behaving environmentally consciously is too much responsibility (Moisander, 2007). Individuals get much and sometimes contradictory information that makes decision-making difficult.

Attitude is widely examined as it is presumed that there is a close relationship between attitude and behaviour. Although the inconsistency of attitude and behaviour has been confirmed by a number of researches (Fazio et al., 1982; Kraus, 1995; Smith and Swinyard, 1983), also in the area of environmentally conscious consumer behaviour (Vermeir and Verbeke, 2006). To understand the gap between attitude and behaviour, it is important to examine the relationship between them.

The relationship between attitude and behaviour

According to Kahle and Berman, there are four types of relationships between attitude and behaviour (McBroom and Reed, 1992), which were evidenced during their attitude researches: first, attitude is caused by behaviour; second, behaviour is caused by attitude;

third, it is a reciprocal relation; fourth, there is no relationship. A third factor was also brought up as a cause for both relationships.

The effect of behaviour on attitude

We can often draw conclusions on our attitude from our behaviour in a given situation. In such cases we determine our attitude towards an object based on our self-perception (Smith and Mackie, 2004). This is the level of superficial information processing. Another way can be if there is an inconsistency between our actions, beliefs, emotions and this uncomfortable feeling encourages us to get rid of these bad feelings which we can do by changing our attitudes. This change is more lasting than that of self-perception, since this requires the individual to process carefully and systematically. Attitude models respond to this type of attitude change, such as:

- Heider's balance theory (Aronson and Cope, 1968; Brickman and Horn, 1973; Heider, 1958.)
- Rosenberg's structural theory on the dynamics of attitude (Rosenberg and Hovland, 1960)
- McGuire's model (McGuire, 1979)
- Learning theory of Hovland and colleagues (Hovland and Weiss, 1951)
- Festinger's theory of cognitive dissonance (Festinger, 2000).

The effect of attitude on our behaviour

As a result of social psychological researches it is obvious that attitude can often, but not always, predict behaviour (Smith and Mackie, 2004). Attitudes can shape behaviour in two ways:

1. attitude directly control behaviour: there is no need to think carefully or plan. The reason is that attitude is capable of shaping our attention to be selective so we "listen to" that information only which is in line with our opinion. In addition, attitude can distort the understanding of the information received so as information can fit into the attitude.
2. attitude control behaviour in a more conscious way: sometimes the individual pays attention to create an intention that matches his or her attitude. This intention initiates the planning of a behaviour matching the attitude.

In order to control our actions, attitude should meet several requirements: it should be easily accessible (Smith and Mackie, 2004), which is achievable if it is a frequent attitude or if we think consciously about the given attitude, that is, we are self-conscious.

Several authors have researched the reasons behind the consistency of behaviour and attitude. Gross and Niman (1974) wrote a comprehensive study in which the problem is traced back to personal, situational and methodical reason groups. Factors inhibiting personal consistency:

- presence of other influencing attitude
- presence of competing motives
- several verbal, intellectual and social capabilities
- different level of activity in different situations.

Situational factors causing inconsistency:

- presence or the image of the presence of certain people
- presence of normative requirements of the proper behaviour
- accessibility of alternative behaviour patterns
- in a given situation, verbal answers are general while behavioural answers are specific
- unforeseen external situations
- expected or real consequences of different behaviours.

According to Kiesel, the following methodological failures may cause inconsistency (Gross and Niman, 1975): reliability, the difficulty of items, spectrum of category and the capability of measuring relevant attitude based on behaviour.

McBroom and Reed (1992) suggest that the question is not whether attitude causes behaviour or vice versa or there is a consistency. It is more important to see in which situations they are consistent and when they aren't.

According to the meta-analysis of Hines et al. (1986), studies show a usually positive and weak relationship between environmental attitude and behaviour.

Environmental attitude: worldview and environmental concern

Environmental attitude is the totality of beliefs, emotions and behavioural intentions, which the individual thinks concerning environmentally-friendly activities and questions (Schultz et al., 2004). Research studies found a mild and medium strong relationship between environmental attitude and environmentally conscious behaviour (Bamberg and Möser, 2007; Hines et al., 1986). Inconsistency is revealed in the studies on environmental attitude and environmentally-friendly behaviour. To address inconsistency, research studies suggest two approaches: based on Ajzen's and Fishbein's similarity theory (1977), general attitude tests are replaced by specific attitudes, where

the object, the behaviour, the context and the time is the same as in the measurements regarding behaviour, thus maintaining direct connection. It is assumed that the weak relationship originates from the incomplete definition of the dimensions of environmental attitude. Comprehensive studies aim to define the dimensions (Milfont and Duckitt, 2004). This, however, disables the power of general attitudes by not allowing joint study of several similar activities. Another way to resolve inconsistency is to incorporate several further variables (influencing the context) into the model such as perceived behaviour effectiveness or the analysis of cognitive processes.

My opinion is that the effect of attitude is manifested in behaviour through a complex process. In my research I do not tend to study specific behaviours. Since I interpret environmentally-friendly activities in general, covering several areas, I examine environmental attitude in a general concept.

Worldview is a general interpretation of attitude which refers to a person's belief about humanity's relationship with nature (Schultz et al., 2004). The individual's worldview serves as a cognitive paradigm or belief system. According to Dunlap and Van Liere (1978) individual's environmental paradigm is a fundamental part of his or her belief system. In my dissertation I apply the New Environmental Paradigm Scale, NEP, developed by Dunlap, Van Liere and colleagues, to measure environmental attitude (Dunlap and Van Liere, 1978; Dunlap et al., 2000).

NEP scale was developed in the 1970th in favour of a change in the prevailing Dominant Social Paradigm. The appearance of an industrialized society allowed people to increase their independence from the biophysical world. Sociology at that time emphasized the uniqueness of human race based on language, technology, scientific and cultural development (Dunlap, 2002). This paradigm did not help to solve environmental problems since it treated humans as independent persons being above all natural creatures (Hofmeister-Tóth et al., 2012b). Catton and Dunlap (1980) accepted the speciality of human race and emphasize that our special skills do not exclude us from the limitations of natural environment. Thus, in order to replace the paradigm of human speciality[10] a New Ecological Paradigm (NEP) was suggested which emphasizes the ecological dependence of human society (Catton and Dunlap, 1980). NEP fundamentally changed the concept of the relationship between nature and the individual. NEP treats the

[10]It is also called Human Exceptionalism Paradigm, HEP (Dunlap, 2002).

individual as part the nature thus putting him or her into suitable limits (Dunlap and Van Liere, 1978). Dunlap et al. do not consider NEP as a specific attitude but an "ecological worldview" (Schultz et al., 2004). The scale has already been applied in many countries to measure environmental attitude (Hawcroft and Milfont, 2010), in spite of its widespread use, however, it has been criticized many times (Cordano et al., 2003), questioning the dimensionality and validity of the scale. The authors reviewed the scale to make its items more balanced and to replace previous wording (Dunlap et al., 2000). NEP scale measures a person's beliefs on the reality of limits to growth, on the anti-antropocentrism, on the fragility of nature's balance, on human privilege (anti-exemptionalism) and on the possibility of an ecocrisis. NEP scale is suitable to study environmental attitude and other socio-economic variables, to connect it with environmental values, to draw conclusions and to examine its relationship with environmentally-friendly behaviour (Milfont and Duckitt, 2004; Schultz and Oskamp, 1996; Sudbury-Riley et al., 2014).

Literature considers environmental concern as another general concept of environmental attitude. Environmental concern, as interpreted by Schultz et al. (2004), refer to an emotion (concern) relating to the beliefs about environmental problems. My opinion is that environmental concern is a transition between emotions and attitudes. Assuming that it is understood as attitude, the emotional component of the attitude is overemphasized compared to the other components. Based on the common definition in references, in my dissertation I will present environmental concern within the concept of attitude, but I will treat it as a separate factor due to its strong emotional focus.

An individual therefore can have concern about the harmful effects of air pollution or the consequences of improper management of dangerous waste. Stern at al. defined three types of environmental concern which are rooted in values (Stern and Dietz, 1994). Egoistic concern refers to the self or self-oriented goals (e.g. power, richness, personal success), altruistic concern is about other people (e.g. family, community, humanity), while biospheric concern refers to all species (e.g. animals, plants). Environment concern can induce actions if they are activated (Schultz, 2000, 2001; Schultz: et al., 2005).

Regarding the research question of my dissertation I find the study of environmental concern especially important as Schultz states in his theory that the value of an object depends on how this object is represented in the given person's self-concept (Schultz,

2000). Schultz assumes that environmental concern and the individual's self-concept are in close relationship. Concern depends on how an individual defines himself or herself dependent or independent from others, any other species. Environmental concern therefore is closely related to how much the individuals see themselves as part of nature. Individuals who feel connected with nature have an extended self-concept which includes non-human species, too, and this may lead to stronger biospheric concern. On the contrary, individuals who feel less connected to nature consider objects representing individual values more important (Schultz, 2000). Schultz and colleagues found positive relationship between the implicit association value of nature and individual and the biospheric concern, and negative relationship in case of egostic concern (Schultz et al., 2004).

This theory presumes the mediator role of environmental concern in relation to the bond to nature and environmentally-friendly behaviour. This mediating effect, though, is still partially evidenced (Gosling and Williams, 2010). In my dissertation I examine this relationship.

Higher education and the belonging to a higher social status lead to a stronger environmentally conscious concern (Winter and Koger, 2004). The reason is that education provides socialization and further information on environmental issues while lower status concerns more direct, instant problems (e.g. crime, existence). In addition, age and political views seem to be strongly determining factors. Young, highly educated and liberal individuals show stronger environmental concern (Jones and Dunlap, 1992). Adapting to the attributes of environmentally-friendly consumers, women and urban residents tend to have concern for environment, but these results may slightly vary by researches.

As it is detailed above, environmental attitude may mean several concepts. One of the first measurements of environmental attitude for instance contained 4 sub-scales: verbal and actual commitment, emotional affinity and specific ecological knowledge (Maloney and Ward, 1973). Nowadays environmental knowledge and environmental values are considered as factors determining environmental attitude (Bamberg, 2003) and the actual behaviour is not part of the concept of attitude. Today, environmental attitude and concern focus on the cognitive and affective evaluation of environmental protection. In this context, it is not surprising that references use environmental attitude and environmental concern as synonyms (Milfont and Duckitt, 2004).

I accept the approach that attitude in the broad sense includes environmental worldview and environmental concern. In my dissertation I study both the concept of worldview and concern to get a better understanding on environmental identity. I apply the worldview measured by NEP in order to evaluate its relationship with environmentally-friendly behaviour and to compare the strength of effect with that of the environmental identity. I find the research of environmental concern necessary due to its close relationship with self-concept and I consider it as a mediator with the real behaviour.

In summary, references consider positive environmental attitude as the strongest psychographic factor affecting the development of environmentally-friendly behaviour. In the course of its study, those circumstances should be focused on which form the strength of the relationship. This research considers environmental attitude as a mediating factor of the relationship between environmental identity and environmentally-friendly behaviour.

NORM

Norm is a belief shared by our social group and society on how we should behave in certain situations (Cialdini et al., 1990; Schwartz and Howard, 1982). Norms should be distinguished by their extent of internalization thus resulting in personal or social norm (Thøgersen, 2006). Social norms are rules or standards that are known by each member of the group and that shape the behaviour without legal regulations (Cialdini et al., 1990). Norms are implicit rules, expectations about how to behave in a given situation. If we see that littering on the street is an accepted norm, then people tend to continue littering which would not be a case in a clean environment. Social norms are the totality of our beliefs on others' behaviour and they act through social pressure and influence group cohesion (Ajzen, 1988).

Personal norms are manifested as the sense of obligation to behave properly. Schwartz defines personal norms as behavioural expectations that are manifested as feelings of moral obligation to perform a specific actions (1977, quoted by Thøgersen, 2006). In this context, personal norms satisfy inner motives similarly to inner values. Affirmation is necessary to follow personal norms. Affirmation, in these cases, come from inside, such as the sense of guilt, lower self-respect and negative self-esteem (Thøgersen, 2006).

Norms can be further classified to prescriptive and descriptive norms. Prescriptive norm refers to the generally accepted or denied behaviour, which motivates with social reward or punishment. Pouring oil down the drain is a prescriptive norm because this activity is

characterized by a general social denial. In contrast, descriptive norm refers to those behaviours that are performed by most members of the group. Prescriptive norm usually acts through informal affirmation, while descriptive norm does this through following. Adaptation can be a motivating factor when we perform similar activities than others (Cialdini et al., 2006). Information on local communities' collecting waste selectively can be an example for this.

Performing environmentally-friendly behaviours usually correlates with personal and social norms, however, research studies show that the effect of social norms is weaker and the development of behaviour depends on the strengths of personal norms relating to the activity (Thøgersen, 2006). If we see the development of norms, we find that norms relating to specific behaviours are developed first, and then these personal norms become general and can be extended to other activities, too (Thøgersen and Ölander, 2003). In order to have a direct effect on the development of environmentally-friendly behaviour, norms should be focal and central (Cialdini et al., 2006). The communication of norms, therefore, can help in the development of environmentally-friendly behaviours. The importance of norms is weakened by the fact that several environmentally-friendly activities are not open: they are performed behind the doors of a household and thus are not visible for others. In such cases, norms should be regulated by law (Winter and Koger, 2004).

The effect of a norm on environmentally-friendly activities is stronger if the given norm is more internalized in the individual. This is in accordance with the results of the impact assessment of values presented earlier. During my dissertation research I take the mediator effect of personal norms into consideration. Personal norms represent the individual's sense of responsibility and obligation on how much he or she feels responsible for the protection of nature.

3.2 GESTALT THEORY AND ECOPSYCHOLOGY

Based on the holistic approach, in which the whole is more than the sum of the parts, environmental protection should be examined as part of the established system. The essence of the theory is that environmental problems are related to the lack of knowledge on the whole picture, the whole system as the overall effect of our behaviours. This

narrow-minded approach is supported by today's modern worldview that emphasizes individualism meaning that everything can be separated from each other, individuals from their culture or from natural world (Winter and Koger, 2004). Gestalt psychologists suggest that new things can only be discovered with insight learning. Learning depends on perception, on perceptual restructuring.

The development of eco-psychology was based on the outlined holistic approach in the 1990th (Koger and Scott, 2007). According to its principle, individuals should change their self-perception to recognize and address environmental problems. The traditional concept of independent self is misleading and dangerous. Arne Naess (1985) stated first that we should learn our ecological self. In order to change our negative environmental behaviour we should experience our wider self related to the environment (Bragg, 1996). An individual's sense of self connecting to the nature is weakened in the urbanized environment which causes psychological stress (Roszak et al., 1995). We can only experience ecological self if we feel the relationship with other individuals, other life styles, ecosystem and the Earth. Several dimensions can be defined in case of ecological self. Bragg highlighted 3 of them (1996):

- cognitive: sensitivity to information on humans and other species and well-being of ecosystem
- emotional: caring, empathy and the sense of belonging with other people, species and the ecosystem
- motivational: concern and intention to ensure well-being of human, other species and ecosystem

Ecological self encourages environmentally-friendly behaviours not by self-sacrifice or self-denial but by love and common identity. As a result of identification self-love will make environmental protection important.

Ecopsychology studies human experience in natural environment. Ecological unconscious is considered as primary part of personality (Roszak, 1992), since these early memories entail the sense of mutuality with environment. Ecopsychology believes that man was born with the sense of unity with ecological environment (Clayton and Opotow, 2003).

Ecopsychology recognized the harmful effects of the isolation from the environment and started to study the role of personality in the development of environmentally-friendly

behaviour. In the next chapter I will showcase personality theories as the fundamentals of environmental identity and then I further detail the concept, development and measuring options of environmental identity. I will come back to the scope of Ecopsychology in Chapter 5, where I will examine the relationship between identity and nature in detail.

"In vain you bathe your own face in yourself,
It can be cleansed only in that of others."
Attila József (translated by Frederick Turner)

4 PERSONALITY

The concept of personality is often used in our daily life to describe someone. Psychology as a discipline approaches this subject in a more complex manner compared to the everyday, naive use, but there is still no consensus in the definition of personality. Different trends may change the interpretations but the concept has some basic, generally accepted attributes. In teaching psychology the major definition of personality is as follows:

"Personality is a dynamic organisation, inside the person, of psychophysical systems that create a person's characteristic patterns of behaviour, thoughts and feelings." (Carver and Scheier, 2006, pp. 30-31.)

Key element of the definition is that personality is an *organization* and not a set of separate elements. The manifestation of the personality is an active process and relates to the physical body. Personality is manifested in the form constant patterns in repetitive, different situations both in terms of behaviour, thoughts and emotions. It is also a causal factor helping to define persons' relationship with the world (Carver and Scheier, 2006).

Each era of psychology, similarly to other disciplines, has its mainstream research topics such as learning, attitude, attribution and affect. Self as a unifying concept has become a popular research topic since the 1970th (Pataki, 2008). In the field of self-psychology the relationship among the related concepts (self, identity, personality) is still not well established, they are often used as free synonyms. "Self-related phenomena do not refer to definitive, strictly outlined objects. Moreover, they mean a divergent scope of concepts and phenomena" (Pataki, 2008, p. 411.).

This is supported by the opinion of Markus and Cross (1990) whereby the psychological perspective of self can be extended from total personality to the person's desired personality (Markus and Cross, 1990 quoted by Pataki, 2008, p. 411.). Levin (1992) collected the following nine possible types of interpretation: soul, substance, type of activity, explanatory hypothesis, cognitive structure, linguistic activity, affective

experience, image flow process, instinctive normative organization. Leary and Tangney (2003) identified five types of the meaning of self:

- self as a total person;
- personality as traditionally used in psychology;
- subject of sense of self, that is the subject of subjective experiences in general;
- the totality of facts and beliefs (perceptions, thoughts, fantasies, emotions) on ourselves reflected in the self-image, self-concept, self-schemes, and
- the executive-controlling agent, that is the organ of the psychical self-regulation of the behaviour.

These meanings should not be considered as mutually exclusive functions but the elements or dimensions of the system (Pataki, 2008).

Different psychological trends have different explanations on personality and its development. Psychoanalysts suggest that self-concept is developed during the separation when a child learns to differentiate himself or herself from others (Carver and Scheier, 2006). The ego-concept of depth psychology and its recent interpretation versions (such as Hartmann, Erikson, Kohut, self-actualization theory of the humanistic psychology) are following a different path than the tradition emphasizing the social origin of the self (Mead' symbolic interactionism) or the concept bearing the hallmark of cognitive revolution which considers the self as a cognitive structure or a formation of identity categories (Pataki, 2008). Based on this approach, personality originates from social appraisal which means that our opinion on ourselves is based on the feedback we receive from others.

Different paradigms apply different working definitions for the use of self-concept. In order to distinguish the paradigms of self-concept, we can define three critical categories (Reed, 2002):

- how does the paradigm define self-concept, that is which components are defined thus defining the dimensionality of the concept;
- in what extent does the paradigm focus on the external and internal aspects of self-concept whether internal, psychological aspects of the self or the external, socially determined attributes are emphasized;
- what is the primary function of self-concept.

The knowledge of self paradigms helps the researcher to apply the right concept in the research study which can explain the necessary aspects exhaustively. During my research

the starting point is the identity concept of symbolic interactionism to interpret environmental identity. In order to compare the personality concepts, I summarized the personality concepts of the classical psychological trends in Table 3.

Personality theory	The orientation of self-concept	Basis of Theory	Major effects of the theory on consumer behaviour
Psychoanalytic self-concept	Personality is congenital and internally driven	Acknowledges the unconscious, internal, irrational elements of personality.	Highlights the deep motivation behind behaviour, emphasizes the symbolic phenomenon of consumption which is in the unconscious. This is the reason, in case of environmentally conscious consumption, for the development of impulse buying that generates overconsumption.
Behaviourist self-concept	Personality is externally driven.	Explains the environmental and situational effects of behaviour.	Highlights the self-rewarding function of buying which supports consumption through positive affirmations. The function of self-rewarding is self-maintenance and the formation of a positive self-image.
Cognitive self-concept	Self can be internally and externally driven.	Self is the whole self-relevant knowledge in memory.	Highlights the importance of self-relevant[11] information in consumption.
Self-concept of social psychology	Identity is externally driven.	Self-concept represents the totality of the individual's thoughts and feelings that have reference to him- or herself as an object of thought.	Concept of self as a social product and power. Society and self are considered as twin pairs.
Symbolic interactionism	Identity is externally driven.	Self is developed as a result of repetitive social interactions. In the development of identity, it is important to familiarise with the other person's view.	Consumption depends on the compliance with social roles. A novelty is the identification with others, individuals take their social roles into account in their decisions.

[11]in some aspects, it is an information that strongly relates to the given identity and shortens the distance between the product/decision alternative and the individual

Social Identity Theory	Identity is externally driven.	Emphasis is put on the effect of inter-group relationships in addition to the identity forming role of the society. Values connected to group membership and their emotional importance determine the self.	Identity emphasizes the importance of identification. Social identity is descriptive, prescriptive and evaluative: it determines the expected behaviour of group member.

Table 3 Main features of the presented personality theories
Source: own editing

Hereinafter I focus on the self-concepts of social psychology in detail demonstrating the theory of symbolic interactionism and social identity. The reason behind this preference is that marketing related researches and the concept of environmental identity are based on these theories. As a starting point, the difference between personality and identity should be defined.

Self is an organized and interactive system of emotions, thoughts and identities (Owens and Samblanet, 2013). In today's psychology, self is considered as a set of cognitive representations which reflects to the individual's personality traits and which is developed through personal experiences. Identity is a new concept in social psychology which includes a wider concept of self. The main difference is that self may be considered as a process originating from self-reflection. In contrast, identity is a tool for individuals and groups to define and introduce themselves to the world (DeLamater and Myers, 2011). In the broad sense, identity covers such categories that the individual uses to identify himself of herself in order to position himself of herself in relation to others (Owens and Samblanet, 2013). Identity has a differentiating attribute (I am not like them but...), and a sense of being similar to others.

4.1 THE IMPORTANCE OF SOCIAL RELATIONSHIPS, SYMBOLIC INTERACTIONISM

Symbolic interactionism (hereinafter referred to as SI) searches interactions for the explanation of behaviour (Buda, 1968). The significance of the word symbolic lies in the fact that it emphasizes the symbolic order of human behaviour. Symbols are of linguistic and conceptual nature which are signals to substitute a certain behaviour. The concept of

SI is that "society is special system of symbols, signs, links and personality behaves according to this context and wears the traces of this system in its internal cognitive structures" (Buda, 1968, p.14.). Behaviour cannot be examined independently of society and its symbology.

The basics of symbolic interactionism (SI) originates from the philosophy of human nature which is based on Scottish moralism which was developed against to prevailing too pessimistic and individualistic worldview of the 1700th (McCall, 2013). It has three principles:

A: Each human being has a common nature which differs from that of the animals but changes according to the social differences of the individual.

B: People usually behave in socially pertinent and effective manner.

C: Human behaviour is self-directed.

Beside Scottish moralism, this trend is rooted in Neo-Kantianism and evolutionism. The European roots of SI were carried on by the American philosophy and psychology. I would also like to mention the approach of philosophical pragmatism at Cambridge and Chicago Universities in which the emphasis is on adaptation (such as evolutionism) and experiences (such as Kantianism) (Lewis and Smith, 1980). George Herbert Mead was a philosopher of the so called Chicago school and a prominent representative of SI (McCall, 2013).

Mead suggested that animals express their intentions and communicate with gestures. In contrast, people have further signalling systems, such as symbols that induce the same responses from persons and the observer. The observer and the individual get in the same position and this allows the individual to expect roles from the other. Mead explained the development of self by interactions and taking roles (Buda, 1968). Self is developed in symbolic interactions of communication in a way that communication is effective only if we take the other person's view. Mead suggests that the individual should perceive himself or herself as an object (Mead, 2000). This can only be learnt by experience. Attempts to take other person's view develop the other person's general perspective (Mead, 2000). The use of symbols entails that fact that "others" are not merely persons connected to a situation but others in a more general approach which also includes several individuals' opinion.

Mead goes beyond Smith's (1759, quoted by McCall, 2013) looking-glass self-concept (that is we see ourselves through the eyes of others), he suggests that taking roles

determined by others is already a big difference. Role is a set of adaptive behaviours incorporated into the personality through interactions (Buda, 1968). As a result of speech and language, human consciousness dominates therefore the person have become capable of internalizing the relationship with outstanding symbols. Self starts to exist when the internalized perspective of the generalized other has developed. When evaluating our actions we will consider the internalized point of view (Carver and Scheier, 2006). Identity is formed by role requirements connecting to social positions and identity, "cognitive responses to ourselves as objects" (Stryker, 1987), establishes the self. This self-control will be internalized which made Mead assume the division of the self into a biological core ("I"), as the impulsive part of the individual and a social self ("Me") as the reactive side, which manifests a framework taking from others (Buda, 1968).

From sociological point of view, the emphasis is put on the significance of the relationship between the individual and the surrounding persons. The SI paradigm considers whether human behaviour is guided more by private consistency or public displays, and considers society and the self-concept as an important, single unit of analysis.

One of the prominent representatives of this theory is Charles Horton Cooley, sociologist. According to Cooley, self and society are "twin born" which explains that self-concept is strongly influenced by what the "important others" think of him or her. Self-concept emerged from the communication interaction between the individual and the relevant social environment. Cooley suggests that the main element of self-concept is the diverse social self whose main motivation is self-respect (Reed, 2002). The paradigm therefore states that individuals see themselves through the eyes of others and they develop their self-concept based on other's feedback.

In the area of psychology James Mark Baldwin (see: Baldwin, 1897) and William James (see: James, 1890) emphasized first the orientation of human nature by society. According to James, self is the key factor in the adaptation to environment. Besides, James was the first to distinguish "I", as a self who can and "Me" as a self who knows, and this emphasizes social self. Blumer is a classical representative of SI who first applied this naming (McCall, 2013). Similarly to Cooley, Blumer put special emphasis on symbols and signs.

Goffman is another scholar of SI (1959), who distinguished social identity from personal identity and ego identity (Goffman, 1959; quoted by Reed, 2002). Beside Goffman,

Turner played an important role in establishing the fundamentals of SI by studying role taking and role development and by forming the framework for self, as a role (Turner, 1978). SI has a focus not only on the judgement of the individual's appearance but on how the individual can influence what others think of himself or herself (Goffman, 1959). The approach of roles have been changed: role development is not a simple role taking but a process of agreement with the social environment. Social situations were considered socially driven in which a collective agreement is achieved on the self, on role development and on other processes. This social self has become a social object which is a subject of agreement. This view further divides the self (that was previously divided into 2 parts) into 3 parts as "I", "Me" and the "self" as a social object (Goffman, 1959). In frame of SI, psychologists started to deal with studying such reference groups to which individuals are strongly connected emotionally and share their values and norms (Buda, 1968).

Solomon (1983), for example, applied this theory in the research of consumer behaviour. He has concluded that the purchase of certain products provides a consumer experience to the buyer that contributes to the development of his or her social reality, self-concept and behaviour. In the performance of social roles, consumers usually rely on such social interpretations that relate to products especially if the role requires a novelty (Solomon, 1983). Solomon integrated concepts adapted from symbolic interactionism and suggested that although traditional research in marketing viewed products as a post hoc response to underlying needs and wishes, an alternative view would suggest that there are conditions under which products serve as symbolic a priori stimuli to behaviour (Reed, 2002).

Identity theory (Stryker, 1987) and social identity theory (Tajfel, 1982) are based on the theory of symbolic interactionism which is somewhat overlapping with Identity theory (Stets and Burke, 2003). I will finish the presentation of personality theories with these two theories. These theories, involving the effect of society and group on identity and behaviour, act as a theoretical basis of several marketing oriented research.

4.2 IDENTITY THEORY

Identity Theory is based on Blumer's traditional (Mead's) symbolic interactionism theory (Blumer, 1969) and Kuhn's structural symbolic interactionism theory (Kuhn, 1964). As I already mentioned, SI emphasizes that identity is always embedded in the social structure. This structure may encourage and inhibit the individual's entering to or quitting the social relationships in which identity is formed. Self is the core concept of identity theory which is built from several meanings and identities which are in a hierarchical order in self-structure (Stets and Serpe, 2013). The position is determined by the centrality and perceptibility of identity. Identity means social meanings shared by others which the individual sometimes attribute to himself or herself (Burke and Reitzes, 1991). Meaning is the totality of individual reactions when thinking of himself or herself in case of a certain role, group or personal identity (for example if I consider myself as an effective employee, then effective is the meaning in that particular role identity). Identity therefore determines the individual's role in the interaction, directs his or her behaviour, strengthens the development of stable social relationships and allows interactions (Stets and Serpe, 2013).

According to Burke and Reitzes, there are several differentiating factors of identity (1991):

- identity is a social product that is developed, remained and well-established through social processes,
- identity is a self-meaning which can be learnt in given situations based on the similarities and differences with the opposite roles,
- identity is symbolic, induces the same responses from one person and more,
- identity is reflexive, individuals might use their identity as reference points to determine the consequences of their own and others' behaviour,
- identity is the result of social approval.

In this theory, identity has three categories (Stets and Serpe, 2013):

- *Role identity:* the group of meanings relating to those roles that the individual takes in the social structure such as environmentalist identity
- *Group identity*: group of certain meanings relating to the individual's memberships, for example WWF activist identity
- *Personal identity*: the individual sees himself or herself in a special way, such as ethical personal identity.

Central statement of identity theory is that individuals search and form social situations in which they can confirm their identity (Burke and Stets, 2009). These situations confirming identity maintain the self. In parallel, behaviours, that help the flow of information and meanings, lead to the development and maintenance of social structure which also includes identity. These behaviours change the situations and might lead to new observations confirming identity (Burke and Stets, 1999). When confirming identity, individuals examine whether others see them in the same way as they do in a given situation (Burke and Stets, 2009). When an identity is activated, a feedback loop is generated in which the individual compares the standard meanings of identity with the ones perceived by the individual and received as a feedback from others. Depending on the rate of compliance between input meanings and standard meanings of identity, different emotions may evolve in the individual. If there is a match between the meanings, the individual is experiencing a positive emotion such as happiness or pride. If there is a difference, negative emotions, such as depression or stress can evolve (Burke and Stets, 1999). This is usually an unconscious process. Identity standards control the individual's behaviour by realizing matching outputs, or, if there is no match between the identity standards and the active identity, then the individual tries to change his or her behaviour for better adjustment (Stets and Serpe, 2013). Persons considering themselves as dominants tend to behave in a more determined way if the feedback on their behaviour suggests that they obediently behave (Swann and Hill, 1982).

As a result of the dependence of identity on role and situation, an individual may have several identities. Different identities are organized in a hierarchy (Burke and Stets, 2009), the individuals form a self-structure which organizes different identities. This is manifested in the salience of identity which shows the probability of how an individual recalls identity in different situations. Salient identities are often manifested verbally or in the form of a behaviour. The salience of identity is considered as an indicator of behaviour which shows the agent nature of identity in social actions (Stryker and Burke, 2000). Hierarchy is developed based on the salience of identity and, according to Stryker, individuals are actively seeking for situations in which they can activate the outstanding identity (Stryker, [1980] 2002 quoted by Stets and Serpe, 2013). The individual's commitment determines how much the identity will be salient. Commitment entails the role of social structure since this shows which social networks the individual is a member of (Burke and Reitzes, 1991). Commitment also shows how hard the individual is working

on the confirmation of his or her identity. The more seriously the individual is working on the confirmation of identity, the more committed he or she is to identity.

In studying the organization of self-concept, the centrality of identity should be highlighted, which reflects how identity is important for the individual. The more important it is, the more it is in the centre of self-concept (Stets and Serpe, 2013). The importance of identity depends on (1) how others support the given identity in the individual, (2) how they are committed to identity and (3) whether individuals are rewarded and receive either an external or internal confirmation. Centrality seems to be similar to the concept of salience. The main difference is that salience is based on the possible behaviour while centrality is based on the internalized importance of identity (Stryker and Serpe, 1994).

The theory discusses the possibilities of identity change and emphasizes its durability and that identity change needs longer time. Burke (2006) defines three reasons explaining identity change (Burke, 2006):

- the situation changes which appears as a change in identity meanings. A child birth for example not only activates the parental identity but causes a change in gender identity. Researches show that male identity will become more masculine while female identity will become more feminine (Burke and Cast, 1997).
- more identities are activated in one situation and identities may conflict which results in change in all identities. In such cases the two identities tend to get closer to each other and stop halfway. Female identity may conflict with the manager identity and as a result the differences of meanings are soon equalised (Burke and Stets, 2009). Identities may be shaped in different extent, most probably the less salient and central identity will show less change, while less committed identity will go through more changes.
- meanings of identity and behaviours may conflict which results in change in meanings. As I mentioned before, the individual tends to perform an activity in a given situation that is in line with the meaning of the identity, and forms an alternative behaviour that fits identity. In such cases (if other identities are not activated), meanings relating to identity tend to changes to achieve consistency in behaviour (Burke, 2006).

4.3 SOCIAL IDENTITY THEORY

In the area of marketing research, among other personality theories, Social Identity Theory is the most widespread approach that emphasizes the importance of society similarly to the socially determined self-concept of symbolic interactionism and puts intergroup relationships, group activities and social identity into the focus. This theory is also based on the researches of social psychology (Reed, 2002).

Tajfel's theory was evolved from his research of stereotypy and discrimination; social identity theory was established to interpret and explain the results of researches examining group behaviour (Oakes et al., 1999). Tajfel suggests that social categorisation in social interactions helps the individual in understanding the causal aspects of social environment and defines the individual's position in the society. Tajfel called the relationship between social categorisation and the self as social identity (Tajfel, 1978). Social identity is "that part of the individual's self-concept which derives from knowledge of his membership of a social group (or groups) together with the value and emotional significance attached to that membership" (Tajfel, 1978, p. 63., quoted by Oakes et al., 1999).

Social categories can be ethnicity, political affiliations, sports team to which we have a sense of belonging and whose attributes appear in self-concept (Hogg et al., 1995). Social category membership within the self results in a self-concept that is in line with the category and that becomes part of self-concept (Reed, 2002). Self-definition is therefore influenced by group membership. The essence of self-definition is that part of the individual's self-concept which derives from knowledge of his membership of a social group (or groups) together with the value and emotional significance attached to that membership (Tajfel, 1981 quoted by Reed, 2002).

The individual has a full repertoire of category memberships that may change their positions in self-concept according to their importance. These memberships appear as social identity and can determine our attitudes and ways of thinking: that is, how one should feel and behave as a member of a group. If a given social identity is salient and becomes the basis of self-regulation in that context, then an in-group is formed along with the stereotype relating to the out-group. Social identity is descriptive, prescriptive and evaluative. As social identities have important self-evaluative consequences, groups and

members are strongly motivated to follow the expected behaviour strategies to achieve and maintain the positive evaluation of the in-group and themselves.

Social Identity Theory applies two socio-cognitive processes (Hogg et al., 1995):

- Categorisation: social category serves as a social reference to interpret individual behaviours (Oakes et al., 1999), sharpens the borders of the in-group by highlighting stereotypical and normative group differentiating perceptions and actions thus puts individuals into environment depending categories (Hogg et al., 1995). Categorisation is basically a cognitive process.

- Self-enhancement presumes that the individual's fundamental need is the positive appraisal from others. Self-enhancement can be achieved by favouring in-group in the comparison of in-group and out-group.

The preference of in-group (Oakes et al., 1999, p. 448.) depends on the following:

- to what extent does the individual identify with the in-group;
- how salient is social categorisation in a given context;
- how important is the comparative dimension;
- have groups been compared in the given dimension;
- what is the relative status of the in-group.

The theory and research of social identity emphasizes the diversity and sensitivity of the differentiating process in favour of the social context and inter-group relationships (Oakes et al., 1999).

Self-categorisation Theory

Turner started to revise the Social Identity Theory with the hypothesis of self-stereotyping to become a cognitive theory of psychology. That is to say, social categorisation causes self-stereotyping in the individual. Self-stereotyping causes depersonalization where under certain circumstances perceivers may see themselves as interchangeable members of the in-group who react and behave as the representatives of the group and not as individuals (Hogg et al., 1995). The re-definition of self implies group behaviour but this does not lead to the loss of identity. According to Turner, social identity is the concentrated form of social categorisation of self which induces group phenomena. This concept significantly differs from Tajfel's social identity concept which is about group identity (Oakes et al., 1999).

Turner based his self-categorisation theory on this difference. The original goal was the explanation of the psychological fundamentals of social groups but it is also about individual identity and group phenomena. The relationships between personal and social, individual and group are also discussed. Although group is a separate psychological process, group activity is part of the individual's psychology (Oakes et al., 1999).

Theories emphasizing the external, social orientation of identity outline the possibility and importance of individualism and identification. In the interest of the development and maintenance of positive self-assessment it is essential that the influencing others and groups positively evaluate the individual.

Psychological personality theories, as shown in the above presentation, basically emphasize the influence of the individual's social existence on identity. These theories consider the individual's human, social environment to be the major factor in determining the individual's identity and they tend not to deal with the identity forming effect of non-human, natural environment (animals, plants, mountains, ie.: the whole nature). Nature can be part of the individual's identity forming in case if individual identifies with nature as the element of his or her environment. The developed identity, as in case of group identity, will encourage the individual to behave in the interest of environmental protection in order to achieve positive self-evaluation. This relationship can be determined by the concept of environmental identity.

The objective of the first four chapters of the dissertation was to put the research topic into context. I have demonstrated how the individual' personal attributes appear in the framework of sustainability and environmentally-friendly behaviour, then I explained environmentally-friendly behaviour and personality in the light of the psychological trends outlining the main theoretical aspects necessary to interpret the concept of environmental identity. In further chapters of my dissertation I will discuss the concept, importance and measuring options of environmental identity.

5 IDENTITY AND NATURE

The overlapping of the interpretation of self-concept and identity (Leary, 2007), and also the arbitrary use of the conceptual differences (self, self-concept etc.) are both present if man thinks about nature. Everybody has a picture on the definition of nature, this is however complex and debated (Clayton and Opotow, 2003).

It should be stated that the concept of nature is a social construction - which can mean many things, the Earth, stars, animals -, this is a man-made concept and thus, it depends on the culture so the interpretation can vary by persons. The relationship between the individual and the nature is interpreted and analysed differently by researchers.

The general definition is that nature is "our nonhuman surroundings" (Simmons, 1993, p. 11.). It also raises the question of what environment is nowadays that human did not touch or modify at some extent? McKibben (1989, quoted by Clayton and Opotow, 2003) had a provoking idea that by the changing weather, caused by human, we make every spot on earth man-made and artificial.

Several disciplines study the relationship between man and environment, such as philosophy, psychology, biology and ecology. According to Wilson, biologist, people have a genetic need for the relationship with nature and to experience natural environment. Wilson (1984) named this need as biophilia. The orientation of human behaviour based on genetic basis is hardly evidenced and is widely debated.

Aldo Leopold, an influential ecologist, analysed the relationship between man and environment in frame of the concepts of ethics and aesthetics (Leopold, 2004). "We can be ethical only in relation to something we can see, feel, understand, love, or otherwise have faith in" (Leopold, 1949, quoted by Leopold, 2004). Leopold designed first the "ethics of preservation", that is the individuals' ethical responsibility for nature. Leopold suggests (1949, quoted by Mayer and Frantz, 2004) that we mistreat nature because we consider it as a commodity which we purchased, and therefore it is ours. If we could see the Earth as a community we belong to, we could learn to respect and love it. Rachel Carson confirms this ethical approach in her ground-breaking exposé of Silent Spring, in which she gives evidence that people should not only worry about people but about all living creatures (Carson, 1962).

The philosophical trend of deep ecology focuses on the nature as a value in itself, the emancipation and interdependence of the existing. Its representatives reject the anthropocentric perspective and place ethical issues on biocentric basis (Leopold, 2004). A balanced life requires a deep and personal relationship with nature (Clayton, 2003). Arne Naess, Norwegian philosopher, finds the reason of ecological crisis in the ambivalent humanity (Naess, 2005), representing a wrong view that self-assertion is working only at the expense of others. Environmental protection should not entail sacrifice, since we are really ourselves if we support each other as part of the community (Lányi, 2007). Conscious existence does not mean isolation, on the contrary, it refers to identification and an intimate sense of being together with others (Naess, 2005). As a result, anthropocentric view was continuously changed into a biocentric one in ecology and eco-philosophy.

The therapeutic method of environmental psychology focuses particularly on the relationship between the individual and nature in the interest of achieving full mental health. The relationship between man and environment has several advantages:

- Environment has healing effects (Kaplan, 1995):
    - ensures physical health,
    - it has emotional, psychological effects, such as the confirmation of peace, self-confidence, and curiosity.
- It allows self-reflection (Herzog et al., 1997), we have time and space to think about our values, goals. We can better understand ourselves, our capabilities, and skills by having clear causal relationships in the environment in contrast to the social relationships (Clayton, 2003).

Environmental psychology reflects Leopold's views insofar as emphasizing the importance of the sense of belonging to nature as a precondition of environmental protection. If the self-concept is expanded to the natural world, then those behaviours which lead to the destruction of the environment will be considered as self-destructive behaviour (Mayer and Frantz, 2004).

5.1 ENVIRONMENTAL IDENTITY

We can view bonds to the environment, a feeling of commitment as important factors in the development of personality and identity. Several scientist have defined the relationship between the environment and the individual in the theoretical concept of self and identity (Bragg, 1996; Cantrill and Senecah, 2001; Clayton, 2003; Thomashow, 1995).

In my dissertation I particularly discuss the concept of environmental identity as its relationship with behaviour can be evidenced from several aspects:

- environmental identity as social identity shapes, guides and gives meaning to social interactions, environmental identity is also a key factor in the formulation of a meaningful interaction between humans and the environment (Zavestoski, 2003).
- individual attitudes and values are part of the self-concept. The effect of attitudes and values on behaviour is something that has occupied researchers for many years and its relevance has been demonstrated (Homer and Kahle, 1988; Kraus, 1995). Consequently, the effect on personal behaviour is probable and testable.
- the attitude focused on by prior research was not a strong enough predictor of actual behaviour, merely behavioural intentions (Bamberg and Möser, 2007; Csutora, 2012; McBroom and Reed, 1992).
- environmentally-friendly actions are generally carried out in the interest of achieving moral satisfaction and not to increase self-usefulness (Clayton, 2003).
- identity can be understood as a motivation system as it possesses an organizing-orienting function above behaviour and actions (Pataki, 2008). This is observable for example in the consistency of a person's behaviour manifested in different situations. Thus, identity enables the prediction of expected behaviours (Stryker and Burke, 2000), and to anticipate the behaviours of those with similar identities (Zavestoski, 2003).

In the conceptualization of the concept, different authors refer different terms for the identity relating to nature. Some researchers prefer the term of ecological identity because it expresses that self is part of the ecosystem and avoids the misunderstanding that environment also entails the built and social environment. In contrary, researchers

favouring the term environmental identity argue that this naming is more intuitive and easier to understand in general for people (Clayton and Opotow, 2003).
In my dissertation I consistently apply the term environmental identity because our national terminology uses environmental awareness and environmentally-friendly product in relation to environmental protection, and average consumers rarely meet the term ecology.

For Thomashow, "ecological identity refers to all the different ways people construe themselves in relationship to the earth as manifested in personality, values, actions, and sense of self." (Thomashow, 1995, p. 3.). This results in nature becoming an object of identification.

Thomashow approaches ecological identity from an environmental education perspective, reflected in his interpretation, emphasising that in the formulation of ecological identity, the interpretation of life experiences overshadows the significance of social and cultural interactions (Thomashow, 1995). The formulation of ecological identity is said to occur on an individual basis, reflecting the individual's cognitive, intuitive and emotional perceptions.

In the words of Zavestoski – who based his research on the roots of deep ecology (Zavestoski, 2003) – ecological identity is 'that part of the self that allows individuals to anticipate the reactions of the environment to their behaviour' (Zavestoski, 2003, p. 299.). In relation to formulation, and in a similar vein to Thomashow, individual experience is emphasised. Although the author focuses primarily on nature and human interactions, he also highlights the importance of social feedback whilst emphasising the role of feedback as the environment cannot address human actions in a socially understandable way for everybody. Nature reacts fundamentally indirectly and in a delayed manner to human activities, but the feedback, that for example is given to air and water pollution can have damaging effects on human health. Due to the indirect effects however, the feedback signs for the social environment are more easily realisable and must be taken into consideration when analysing this topic as these feedback signs can determine the interaction between nature and humans as well as validating actions guided by ecological identity. The power of the activity influencing of ecological identity thus lies primarily in the relationship with the rest of our social identities. This is why it is important for the social environment not to give a positive social meaning to environmentally damaging forms of behaviour.

Identity ascertains social roles and with these roles comes responsibility. In the environmental identity concept of Clayton (2003), social influence plays an important role in the analysis since the way we understand nature, its values and usage is culturally influenced, and permeates the way we consider ourselves as a part of nature (Clayton and Opotow, 2003). In the analysis of environmental identity, social influence does not mean the effect of human groups, but that of nature as a social environment.

Thus, the formation of environmental identity can directly explain how abstract global problems will become a personal issue (Clayton and Opotow, 2003). Clayton's environmental identity concept was emerged from his studies on rights attributed to living creature by humankind and on environmental justice. Based on the researches on ecological decisions and environmental identity (Opotow and Clayton, 1994) the relationship between man and nature is in accordance with the individuals' such evaluation, how much they consider human species superior to plants and animals, do they attribute the same rights to them as to people.

According to the wording of Clayton (2003), environmental identity can be captured in the following statement:
'An environmental identity is one part of the way in which people form their self-concept: a sense of connection to some part of the non-human natural environment, based on history, emotional attachment, and/or similarity, that affects the ways in which perceive and act toward the world; a belief that the environment is important to us and an important part of who we are' (Clayton, 2003, p. 45.)

Social influences shape us in observing nature and interpreting what we see and experience. Although the social influence is inevitable, the strength of the effect of social relations, different social identities may be different. If environmental identity is weakly influenced by the possible social effects, individuals may feel that they directly experience and understand nature without social mediation (Clayton and Opotow, 2003). In case of environmental identity of high social influence, individuals and groups appear in such social categories in which activism and social conflicts of interests are dominant. The interpretation of environmental identity therefore is not static: it is based on the dynamic interaction of environment and society.

Environmental identity, similarly to national and ethnic identity, can be considered as collective identity. It gives the sense of our being part of a bigger unit, we recognize

similarities between ourselves and others (Clayton, 2003). Similarly to all group identities, the strength of environmental identity can vary by individuals which can modify the effect on individual identity and behaviour. In the research phases of my dissertation I put a special focus on the effect of environmental identity on behaviour.

5.2 Formation of Environmental Identity[12]

The examination of environmental sensitivity, the openness to environmentally-friendly behaviour and the development of commitment through life events became into the focus of researches in the 1980th (Tanner, 1980). From this time, quantitative and qualitative methods were applied to study the forming factors of environmental sensitivity (Chawla, 1998). These studies are not suitable for comparison for the different samples and methodology, but the results show significant overlapping regarding the outlined events. The following main events appeared in the research studies: experiences in nature, exemplary persons and education.

Experiences in nature (or outdoors) are the most frequent factors (Chawla, 1998, 1999; Palmer, 1993; Tanner, 1980). Within this category, studies outline the role of *childhood experiences*, which can be family holidays, summer camps or outdoor activities. Palmer's conclusion was that the "outdoor childhood experiences led to their concern for the environment" (Palmer, 1993, p. 29.) This statement overemphasises childhood experiences: it is not evidenced that they are the most influencing factors. They have less importance in domestic research (Hofmeister-Tóth et al., 2012a), but their role is definitely important in the study of life events.

The effect of *role models*, namely family and relatives, is evidenced in researches and the *role of education* is emphasized. In case of education, references usually separate teachers and education as an institute into different categories (Chawla, 1998). Beside education the role of other organizations, such as environmentalist organizations, civil associations should be highlighted (Gunderson, 1989, quoted by Chawla, 1998; Chawla, 1999).

Negative experiences as influencing factors appeared in research studies (Chawla, 1999; Palmer, 1993; Palmer and Suggate, 1996); which refer to perceived environmental

[12]This chapter was published as parts of articles (Hofmeister-Tóth et al., 2012a)

pollution, damage to the environment and environmental catastrophes. In addition, several studies discuss *travels* and experiences gained abroad (Palmer, 1993; Tanner, 1980), as well as *religion*, spirituality and personality.

Chawla (1999) examined in which life stage the given life experiences have the biggest influence. Outdoor experiences, family members and education clearly have the biggest role in childhood. These results are confirmed by domestic researches (Hofmeister-Tóth et al., 2012a), adding the possible positive effects of belief and religion. During the university years, friends and education have the most intensive influence. In adulthood, the influence of organizations, communities become an encouraging factor.

5.3 MEASUREMENT METHOD OF IDENTITY

Four well-known scales and methods have been recently used to measure the relationship between the environment and man. Firstly, the primary difference comes from which dimension of the environment and nature the approach focuses on (Brügger et al., 2011), for example Mayer and Frantz's scale examines the emotional attachment, whereas Clayton focuses on nature's role in personal identification. Secondly, measurements can be explicit or implicit depending on the relationship between the environment and the individual as being conscious or unconscious.

Schultz developed an implicit scale in 2001 named as the Inclusion of nature in the self, INS (Schultz, 2001), which is an adaptation of the scale of Aron et al. scale of 1992. Later on, Schultz et al. (2004) applied the Implicit Association Test - Nature to measure the relationship between the nature and the individual.

Another frequently applied measurement tool is the Connectedness to nature scale, CNS developed by Mayer and Frantz in 2004. The original objective of this scale was to amend connectedness with the emotional component (Mayer and Frantz, 2004).

5.3.1 MEASURING ENVIRONMENTAL IDENTITY

In my dissertation I focus on Clayton's (2003) Environmental Identity scale. The Environmental Identity Scale (EID) examines a wide concept of identity. It includes the measurement of emotional associations against the environment, as well as the agreement

with environmental trends and the rate of the interaction with nature (Gosling and Williams, 2010). The scale has emotional, cognitive and behavioural dimensions.

The scale was designed to determine the rate of natural environment in influencing self-definition. The dimensions of the scale are based on the following collective social identity factors: salience of identity, identification with the group, ideology linked to the group and positive emotions in relation to the group. The operationalization of dimensions:

- salience of the attribute: the importance of the relationship with nature
  Item of EID scale: I spend a lot of time in natural settings (woods, mountains, desert, lakes, ocean).
- identification: how does nature contribute to community which the individual identifies with.
  Item of EID scale: I think of myself as a part of nature, not separate from it.
- ideology: environmental education and the support of sustainable life style.
  Item of EID scale: Behaving responsibly toward the Earth—living a sustainable lifestyle—is part of my moral code.
- positive emotions: enjoyment obtained in nature, rate of satisfaction.
  Item of EID scale: I'd rather live in a small room or house with a nice view than in a bigger room or house with a view of other buildings.
- biographical elements:
  Item of EID scale: I spent a lot of my childhood playing outside.

Clayton (2003) points out that the scale measures social identity thus this depends on culture, religion and worldview. The original version of scale contains 24 items (see Annex), and it had a one-dimensional structure.

The scale has already been used in several researches that compared the existing measuring tools (Brügger et al., 2011; Gosling and Williams, 2010; Kiesling and Manning, 2010; Olivos and Aragonés, 2011; Olivos et al., 2011). These researches confirm its high reliability (the value of Cronbach alpha is appr. 0.9) but opinions are different in terms of its dimensionality. Brügger et al. examined the scale with factor analysis where two factors were found: the first one represents a concept outlining the emotional attachment similar to the Connectedness to Nature (CNS) scale of Mayer and Frantz, the other one represents a concept of environmental concern used in NEP scale (Brügger et al., 2011).

Olivos and Aragonés (2011) carried out a principal component analysis with oblimin rotation and confirmed four factors, as a result, which explained 55.6% of the total variance. The factors were as follows:

- Environmental identity correlating to Clayton's identification factor
- The enjoyment of nature correlating to Clayton's salience factor
- Respect of nature correlating to Clayton's positive emotions.
- Environmental protection correlating to Clayton's ideology factor, symbolizing moral values and ideological commitment.

Different results may originate from methodological or cultural differences.

Clayton developed a shortened identity scale consisting of 11 items (source: Clayton, personal consultation). In my dissertation I chose to use this scale which uses the same concept in the measurement and it is easier for the respondents to understand (Clayton et al., 2011).

5.3.2 CONNECTION TO NATURE

At psychological level, there is a direct relationship between the extent of an individual associating himself or herself with nature and his or her individual attitude (Schultz et al., 2004). Persons connected to nature have a stronger concern for environmental issues. Those who are less connected to the environment still have some concern for environmental problems but they focus on narrower issues which have direct effect on the individual. In order to confirm this, Schultz made some research by studying connectedness with explicit and implicit methods.

Schultz presumes the relationship with environment as psychological variable and studies it on the individual's level (Schultz et al., 2004). To achieve this, he adapted Aron's scale (Inclusion of Other in Self Scale), applied in social relationships in psychology, to study the relationship between the individual and environment (Schultz, 2001). The original scale (Aron et al., 1992; Aron et al., 1991) consisted of only one item illustrating partially overlapping circles, from which the respondent had to choose the most matching one regarding the relationship. In the interpretation of Schultz circles symbolizing "me" and "nature" and the suitable one should be chosen from 7 pair of circles. Schultz named this scale as Inclusion of Nature in Self, INS. Research results show that INS scale positively correlates with biospheric concern and environmentally-friendly behaviour, the latter one measured with self-declarations (Schultz, 2001).

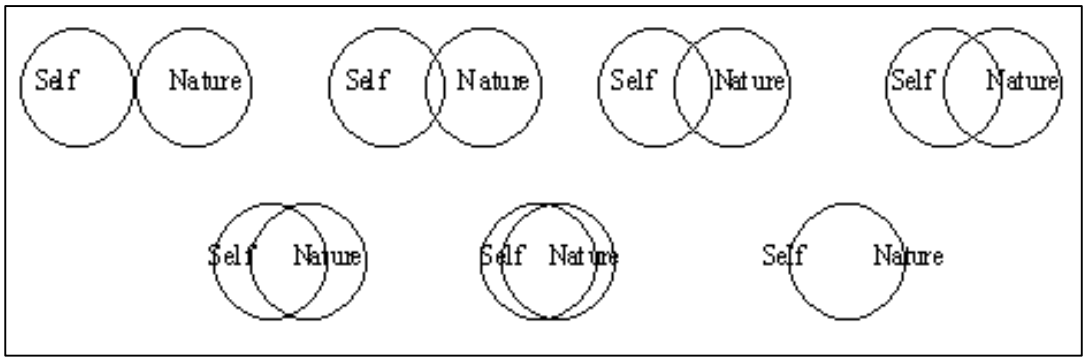

Figure 3 Inclusion of nature in the self (INS)

Source: According to Schultz (2001)

The concept and the explicit measurements were criticized a few times therefore Schultz applied a different method in his researches:

- INS has one item only which does not allow the examination of internal reliability;
- it is based on self-declaration which require respondents having an explicit opinion on the relationship between individual and nature. Respondents usually do not consider this question before, they do not have a firm belief on nature but they are capable of answering the question.
- Dunlap and his colleagues (Dunlap et al., 2000) suggest that the individual's worldview is a primitive belief and the connectedness to nature is not conscious, or not such belief that we often think of.

Based on these criticisms, Schultz and his colleagues elaborated a version of an alternative measuring techniques, Implicit Association Test (IAT) adapted to the relationship between nature and man (Bruni and Schultz, 2010; Schultz et al., 2004; Schultz and Tabanico, 2007), which does not require the consciousness of association.

The disadvantage of the survey based on self-reported information is that it requires conscious consideration which can be avoided in indirect examinations. Implicit methods are useful if the compulsion for conformity and the social desirability are high, for example in case of vanity, stigmatized behaviours or drug and alcohol use (Perkins et al., 2008). In these areas, explicit and implicit attitudes are usually different because implicit measurements do not entail the effect of social desirability and results are hard to "falsify" (Schultz et al., 2004). In addition to differences, implicit measurements usually show positive correlation with explicit measurements (Greenwald and Banaji, 1995; Greenwald et al., 1998; Schultz et al., 2004; Schultz and Tabanico, 2007).

5.3.2.1 Presentation of Implicit Association Test

Implicit Association Test (IAT) is the most frequently quoted[13] indirect measurement method (Nosek et al., 2011). It is applied for indirect measurement of the relative strength of association between imaginary concepts and/or objects (Perkins et al., 2008). The method developed by Greenwald, McGhee and Schwartz (1998) is based on response latency which is manifested in the process of matching the dimensions of the object of attitude and the evaluator (Somogyi and Bernáth, 2014). The test consists of computer based categorisation tasks which were designed to measure the relative strength of the associations between the concepts in the memory without the need for self-evaluation, which is the biggest advantage of implicit measurement (Schultz et al., 2004)[14]. However, it is limited to measure only an attitude that we can compare to something (Somogyi and Bernáth, 2014), in other words, it cannot measure attitude relating to nature but only the difference between attitudes relating to nature and built environment.

The test measures the strength of association between concept pairs and attributes based on the response times. Respondents have to quickly match elements appearing on the screen (images, words for example: daisy, butterfly) with the relevant concepts (e.g.: flower or beetle). Later on concepts are combined (e.g.: flower and good, beetle and bad). The strength of connection between the concepts is measured by the difference of response times in combined tasks, in case of the compatible and incompatible tests (Greenwald et al., 1998).

IAT results show that values moderately correlate with explicit attitude measurements, i.e. the responses based on self-report (Schultz et al., 2004). Implicit attitudes differ from the explicit one as they are traces of past experience free from introspection, that mediate favourable or unfavourable feeling, thought, or action toward social objects (Greenwald and Banaji, 1995). Implicit attitude is strongly influenced by the unconscious processes as it is independent of the conscious consideration and evaluation. The difference between explicit and implicit attitudes were earlier explained with the fact that implicit and explicit attitudes are fully independent constructions (Greenwald and Banaji, 1995). Later, the division of explicit and implicit attitudes was explained with the fact that they tap two distinct but connecting constructions (Perkins et al., 2008). Regarding the interpretation

[13] 6282 articles applying implicit measurements were analyzed. 43.6% of them applied IAT method.
[14] IAT test is available at https://implicit.harvard.edu/implicit/takeatest.html

of results, only few articles state which theoretical relationships interpret explicit and implicit attitude measurements:

- two different measuring scenario of one common construction (single-process theory);
- two different constructions are measured by different measurements (dual-process theory);
- or general cultural knowledge over personal attitude.

The test contains the following factors (Perkins et al., 2008):

- attitude object or goal category (target concept): can be brands, for example Coca-Cola or Pepsi
- evaluation dimensions (attribute): attributes that the respondent can link to an object of attitude, for example pleasant flavour or unpleasant flavour
- stimulus elements: typically 3 and 6 stimulus elements, for example images, brand logos, words, slogans.

The test usually contains 5-7 set of discrimination tasks. Among them, there are some practising tasks for the respondents to learn the tasks and there are real test tasks which are served for measuring response time (Perkins et al., 2008).

- Task 1: the goal is to distinguishing images, words and stimuli relating to two objects of attitude and to link them to the relevant object of attitude. (Press D button if it is connected to Coca-Cola and K button for Pepsi.)
- Task 2: similar to the first one but this includes the evaluative attributes to apply. (Press D button if it is connected to pleasant and K button for unpleasant.)
- Task 3: combination of the two tasks, this is the first combined task. One attitude object connects to one button with one assessing attribute, the other attitude object connects to the other button with another assessing attribute. The task contains both categories of the target traffic and the attribute categories. (Press D button if the stimulus is connected to Coca-Cola OR pleasant and K button for Pepsi OR unpleasant.)
- Task 4: reversal of the first task (Earlier D button had to be pressed for Coca-Cola, and not K button should be pressed.)
- Task 5: second, reversed combined task. In this case, attitude objects link to the evaluative attribute whose combination was not assessed for the strength of

association. (I.e. if in Task 3 Coca-Cola and pleasant were linked, now Coca-Cola and unpleasant will be linked and vice versa.)

In case of the demonstrated sequence of tasks, task 3 and 5 will be measured for latency. The difference of the response speed of matching with evaluative dimension and polar attitude objects detects the strength of implicit attitude. The evaluation of the test is based on the response speeds, between the initial combined task and the reversed combined task (Perkins et al., 2008). The calculation of the test was revised by Greenwald and colleagues a few times, currently they recommend D-measurement (see Table 4.) to evaluate results (see Greenwald et al., 1998; Greenwald et al., 2003a). The index is based on D-measurement applied in the signal detection theory and on Cohen's D-value marking the effect of average differences (Cohen, 1992; Greenwald et al., 2006). The D-value of each respondent comes from the average of response times of the two (compatible and incompatible) peer, combined tests of IAT. D-measurement is the difference between the average response latencies (time elapsed between two responses) given in the stimulus matching tasks, divided by the standard deviation of all the activities of the two blocks. If matching tasks are asked four times (two compatible, two incompatible), the average of the two quotients calculated as shown above is the D-measurement. The calculated D-value varies between –2 and +2 depending on which condition was easier to learn for the respondent (Somogyi and Bernáth, 2014). If respondents faced the same difficulty of the tasks, there is no difference in the response latencies, D-value will be 0 (Greenwald et al., 2003b).

Calculation of D value	
Step 1	Deletion of tests of longer response time than 10,000 ms
Step 2	Deletion of persons where more than 10% of the tests showed shorter response time than 300 ms
Step 3	Calculation of standard deviation for all combined tests (pooled SD)
Step 4	Calculation of average response latencies for the blocks of combined tasks
Step 5	Calculation of differences between the averages (in example: the average of block 5. - the average of block 3.)
Step 6	Division of differences by the relevant deviation
Step 7	D= the average of the two quotients (provided that the combined tasks are asked four times)

Table 4 Calculation of D value
Source: Greenwald et al., 2003, p. 214

Research studies (Bar-Anan and Nosek, 2014; Greenwald et al., 1998) call the attention to the reasons of differences in applying the test, for example the order of presenting the stimuli has an effect on the results. In order to avoid this, tasks are recommended to randomize among the respondents.

IAT method have already been applied in several areas, Greenwald and Farnham for example adapted it to measure self-respect and they show how to apply it to understand the social identity of the individual (Greenwald and Farnham, 2000). Implicit association tests have already been used in studying consumer behaviour. In case of defining consumer behaviour, implicit and explicit measurements resulted in inconsistent results (Perkins et al., 2008). Both explicit and implicit measurements proved to be suitable in terms of methodology but in case of stereotype and preconceived behaviours implicit measurements are more reliable.

This method has been used in studying consumer attitudes, for example to evaluate high and low calorie food (Maison et al., 2001) and in examining consumer ethnocentrism (Watson and Wright, 2000). IAT tests have been used to study self-brand associations where implicit measurement reliably defined the buying intention, brand preference and perceived brand superiority. This confirms the assumption that self-brand associations relating to a given object directly influence attitude and behaviour (Greenwald and Banaji, 1995). The effect of implicit attitude on brand choice appears intensively in a time pressure, while explicit attitude influences the choice if the buyer has enough time to choose (Perkins et al., 2008). Based on the results, if the cognitive resources are in a shortage, individuals make their decisions based on their implicit associations as they are lacking those cognitive resources that are necessary for a conscious, careful consideration.

This concept is behind IAT-Nature test designed to measure the relationship between nature and man, which compares built environment with the connectedness to nature.

5.3.2.2 IAT-Nature test to study the relationship between man and nature

IAT-Nature test implicitly measure how much and individual associate nature close to his or her self. Two categories were used in the test: Me-Other and Nature-Built environment (Schultz et al., 2004).

The structure of IAT-Nature according to Schultz et al (Bruni and Schultz, 2010; Schultz et al., 2004; Schultz and Tabanico, 2007) is the following:

- attitude object or goal category: Me - Not Me
- evaluating dimensions Nature - Built Environment
- stimulus elements: for nature: animals, birds, plants, whales, trees; for built environment: building, car, city, factory, street; for the self: I, my, me, myself; for non-self: this, different, they, their. (These stimulus examples are from a research in 2004 and have been modified in further researches.)

Respondents should link stimuli to the given categories to create category pairs of "me" and the "nature" as opposed to "not me" and "built environment" (compatible matching) and vice versa. The sign whether nature or built environment is closer to the respondent can be detected from the faster response time for the compatibility matching compared to the incompatible matching.

Results show positive IAT effect, that is, respondents rather associated themselves with nature than with built environment but still, 25% of the respondents associated with built environment (Schultz and Tabanico, 2007). These results should be considered very carefully, authors point out, it can also be the evidence of Keller's biophilia hypothesis as a fundamental propensity, or it can be justified with the fact the respondents prefer nature to built environment and it makes association easier (Schultz et al., 2004).

IAT-Nature had a positive correlation with biospheric concern and a negative correlation with egoistic concern. In addition, IAT positively correlated with INS scale results, also, the reliability of the re-test was suitable. Schultz et al. (2004) consider implicit relationship more stable in time as it is not influenced by memory, cannot be hidden, responses are not distorted and it is less influenced by daily experiences. Naturally, this does not mean that implicit relationships can never be changed but they are more difficult to be influenced that variables based on explicit measurements.

Schultz et al. applied IAT-Nature test beyond experimental circumstances, in national parks (Schultz and Tabanico, 2007), or in the form of online games (Bruni and Schultz, 2010). Their results confirm the reliability of the method since they remained to be consistent independent of the measuring environment. They also detected that IAT-values may change by experiences as opposed to the previous hypothesis (Schultz and Tabanico, 2007). This emphasizes the changeability of the relationship between nature and man and

further supports the study on the relationship between nature and the individual. If the relationship can be confirmed, thus the appearance of environmentally-friendly behaviours can be encouraged.

The correlation of IAT-Nature test with explicit measurements confirms that although there is a social pressure in this field, it is not that intensive and distorting than in case of for example racism or sexism. In case of the online survey of IAT-Nature, children and activists did not show correlation between implicit and explicit measurements which was explained with the different explicit measuring tool and with the different object of the explicit and implicit measurement.

5.3.3 EMOTIONAL BONDS TO NATURE

Based on the biophilia theory, the scholars of ecopsychology emphasize that the sense of belonging to an environmental community is a prerequisite of environmentally-friendly behaviour (Mayer and Frantz, 2004). We do not care about nature enough because we consider it as a commodity. If we can view nature as a community in which we live, we will learn to love, respect and protect it. The Connectedness to Nature Scale (CNS) was designed by Mayer and Frantz (2004) to study the emotional attachment to environment. Authors explain below the differences form other scales studying the relationship between man and nature:

- the scale has an emotional focus, not cognitive oriented as NEP and Schultz's INS scale;
- it has several items thus is can be considered as a more reliable measuring tool compared to INS;
- it is easier to apply than IAT and predict behaviour similarly.

It is a one-dimensional scale of 14 items with high internal consistence (Alpha value: 0.84). The scale has been proved to be suitable to predict environmentally-friendly behaviour: it correlates with biospheric value orientation, anti-consumption, environmentally-friendly identity and environmental perspective.

According to Mayer and Frantz, CNS is suitable to test the effect of situational factors and personality attributes which can influence the relationship with environment. Furthermore, it is also suitable to measure the effect of interventions which strengthens the relationship between human and nature.

CNS is the most frequently used scale to study the emotional relationship between man and nature (see: Dutcher et al., 2007; Frantz et al., 2005; Gosling and Williams, 2010; Mayer et al., 2009; Olivos et al., 2011; Perrin and Benassi, 2009). Perrin and Benassi, however, pointed out that CNS scale does not measure emotions but cognitive beliefs, similarly to NEP (Perrin and Benassi, 2009). The justification given was that the items are not suitable to recall emotions. In spite of the fact that 8 items use the wording "I feel...", authors state that cognitive evaluation, beliefs and attitudes toward nature are measured. Their studies lead to the same results as that of Mayer and Frantz: they found one dominant factor, but their main question was to find out the meaning of this factor. Perrin and Benassi (2009) explains the difference between NEP and CNS with several reasons:

- while the wording of CNS Scale refers to the persons themselves, NEP has a more general wording referring to humanity;
- the wording of NEP is more negative than that of the CNS;
- Mayer and Frantz surveyed Environmentalism scale in the same question group as CNS, while NEP Scale was in a separate group. Different appearances may cause differences.

Authors do not reject the use of CNS but emphasize that the scale does not measure emotions, only cognitive beliefs, or perhaps the cognitive personality dimension of the relationship between human and nature (Perrin and Benassi, 2009).

Researches using the scale and not questioning emotional connection measured by the scale confirmed the correlation between the scale and environmentally-friendly behaviour, as well as the reliability of the scale. Researches confirm that emotional connection to nature may lead to an extended sense of self which entails the respect of other species and the nature, as well as environmentally-friendly behaviour (Frantz et al., 2005; Gosling and Williams, 2010; Olivos et al., 2011).

5.3.4 RELATION TO NATURE SCALE

The scale was developed by Nisbet and colleagues (2009). Nature Relatedness scale, NR, entails the understanding and respect of the relationship with all the living creatures of the world (Nisbet et al., 2009). The objective of the authors was to develop a complex measurement tool which takes emotional, cognitive and experience aspects of nature relatedness into consideration. Experience obtained in the nature is a key to environmental

sensitivity (Chawla, 1998, 1999, 2006), and authors suggest that this is the aspect that all previous scales on the relationship between human and nature are missing.

The scale contains 21 items, that were measured on a 5-point Likert scale. Based on the analyses, the scale covers 3 dimensions:

- NR - Self: this factor shows the extent of identification with nature, opinions on nature and the appearance of emotions;
- NR - Perspective: the manifestation of external, nature oriented worldview, concern about the effect of individual activities;
- NR - Experience: individual's experiential knowledge on natural world, how he or she feels comfortable in nature, how much he or she wishes to spend time outdoors.

The scale strongly correlates with environmental attitude measurements. Nisbet and colleagues find the reason in the strong similarity between the concept of NR and NEP (Nisbet et al., 2009). The correlation between environmental attitude measurements and NR is so high that the scale is actually likely to be suitable to measure attitude. As a result of its effect on environmentally-friendly behaviour authors state that the concept of NR is more than environmental attitude.

I reject the application of NR scale in my research because its strong relationship with NEP indicates that environmental attitude is measured along with environmental identity and the relationship between human and nature. My aim is to measure environmental identity separated from attitudes.

5.4 Identity as a forming factor of Consumer behaviour

In the chapter on personality theories I already emphasized the function of identity which influences attitude and, through its attitude moderating effect, behaviour also. In this context, environmental identity, if developed in an individual, may influence the quantity and quality of environmentally-friendly activities. It can of course be manifested if environmental identity was activated in the mind at the moment of decision or choice. As a result, environmental identity will have the strongest presence among the individual's identities relating to his or her different social roles and groups, and when making a decision, he or she will consider the given choice to be acceptable for the self supporting

environment. In the next part of my dissertation, I will describe the possibilities to activate identity in decision making.

People are naturally attracted to products that are in line with their self-concept and identity (Kleine et al., 1993; Reed and Forehand, 2003; Stayman and Deshpande, 1989). Consumers tend to choose a certain product because they symbolize their different social identity toward self and others (Chattaraman et al., 2010). Symbolic benefit can be defined as the attitude function of social identity. Thus, consumers with consistent behaviour are able to express their values and attitudes, also they can fit into situations and groups (Chattaraman et al., 2010). Social identity has a strong effect on the relationship of belief-attitude-behaviour. In this context, attitude appears as a mediating variable (Madrigal, 2001).

The studies of the role of social identity in consumer behaviour and in the responses given to marketing stimuli are getting more and more significant (Chattaraman et al., 2010). These studies are based on Tajfel's Social Identity Theory (1981) already mentioned before. In my research, I consider environmental identity as social identity which is in line with the concepts I have already listed before. Reed (2002) emphasizes the importance of applying identity in marketing as salient social identity may lead to a positive evaluation in case of a product which is congruent with the relevant social identity. This relationship is based either on the assumption that the product symbolises the consumer's real or a desired personality which he or she wishes to become (Reed and Forehand, 2003).

The effect of social identity has been studied and confirmed in case of several consumer behaviour situations. Concerning environmentally conscious behaviour Bartels et al. (2011) concluded that if the consumer identifies himself or herself with environmentally conscious consumer identity, it will have an indirect effect on the consumption of organic food. In contrast, if the consumer identifies himself of herself with consumer identity buying organic food, it can have a strong direct and indirect effect on consuming organic products (Bartels and Hoogendam, 2011).

Social identity has significant influence on consumer attitude, decisions and behaviours if the information on identity is accessible or activated in the consumer's mind. This concept is called the salience of social identity (Reed, 2002). The stronger the identity salience, the bigger the possibility to develop a behaviour matching identity (Stryker and

Burke, 2000). The effect of identity accessibility originates from the need of consumers wanting to create a positive self-image, thus the judgement of information consistent with identity is more positive (Wheeler et al., 2005). If an identity becomes accessible, that is it appears in the individual's consciousness, then the rest of the identities are reorganized and the activated identity will be salient and makes behaviour consistent (Zhang and Khare, 2009).

Social identity can be an active influence on consumer behaviour and attitude if it meets the following criteria: first, it should be available, that is, it should be important for the individual for self-definition, second, it should be accessible to retrieve it from memory and activate it (Reed and Forehand, 2003). Active identity encourages the individual to categorize himself or herself according to that social identity (Forehand et al., 2002; Forehand and Deshpandé, 2001).

Social context, environmental traces and the existing associations may trigger the accessibility of the social identity on the consumer's self-concept and social identity and may prime further attitude and behaviour congruent with identity (Chattaraman et al., 2010). In more details:

1) *Situation*: the accessibility of the given social identity can be increased if the situation is somewhat irregular or differentiable. In researches on the differentiation individuals point out such consumption situations in which the consumer belonged to the minority (Reed and Forehand, 2003), for example a man in a women fashion shop.
2) *Environmental cues:* possible environmental cues are symbols, images or words of a reference group. The perception of given signals encourages the activation of social identity related concepts in memory. Mitchell et al (quoted by Reed and Forehand, 2003) concluded that the evaluation of Michael Jordan was more positive if the sportsman's identity were activated and not his Afro-American identity. These environmental cues allow identity to be accessible in a given situation.

   The term "priming" is used to describe the effect when a stimulus influences further performance of the processing system (Baddeley, 2003). That is, as a result of the initial stimulus, we have a different response, matching the priming stimulus on further stimuli. This phenomenon confirms the existence of implicit

memory (Kónya, 1990). In psychological researches, priming effect is used to study human memory (for example in learning words).

The "second generation" of priming researches confirms priming effect and raises the question of how to control priming effect or can priming result in different effects or is it possible to define which identity "wins" among the competing identities (Bargh, 2006). The question was raised because the same priming stimulus caused different reactions from the consumers (when studying cultural identity). Individual's demographical and psycho-graphical attributes result in different consumer decisions. Results show that individual differences may act as moderating variables on consumer's purchases based on priming (Wheeler and Berger, 2007). The decision may depend on the strength of identification with social identity (Bolton and Reed, 2004; Reed, 2004).

3) *The strength of association between the self and the social identity*: as I described earlier, one individual may have several identities at the same time, and there is a hierarchical relationship between these identities. The more important the given identity in the person's overall sense of who they are, the stronger effect of identity on decision, on consumption. This hierarchy is usually called the strength of identification. The self-importance is strengthened if identity can have more options to behave, to receive feedback through social relations (Kleine et al., 1993).

According to another classification, identity can be made accessible in two ways: firstly, long-term identification (long-term group membership identifies us with the group), secondly, situational priming (Zhang and Khare, 2009).

In the interest of social identity influencing behaviour, the accessibility of identity is not a sufficient condition. The diagnosticity of an identity is inevitable for the identity to be a determining factor in a given decision. This depends on two aspects (Reed and Forehand, 2003):

1) to what extent is social identity relevant in the evaluation, or
2) how does social identity help people to make distinction among the products and decision alternatives.

When consumers realize similarity and congruence between activity or brand and social identity, then the evaluating content relating to identity is attached to the given activity or brand. This object-identity similarity can be caused by three factors:

1) Symbolic relevance: if the expression of a belief or the owning of an object communicate the person's social identity or support an important element of social identity (Nelson et al., 1997 quote by Reed and Forehand, 2003). This is also the basis of symbolic consumption (Solomon, 1983).
2) Goal relevance: if a belief or activity is connected to a problem or output which is important from the perspective of social identity accessible. These beliefs or activities may entail the expression of attitude or the development of behaviour relating to a specific group. Goal relevance is often evaluated in comparison to social norms which include the desired goals. The goal based content of social identity provides evidence for the individual possessing the given identity on social reality and gives evaluative answer on the identity-relevant stimulus. Based on this, when planning the communication adjusting to social identity, implicit and explicit communication of norms should also be considered.
3) Action relevance: the extent of how an object allows activities relating to the given social identity to be manifested. Each possession relating to identity forms a coherent set around the identity. These are the objects that the individual considers useful in the behaviour matching the identity. Possession is not sufficient alone: it is also important what kind of responses are caused by the individual from other consumers when using the given possession. The more the possession is connected to social identity, the more the consumer feels capable of behaving according to the social identity (Kleine et al., 1993; Laverie et al., 2002).
4) Discrimination ability: social identity should be able to allow the consumer to make distinction among the different possibilities. If identity does not give a proof for choice, then norm connected to understandable and clear identity will give a proper foundation to make the decision.

In order to use identity to change behaviour, the aspects presented in this chapter should be taken into account. In case of environmental identity, in the given decision situations identity should be available for the individuals. In the given purchasing situation or in other consumer's decision making situation, the individual should be aware that he or she is part of the nature and should feel close to nature and his or her decisions should serve this concept.

6 CONSUMER BEHAVIOUR MODELS IN ENVIRONMENTALLY CONSCIOUS CONSUMPTION

In previous chapters we reviewed the internal, personal factors influencing environmentally-friendly behaviour. In order to support change in behaviour we have to understand how major factors influencing behaviour are linked and how they influence behavioural intention and real behaviour. For this understanding a range models have been developed which can be grouped based on their initial hypotheses.

Models basically differ in complexity. One group of the models outlines one or two key factors to focus on (see: Schwartz's Norm Activation Model, 1977; Ajzen – Fishbein TRA model, 1980), which encourage the easy applicability of the model. Another group of the models tends to grab the complexity of the process to incorporate all possible factors into the model (see: Gatersleben – Vlek NOA model, 2002; Ölander – Thøgersen's MOA model, 1995; Stern's ABC model, 2000). These models help conceptual understanding but they are not easy to validate.

It is important to highlight how the given model thinks about the consumer, whether he or she is a rational or partially rational consumer. The basis of rational decision models is the consumer's goal to maximize its usefulness function. In these decision models, the individual is in the centre along with his or her judgements or choices made through considerate and rational arguments (Jackson, 2005b). Rational models were applied in healthcare and sustainable consumption (Ryan and Bate, 2001).

The assumption of rational models is that individual is following his or her self-interest. Researches in the field of environmentally conscious behaviour show that the development of environmental awareness is strongly influenced by altruistic and biospheric motivation (Schultz, 2000). The key concept of my dissertation, environmental identity has the assumption that the individual being in a unity with nature is more willing to perform environmentally-friendly behaviour. Models emphasizing pro-social motives attribute more role to values, norms, personal factors (see: Schwartz's Norm Activation Model, 1977; Stern's VBN Model, 2000). Researchers considering the following of self-interest as the main motivation of environmentally-friendly behaviour apply the Planned

Behaviour Model (Ajzen, 1991). Those researchers who emphasize pro-social motives (Bamberg and Möser, 2007) apply mostly the Norm Activation Model.

Models can be differentiated whether they concentrate on external, situational factors (financial conditions, organizational conditions, regulatory environment), or on internal, personal attributes such as attitude, values or personal norm (Jackson, 2005b). Marketing research should involve both. Internalist conception assumes that behavioural change is based on values, beliefs and on the change of attitudes which can be achieved by the tools of social marketing (Andreasen, 2006; Kotler and Zaltman, 1971). Externalist conception emphasizes consumer's path dependence[15], the effect of external economic necessity, market environment and social expectations. Stakeholders' activity (see Chapter 2.2) to shape consumption environment encourages environmentally-friendly behaviour, which is supported by environmental marketing (Csutora and Kerekes, 2004; Henion and Kinnear, 1976), as a tool to help transforming decisions.
In my dissertation I apply the internalist conception focusing on the individuals' personal factors. I highlight those models that are the most applicable based on the attributes presented above. (Further description of the models see: Jackson, 2005b)

1) **Ajzen and Fishbein (1980): Theory of Reasoned Action (TRA)**
   In theory of reasoned action Ajzen and Fishbein (Ajzen and Fishbein, 1980) created a simple model. The model highlights that attitudes have no direct effect on behaviour but they influence the intention to act. The intention to act is shaped by three factors: attitudes, subjective norm and the relative importance attributed to subjective norm (Jackson, 2005b).

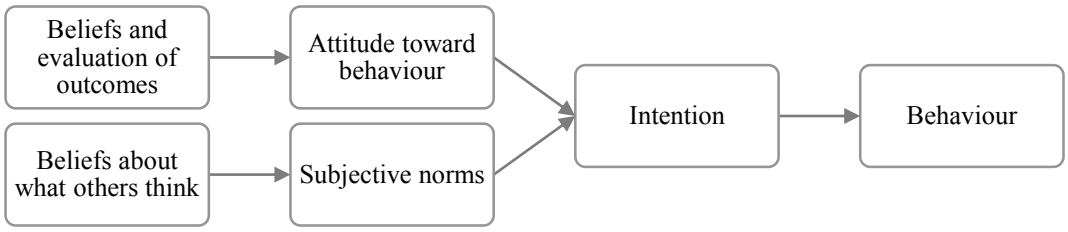

Figure 4 Theory of Reasoned Action
Source: Ajzen and Fishbein (1980)

[15] lock-in

The final effect of norm have been confirmed by several studies (Bagozzi and Schnedlitz, 1985) and it is applicable for studying environmentally-friendly behaviour.

2) **Ajzen (1985 and 1991): Theory of Planned Behaviour (TPB):**

A further developed version of TRA model is the Theory of Planned Behaviour. New elements of the model are the controlling beliefs and, as a result, perceived behaviour control (Ajzen, 1985, 1991).

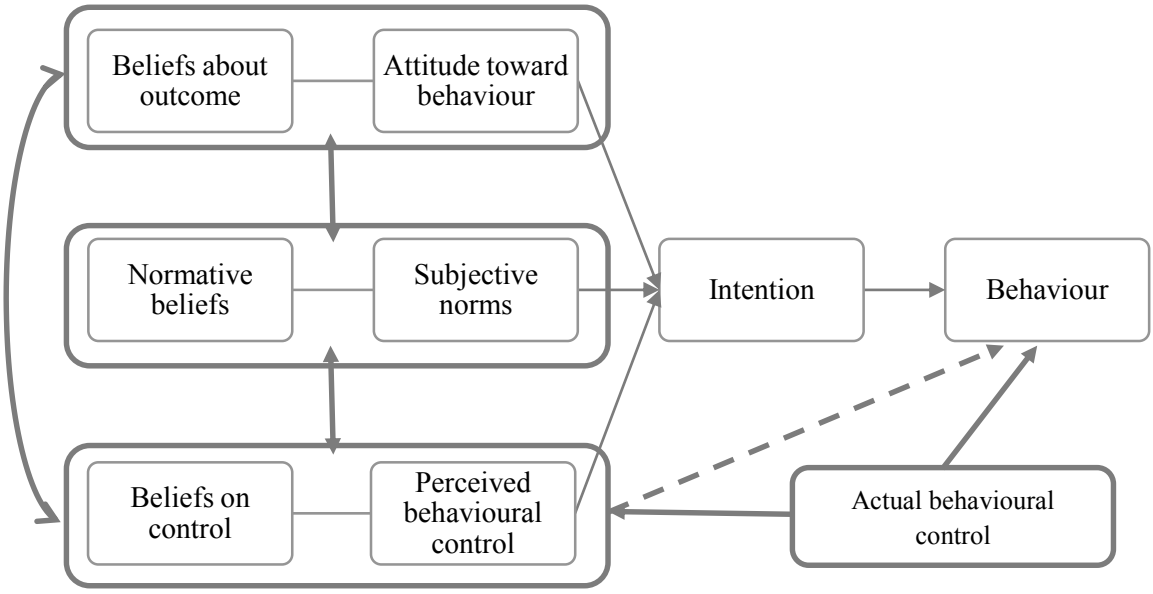

Figure 5 Theory of Planned Behaviour

Source: According to Ajzen1991

Ajzen's model puts significant focus on perceived behaviour control which influences behaviour not only through the intention to act but in a direct manner, too. The model becomes dynamic with the expansion by *actual behavioural control* element (Ajzen, 2002). Actual behavioural control refers to how much a person's behaviour can achieve the desired effect in a given situation.

TPB models are frequently applied for studying environmental awareness: in case of a meta-analysis in 2001, 154 applications were observed which were different in context (Armitage and Conner, 2001).

3) **Hines, Hungerford and Tomera (1986): Model of responsible environmental behaviour**

Compared to TRA and TPB the model was expanded with the aspect of personality which entails attitude and behaviour control, too. It emphasizes the knowledge of problems, the knowledge of action strategies and the influencing role of the intention to act (quoted by Zsóka, 2007). In addition, situational factors are new features (economic situation, social pressure, the lack of infrastructure etc.) which, in this model, directly influence actual behaviour (Hines et al, 1986).

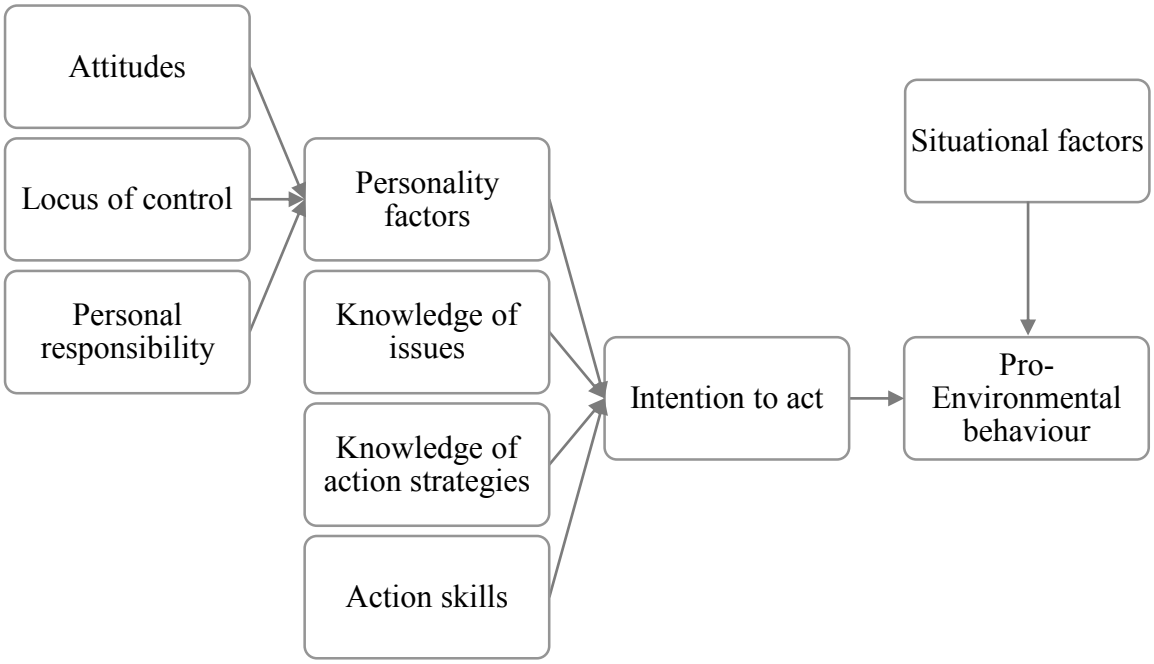

Figure 6 Model of responsible environmental behaviour
Source: Hines at al, 1986, quoted by Zsóka, 2007, 48 p.

While other models are more general and can be adapted to several behaviour types, the strength of this model is its applicability for environmentally conscious behaviour, in particular.

4) **Schwartz (1977): Norm Activation Model**

Beside TPB, this model is used the most frequently in the field of environmentally conscious behaviour. The original objective was to understand the frame of the pro-social, altruistic behaviour (Schwartz, 1977). The basis of the model was that personal norm, as a strong moral feeling of pressure, is the only direct determining factor of commitment to pro-social behaviour. Personal norm has two types of

background: the awareness of the consequences of activities and the acceptance of personal responsibility. The name of the model refers to the fact that the knowledge of consequences and responsibility activate personal norm which determines whether the individual should intervene to avoid damage to the environment (Cordano et al., 2011). The model is also called intervention behaviour theory since it is activated if the individual perceives that processes will damage the environment and the self. It was originally called the model of altruism by Schwartz.

The explanatory power of the model is not constant: the strongest factor influencing personal norm is the external social and institutional framework (Jackson, 2005b).

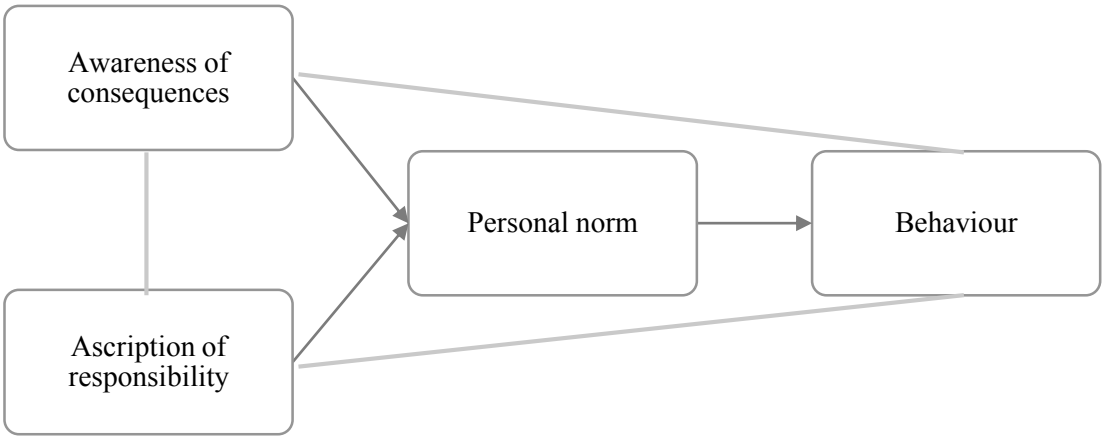

Figure 7 Norm Activation Model

Source: According to Schwartz (1977)

5) Stern (1999): Value - Belief - Norm Theory

Stern's theory is based on the norm activation concept. In comparison with Schwartz's model, the difference is found in the incorporation of values and worldview. Stern suggests that the development of pro-social behaviour, similarly to Schwartz's model, is caused by the activation of help norm (Cordano et al., 2011). The theory assumes that the New Environmental Paradigm (NEP) as an attitude is a determining factor of the knowledge on consequences. The acceptance of NEP depends on the biospheric and altruistic value orientation. The

model studies the effect of egoistic values which show negative correlation with pro-social behaviour.

The acceptance of NEP positively correlates with the knowledge on consequences and responsibility. Personal norm is activated based on this (Stern et al, 1999).

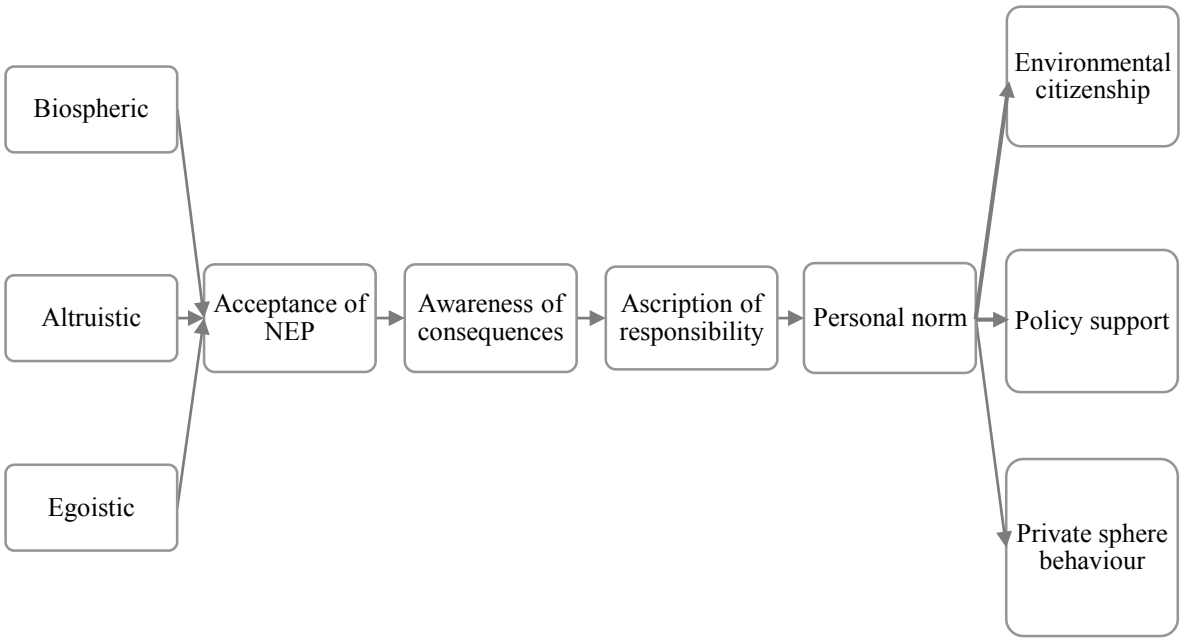

Figure 8 Value - Belief - Norm Model
Source: According to Stern (1999)

Stern (2000) suggests that, after comparing it to other models, this model is a more clear predictor of environmental citizenship, behaviour in private sphere and the support of public sphere.

Models shown before emphasize the importance of personal psycho-graphic factors and study the relationship among them. The variable of identity have recently appeared in the models presented above, attempts were seen to incorporate the concept into the model in studying the role of identity (Davis et al., 2009; Hinds and Sparks, 2008).

TPB is the most frequently applied conceptual model which attempted to incorporate the concept of identity into the model. The explanatory power of the model is strengthened by incorporating the variable of self-identity into the model (Fielding et al., 2008). More and more studies confirm the importance of self-identity in predicting intention to act (Fielding et al., 2008; Hogg et al., 1995; Sparks and Guthrie, 1998; Sparks and Shepherd, 1992; Terry et al., 1999; Theodorakis, 1994). Sparks and Shepherd (1992) argued that

self-identity acts through attitudes, but at the same time they confirmed that green-consumer self-identity have been proved to be an independent predictor of the intention to buy organic products. Based on this, identity can be a useful factor of the models explaining behaviour, preceding attitude relating evaluations (Thorbjørnsen et al., 2007).

The next chapters of my dissertation, based on the results of the literature review, I will describe the steps of my empiric research on the relationship between environmental identity and environmentally-friendly behaviour.

7 PRELIMINARY STUDIES

I have been dealing with environmentally conscious behaviour and consumption since 2008. As a member of the sustainable consumption, production and communication research group of the Norwegian Fund I have been studying the changes of European and national environmentally-friendly consumer behaviour patterns with my colleague Ms Kata Kasza-Kelemen since 2008, under the supervision of Ms Agnes Hofmeister-Tóth. As of 2010 we continued our work started with the Norwegian Fund in a sub-project focusing on consumption of the Sustainable Development Research Group funded by TÁMOP (Social Renewal Operational Programme). These research projects allowed me to master environmentally conscious behaviour and formed a firm basis to plan my dissertation research on.

The objective of my dissertation is to study the relationship between environmental identity and environmentally conscious behaviour. I assumed a positive effect of environmental identity on environmentally conscious behaviour through both direct and indirect psycho-graphic factors (see Chapter 3). In order to study and prove the role of environmental identity I confirmed the operationalization of environmental identity concept during my preliminary studies. I compiled two preliminary studies aiming at the interpretation of nature and the exploration of emotions and attitudes relating to nature, as well as the applicability testing of the scale customized for environmental identity concept.

7.1 QUALITATIVE RESEARCH TO STUDY COMMITMENT TO NATURE[16]

Society and personal experiences have a strong effect on the relationship between nature and the individual. Before starting to measure environmental identity in a different cultural environment, it should be studied what individuals mean by nature (Piskóti, 2013).

The aim of the research was to study the connection to nature and the appearance of environmental identity in a qualitative way in order to map whether the factors used in

[16]Study published at MOK Conference in 2012 (Piskóti, 2012)

international scales are present in the Hungarian environment. The research has an exploratory characteristics to interpret the picture formed by the students on nature and to reveal which experiences, emotions, thoughts occur to the respondents first.

7.1.1 RESEARCH METHOD

Initially I performed a qualitative research to examine the dimensions of environmental identity. The research was carried out in the second quarter of 2011 among first-year master's students at Corvinus University of Budapest. Participation in research was voluntary, respondents were motivated by extra points in a course above the compulsory requirement. The dataset consists of altogether 68 essays, two essay from each participants, where they expressed one positive and one negative environment-related experiences.

Due to its exploratory nature, narrative analysis was used as a technique in the research. Narrative approach allows us to learn about nature as a phenomenon through narration. The goal of the method is to ask the respondent about the given phenomenon by influencing them as little as possible. Narrative analysis is and empiric, text related research method aiming to study how stories operate, how people use stories (Szokolszky, 2004).

During the research respondents provided personal stories. Emotionally positives stories were told to the following question: "Can you remember a situation when you were very happy and that moment connected to nature? Please, describe this moment in more details.". Emotionally negative stories were told to the following question: "Can you remember a situation where you did not feel well in the nature? Please, describe it in more details."

The analysis of the essays was performed by Atlas Ti 5.2 qualitative software application. The data were analysed in a deductive way, the analysis were driven by the theory of environmental identity. According to this the analysis of the essays was made from different perspectives in focus, such as the interpretation of nature, the individual or social characteristics of the experiences as well as the dimensions of the environmental identity.

7.1.2 RESULTS OF THE RESEARCH

As for the gender breakdown, there were 6 male and 28 female respondents. Their average age was 23.3 (the youngest being 22, the oldest 25). As a place of residence, 16

respondents live in the capital, 8 persons in a county seat, 6 persons in other cities and 4 persons in a village or other places.

Each respondent compiled two essays: one about the positive experiences obtained in nature and one about negative experiences. The size of the essays differed by respondents starting from short essays consisting of one hundred words to longer essays of six hundred words. The average number of words was two hundred and fifty. The differences in the number of words were observed in different respondents. A respondent used the same number of words for writing essays with a negative or a positive charge. Thus, emotional side was irrelevant in terms of essay sizes.

Interpretation of nature

When examining the relationship between man and nature, it is utmost important to understand how respondents consider nature. Personal connectedness depends on this interpretation. For this reason, instructions did not contain any explanation regarding the term 'nature' thus leaving the interpretation for the respondents.

By nature, respondents defined several natural phenomena (see Figure 9). More than two third of the essays (28) mentioned nature as an excursion. Tracking in mountains and forests means the most intense experience of nature. These experiences appear as both positive (15 essays) and negative (13 essays) experiences.

The second most intense interpretation was the connection of nature with weather. This interpretation should be outlined because this was associated to negative experiences in 87% (2 positive and 14 negative essays). Almost half of the negative experiences associated with nature concern storm, rain and cold[17].

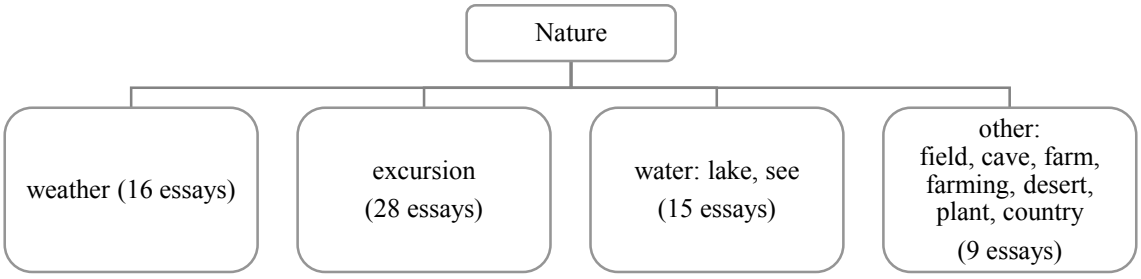

Figure 9 Interpretation of nature in positive and negative essays together
Source: own editing

[17] Quotes relating to the presentation can be found in the Annex

Third important category of interpretation is water. Memories associated with rivers, lakes and sees. Usually positive experiences were associated with the view of water, which means mental relaxation and recovery for the respondents. Respondents reported the sense of freedom, total relaxation and rest in their stories about water.
The essays sometimes included plants, animals and other forms of nature but their importance based on their numbers is negligible.

Time of the stories

Most stories were based on memories from childhood (25 essays). Among these stories, the breakdown is quite balanced between positive (12) and negative (13) essays. 18 stories are based on high school experiences (8 positive and 10 negative), 9 stories come from the university years (6 positive and 3 negative experiences), while in case of 14 essays the respondents did not report the time of the story.

The importance of childhood experiences in environmental sensitivity and the development of environmentally conscious behaviour was confirmed by several studies (Chawla, 1998, 2006). In the essays, childhood stories were grouped by two types of events. One type included regular family excursions, experiences obtained in the family or grandparents' garden. The other type of events included study visits and school trips.
Negative experiences may also entail the importance of family or school excursions. The night-time "courage tests" organized by school trips appeared as experiences of recurring fear.
The majority of the high school experiences refer to group trips but some mentioned also individual vacations. During the university years only those excursions appeared which were individually organized with partner or friends.

Social characteristics of stories

Respondents reported social experiences in 79% of the essays. Walking outdoors or spending time in nature requires good company. The need for company, the importance of sharing experiences were mentioned in several essays, as organic part of the positive experiences connected to nature.

Neither social, nor individual experiences cause significant differences between positive and negative experiences. The ratio of social and individual experiences was similar in both essay groups (positive: 28 social, 6 individual experiences; negative: 26 social, 8 individual experiences).

Individual experience obtained in the nature can encourage the achievement of personal calm. As environmental psychology emphasizes (Kaplan, 1995; Kaplan, 2000), nature has a positive effect on human mind, calm and self-respect. In all essays presenting both positive and negative experiences, nature has a beneficial psychological effect encouraging self-reflection.

Appearance of environmental identity

I coded environmental identity by 5 dimensions according to the references (see Chapter 5.3.1): Ideology, Identification, Salience, Positive emotions and Biographical elements. Among the dimensions, the dimension of Positive emotions was coded the most frequently, which was followed by Biographical elements and Salience. Identification and Ideology hardly appeared in essays (Table 5)

	Number of appearances	Positive experience	Negative experience
Identification	5	5	0
Biographical elements	23	18	5
Ideology	4	3	1
Positive emotions	52	50	2
Salience	11	11	0
Total	95	87	8

Table 5 Coding frequency of the dimensions of environmental identity
Source: own editing

Positive emotions

Thoughts associated with positive emotions usually refer to the aesthetic description of environment by highlighting the beauty and the unique features of environment. Apart from the feeling of peace and calmness mentioned earlier, the respondents associated nature with the feeling of freedom. Time spent outdoors may enhance self-assessment. A potential challenge in nature can be such factor which may cause personal success and the individual can be proud of himself or herself.

Of course, positive emotions mostly appeared in positive essays but negative essays also mentioned the sense of competence as a positive factor. DeYoung (2000, quoted by Clayton and Opotow, 2003) emphasize the importance of the need toward competence in motivating environmentally-friendly behaviour. This is reflected in my research. Competence mainly results from the sense of independence, the ability to protect ourselves and from the fact that we manage to survive in the nature on our own, climb steep mountains and tackle the fear of darkness (Clayton and Opotow, 2003). A huge

physical performance fills us with pride also by revealing our own physical limitations. It is the autobiographical component of the environmental identity which is mentioned in negative essays.

Biographical elements

Respondents often feel it important to mention their childhood lifestyles, family behaviour patterns and attributes in the essays as if justifying their commitment.

Some respondents described family events to emphasize family influence, taking and following good examples and put a particular focus on following family patterns in childhood. Fathers, mothers and grandparents were role models to follow later on. This result is also in line with prior studies in the field of environmental sensitivity (Chawla, 1998).

In negative essays the appearance of biographic elements reflects childhood fears (for example from animals) or childhood situations, as for example the place, which references consider as a salient factor in the development of environmentally friendly behaviour.

Salience

The frequency and importance of time spent in nature was not salient: it was coded 11 times and only in positive essays.

Identification

The identification with nature, the sense of community was rarely mentioned in the essays. The student sample can account for this, this sample did not specifically focus on committed people[18].

Ideology

Ideology dimension appeared in the essays as a responsibility for would-be children and as an obligation to grow children in a manner of loving nature. Not surprisingly, all such essays were written by women.

Besides, negative experiences also reflect moral values of protecting and not damaging nature even if nature has a self-damaging phenomenon by storms.

[18]A version of environmental identity scale containing 24 items were surveyed among the students. Results show that none of the respondents had high environmental identity score compared to the international figures.

The elements of environmental identity were coded 95 times; on average any factor of environmental identity was coded 2.8 times per respondent (Min=0, Max=7, Modus=3). Low values can be traced back to sample attributes and the small volume of essays.

7.1.3 SUMMARY AND LIMITATIONS OF THE RESEARCH

The aim of the research was to interpret nature and to study environmental identity. Respondents considered nature as different concrete or abstract elements of the environment (wood, water, weather), which are strongly connected to human activities done in nature (excursions, swimming). In summary, the concept of nature should be considered in a wider sense for the sake of research. For this, measurement tools listed in Chapter 5.3 are appropriate.

One important result of the research is the interpretation of the social attribute in experiences connected to nature. The love of nature was closely linked to the importance of company in students' essays. Experiences become more intense and emotional by the appearance of company, friends and family, by sharing experiences. Further research is needed to prove the effect of this phenomenon on environmental identity.

When studying the dimensions of environmental identity (see Chapter 5.3.1) they were all explorable, although in different extent, during the content analysis. Positive emotion was the most dominant dimension. This was mainly due to the following question: "Please describe your happiest and your most negative experience in nature." Due to the priming effect of emotional experiences, we expected emotional dimension to be salient in students' essays. Other dimensions were less significant but they were still be able to evaluate.

In addition, experiences support the importance of childhood experiences and experiences obtained in nature, which is emphasized by the reviewed literature (Chawla, 1999; Palmer, 1993; Tanner, 1980) that 36% of the positive experiences comes from childhood and another 24% is based on high school experiences. The importance of role models also appear in the biographic event dimension: activities learnt from parents and grandparents were the most salient ones among family memories.

Research was done on a student sample containing the essays of 34 respondents. The low number of the sample and the special character of students act as limitations of the

research and may cause an unbalanced judgement of environmental identity. Due to the limitations of this research, results should be considered as initial state, but a repetition of the research is recommended on a bigger sample containing people committed to environmentally conscious behaviour so that the difference between the committed and the non-committed groups could be properly explored.

7.2 QUANTITATIVE RESEARCH TO TEST SCALES MEASURING ENVIRONMENTAL IDENTITY

The scales to be applied were tested in November, 2011 on a students' sample in frame of an online survey. The participation in the study was on a voluntary basis, students received extra points by participating in the research. After cleaning the database, we analysed the questionnaires of 299 respondents.

The aim of this research was to test the reliability of the scales suitable for measuring connectedness to nature as well as the testing of the applicability and reliability of Clayton's environmental identity scale. Main attributes of the scales studied during the preliminary study are summarized in Table 6.

In order to choose the appropriate scale, in frame of the students' survey we pre-tested the following scales: Schultz's INS scale, the Nisbet – Zelenski – Murphy NR scale and Clayton's EID scale. When selecting the scales, I had two criteria in mind: first, does the scale apply explicit or implicit measuring method? In order to interpret the unconscious environmental identity, I tested INS scale as an implicit measurement. Second aspect was the dimensionality of the scale. EID scale is a one-dimensional tool for environmental identity, while NR scale applies three dimensions: identification, attitude and behavioural component when examining the connectedness of personality to nature.

Scale	Year	Concept	Method of Measurement
Schultz Inclusion of nature in the self (INS)	2001	Adaptation of Aron scale (1992), to examine the strength of relationship between individual and nature.	Implicit, 1 item
Clayton Environmental Identity (EID)	2003	The role and extent of nature is examined in individual self-definition. Cognitive, affective and emotional perspectives also examined. 1-dimensional	Explicit, 24 items
Schultz IAT - Nature	2004	Belongs to implicit measuring tools. The scale examines the strength of bonds to nature and the built environment.	Implicit Association Test
Mayer - Frantz Connectedness to Nature (CNS)	2004	The scale examines the emotional bonds to nature. 1-dimensional	Explicit, 14 items
Nisbet – Zelenski – Murphy: Nature Relatedness Scale (NR)	2009	Examination of personality attached to nature. Emotional, cognitive and experience aspects of nature relatedness are also taken into consideration. 3-dimensional	Explicit, 21 items
Clayton Environmental Identity (EID), short version	2011	The role and extent of nature is examined in individual self-definition. Cognitive, affective and emotional perspectives also examined. 1-dimensional	Explicit, 11 items

Table 6 Summary of scales examining the relationship between individuals and nature
Source: own editing

7.2.1 THE STUDY OF INS SCALE

Respondents think they have a less close relationship with nature. The average of the scale was M=3.54, as shown in Figure 9, 82% of the respondents chose circles representing semi-overlapping or weaker relationship.

Results show that respondents consider the relationship between the individual and the environment weaker in case of implicit measurement compared to explicit measurement. This result may be based on the fact that environmental awareness has become a buzz word which we frequently hear, and has become part of the social norm. This social pressure is moderately present in the responses.

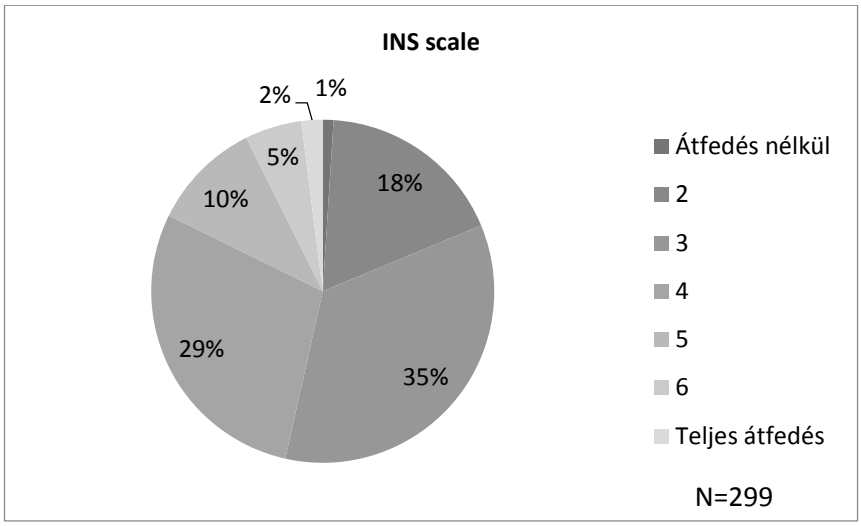

Figure 10 The distribution of INS scores
Source: own editing

7.2.2 EXAMINATION OF NR SCALE

The NR scale consists of 21 items from which item 2, 3, 10, 11, 13, 14, 15 and 18 are reversed items. Items referring to the identification with nature were given the highest average score ('Even in the middle of the city, I notice nature around me.' M=3.67), this is followed by items relating to environmental concern (see annex). Respondents mostly disagreed with the item referring to environment protection as being unnecessary (M=1.66).

Score is measured as the average of all values given to an item, thus each individual can get a score between 1 and 5. The average of the whole score is 3.10, the average of NR Self values is 2.88, the average of NR Perspective is 3.64, while the average of NR Experience is 2.81. It seems clear, that NR Perspective symbolizing environmental attitude is the most important on the sample.

Scale reliability can be checked by Cronbach-alpha measuring internal consistency. Its value for the whole scale was α=0.840 which meets the expected optimal value of 0.7-0.9 (Nunnally, 1967). In case of sub-scales, values are not satisfactory. Value of NR Self is α=0.393, the value for NR Perspective is α=0.445. The only acceptable value was given for NR Experience, that is α=0.820.

To check the dimensions of the scale, similarly to the authors, I carried out exploratory factor analysis with maximum likelihood and promax rotation. The result of factor

analysis was 4 factors. The expected 3 dimensions were not clearly shown in the sample data. Due to the ambiguous reliability analyses and dimensions I decided to discard the use of this scale.

7.2.3 EXAMINATION OF EID SCALE

I used the shortened version of Clayton's Environmental Identity scale during the survey. Descriptive statistics of the scale is summarized in Table 7. The scale contains 11 items, the author recommended to measure them on a 7-point Likert scale.

Respondents mainly agree with the item of ideological understanding, the importance of involving natural world into every child' upbringing (M=5.99), which reflects concerns about next generation. Respondents less agree with demonstrating own responsible behaviour (M=4.54). Time spent in nature (M=3.74) and supporting material and convenience related aspect (M=4.01) were the least dominant.

EID scale	**N**	**M**	**SD**
I spend a lot of time in natural settings (woods, mountains, desert, lakes, ocean).	299	3.74	1.490
I think of myself as a part of nature, not separate from it.	299	4.26	1.736
If I had enough time or money, I would certainly devote some of it to working for environmental causes.	299	4.01	1.771
When I am upset or stressed I can feel better by spending some time outdoors "communing with nature."	299	4.96	1.718
I feel that I have a lot in common with other species.	299	4.00	1.798
Behaving responsibly toward the Earth—living a sustainable lifestyle—is part of my moral code.	299	4.54	1.533
Learning about the natural world should be an important part of every child's upbringing.	299	5.99	1.173
I'd rather live in a small room or house with a nice view than in a bigger room or house a view of other buildings.	299	5.49	1.600
I would feel that an important part of my life was missing if I was not able to get out and enjoy nature from time to time.	299	5.52	1.544
I have never seen a work of art that is as beautiful as a work of nature, like a sunset or a mountain range.	299	4.76	1.848
I feel that I receive spiritual sustenance from experiences with nature.	299	4.49	1.777

Table 7 Descriptive statistics of the EID scale
Source: own editing

The value of the scale shows the strength of environmental identity of the respondents. Score values are limited between 11 and 77, where 77 is given to a person having strong environmental identity. The average score is 51.76 which reflects a bit stronger connection to nature than the midrange.

To check scale reliability I examined the correlation between the items. These values exceed the minimum value of 0.3 in all cases (see Table 8). The value of Cronbach-alpha is also acceptable α=0.881.

Items of EID scale	**Average, mean if item deleted**	**Sample - scale correlation**	**α, mean if item deleted**
I spend a lot of time in natural settings (woods, mountains, desert, lakes, ocean).	48.02	.567	.872
I think of myself as a part of nature, not separate from it.	47.50	.716	.862
If I had enough time or money, I would certainly devote some of it to working for environmental causes.	47.75	.562	.873
If I am upset or stressed I can feel better by spending some time outdoors "communing with nature."	46.80	.708	.863
I feel that I have a lot in common with other species.	47.76	.563	.873
Behaving responsibly toward the Earth—living a sustainable lifestyle—is part of my moral code.	47.22	.581	.872
Learning about the natural world should be an important part of every child's upbringing.	45.77	.596	.872
I'd rather live in a small room or house with a nice view than in a bigger room or house facing other buildings.	46.27	.442	.880
I would feel that an important part of my life was missing if I was not able to get out and enjoy nature from time to time.	46.24	.713	.863
I have never seen a work of art that is as beautiful as a work of nature, like a sunset or a mountain range.	47.01	.432	.883
I feel that I receive spiritual sustenance from experiences with nature.	47.27	.704	.863

Table 8 Internal consistency of the EID scale
Source: own editing

The scale (Clayton, 2003) has one dimension in spite of the fact that environmental identity is measured by five different aspects. To check the number of dimensions I carried out a principal component analysis.

The result of the principal component analysis without rotation is one factor. Correlation matrix showed, that the items have significant, medium strong correlation, thus the factor analysis can be performed. Based on the result of the Bartlett test ($p<0.000$) null hypothesis can be discarded; the result of the KMO test is 0.901, so the result of the factor analysis is acceptable. 47.053 % of the variance is explained by the factor. According to

the rule of thumb, a principal component analysis can be accepted if it preserves at least half of the information, but this depends on the number of variables. In case of 11 items, the 47% can be considered as a borderline (Székelyi and Barna, 2008).

	Component
I spend a lot of time in natural settings (woods, mountains, desert, lakes, ocean).	.662
I think of myself as a part of nature, not separate from it.	.786
If I had enough time or money, I would certainly devote some of it to working for environmental causes.	.644
If I am upset or stressed I can feel better by spending some time outdoors "communing with nature."	.788
I feel that I have a lot in common with other species.	.651
Behaving responsibly toward the Earth—living a sustainable lifestyle—is part of my moral code.	.664
Learning about the natural world should be an important part of every child's upbringing.	.679
I'd rather live in a small room or house with a nice view than in a bigger room or house facing other buildings.	.532
I would feel that an important part of my life was missing if I was not able to get out and enjoy nature from time to time.	.784
I have never seen a work of art that is as beautiful as a work of nature, like a sunset or a mountain range.	.512
I feel that I receive spiritual sustenance from experiences with nature.	.773

Table 9 Result of the principal component analysis on EID scale
Source: own editing

If we take out the 10th item, the explained variance increases to 49.538 %. If we take out the 8th item, the explained variance increases to 52.371%. The two items emphasizes the aesthetic and artistic value of nature. Based on the results, this aspect is separated from the rest of the items which represent a closer relationship with nature.

Matching this with the INS scale shows medium strong relationship (r=0.566). The two scales measures similar concepts.

In summary, the result of the EID scale examination confirms its one-dimensional structure, and the results of the reliability tests support further use of this scale. Having matched the INS and NR scale, I chose EID scale for the next stage of my research. First, the reliability of the applied implicit measuring tool, INS scale was hard to measure due

to the only item, second, the strong correlation indicates that both scales measure similar concepts.

In case of NR scale the expected dimensions did not appear on the student's sample. I would expect similar results on a sample representing the whole population. In my opinion a clear distinction of dimensions could be achieved by examining a committed environmentally conscious consumer group. As a result, I decided to use EID scale specifically measuring environmental identity and substituted NR sub-scales with other validated scales such as the NEP scale strongly correlating with NR Perspective sub-scale used to measure environmental attitude (Nisbet et al., 2009).

8 EMPIRICAL RESEARCH PLAN

In the course of my dissertation I examine one possible route to commitment to environmentally conscious behaviour with the strengthening of environmental identity. *The aim of my research is to determine the effect of environmental identity on environmentally conscious behaviour as well as to analyse the differences influenced by environmental identity.* During the analysis of the relationship between environmentally-friendly behaviour and environmental identity I also examine the role of those psycho-graphic factors employed in models of environmentally conscious consumer behaviour that are given priority in the literature such as environmental attitude, environmental concern, personal norms and values.

I describe the major models applicable to examine environmentally conscious behaviour in Chapter 6. The aim of the research is to examine the effect on environmental identity on environmentally conscious behaviour as well as mediating factors from a wide perspective by entering them into a conceptual model. Environmental identity is a personal psycho-graphic factor which assumes that the individual is in unity with nature and takes the interest of nature and community into account when making a decision. My research is based on internalist models and within these models those emphasising pro-social motivations. I use Stern's Value-Belief-Norm model (1999) as a starting point for my dissertation.

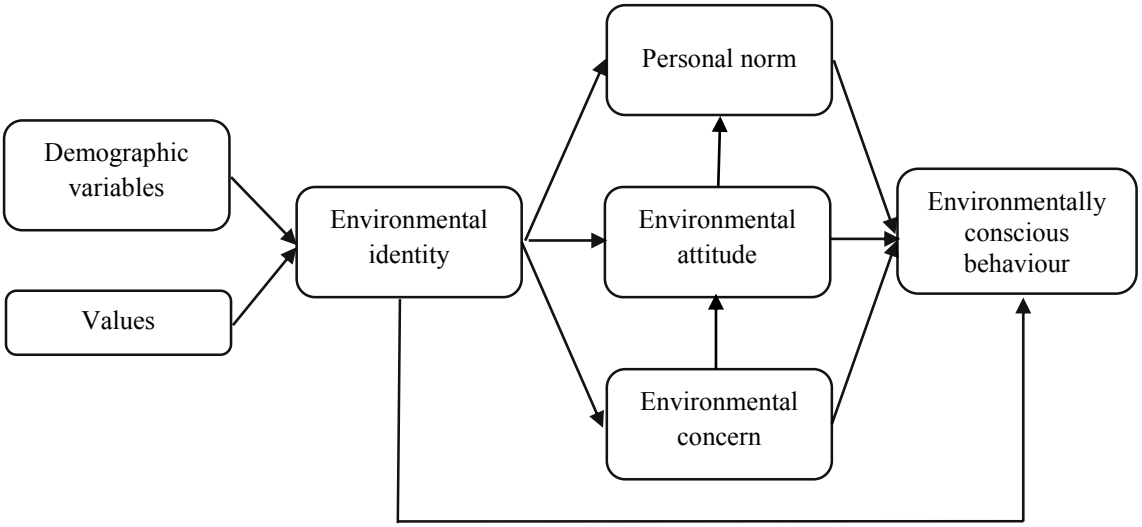

Figure 11 Theoretical model of my research
Source: own editing

The basic assumption of the model is that the development of environmental identity is a key component of committing to environmentally conscious behaviour, as those individuals who have stronger environmental identity carry out more environmentally-friendly activities (Clayton, 2003). Values occupying a central location in the individuals cognitive system, are stable personality characteristics which have an effect on the development of environmental identity as well as on attitudes and behaviours (Homer and Kahle, 1988; Kamakura and Novak, 1992). In the current model I consider value as a determining factor of identity.

The second part of the model is based on the effects to foster behaviour of norm activation (Schwartz, 1977, Stern, 1999). Environmental attitude and concern for the environment (see also biospheric concern, Chapter 3.4.2) promote the activation of personal norms and the appearance of these effects on behaviour.

My initial assumption is therefore that environmental identity is such a fundamental factor which has a strong direct effect on behaviour and indirect effect through environmental attitudes, environmental concern and norms as well.

8.1 RESEARCH QUESTIONS AND HYPOTHESES

The theoretical model I have established (Figure 11) is based on a processing of the literature as well as primary research results obtained in the subject over the last few years. Several models have been developed to study environmentally conscious behaviour, however, environmental identity as such was not examined in detail by literature in the context of the determining psycho-graphic constructions. The model contains the most commonly employed psycho-graphic factors for determining the development of environmentally conscious behaviour with the goal of systematizing the examination of the concept of environmental identity.

The question of my research is as follows: What are the main determining factors of environmentally-friendly behaviour and what effect does environmental identity has in particular?

I have also formulated the following sub-queries in relation to my research question:

1. What are the possible methods for measuring environmental identity?

2. Which factors have an effect on the strength of environmental identity?
3. What kind of direction and strength has the effect of environmental identity on environmentally-friendly behaviour? Is there a direct effect of environmental identity, and if so, the mediating effect of which psycho-graphic factors needs to be taken into consideration?

I carried out two further pieces of research to answer the research questions stemming from preliminary studies.

The first research objective is to analyse the differences in measurement methods focusing on environmental identity. During the preliminary study I compared the possible explicit measuring tools then, based on the results, I chose Clayton's Environmental Identity scale for the quantitative phase of my dissertation.

Literature recommends to apply both explicit and implicit measurements to study environmental identity (see Chapter 5.3). There is an assumption behind implicit measurements that environmental identity is not a conscious concept which cannot be defined by self-report (Schultz et al., 2004; Schultz and Tabanico, 2007).

During the course of research for my dissertation I analyse the reliability of the possibilities for explicit and implicit measurements and their relationships with actual behaviours. My initial assumptions on environmental identity viewed as an unconscious concept are the following:

The positive effect of implicit environmental identity on environmentally conscious consumer behaviour is stronger than the positive effect of explicitly measured identity.

Dependent variable: environmentally-friendly behaviour

method of measurement: Roberts' Ecologically Conscious Consumer Behaviour (ECCB) scale for measuring environmentally conscious consumer behaviour (Roberts and Bacon, 1997).

Independent variable 1: Environmental identity

measurement of identity: Clayton's Environmental Identity Scale, (Clayton, 2003)

Independent variable 2: Connection to Nature, IAT-Nature

method of measurement: Result of IAT-Nature D-measurement (Schultz et al., 2004)

The second research focuses on the quantitative examination of the relationship between environmental identity and environmentally-friendly behaviour. Based on my presented model I have determined the following research questions and hypotheses:

Environmental identity refers to the relationship between nature and the individual, its strength and how nature forms part of the self-image. The more important the nature for the person, the stronger the environmental identity of the individual. Strong environmental identity induces active environmentally-friendly behaviour (Clayton, 2003; Olivos and Aragonés, 2011; Olivos et al., 2011). Based on this:

H1: Environmental identity positively affects environmentally-friendly behaviour. That is, the stronger the environmental identity, the more environmentally-friendly behaviour will be done.

Dependent variable: environmentally-friendly behaviour

method of measurement: Kaiser – Wilson's General Environmentally-friendly behaviour Scale (GEB) (Kaiser and Wilson, 2004)

Independent variable: environmental identity

method of measurement: Clayton's Environmental Identity Scale, (Clayton, 2003)

It is recommended and necessary to examine the effect of demographical variables in the study of environmental identity concept. We can conclude the effect of demographical variables on environmental identity from the demographical description of a typical environmentally conscious consumer (Diamantopoulos et al., 2003; Roberts, 1996). The demographical description of an environmentally-friendly consumer was already studied in the 1970th. In 2000th, however, the focus was shifted to the social and personal factors as well as to the creation of complex models (Kilbourne and Beckmann, 1998). In the context of complex researches, the study of this topic have again been justified since demographical variables have different effect on personal factors: age has a different effect on environmental attitude than actual behaviour (Diamantopoulos et al., 2003). Based on this, it is worth studying environmental identity as how the effect of certain factors can be measured.

H2a: The level of education has a positive effect on environmental identity. That is the higher the level of education, the stronger the environmental identity.

Dependent variable: environmental identity

method of measurement: Clayton's Environmental Identity Scale, (Clayton, 2003)

Independent variable: educational attainment

H2b: Women have a stronger environmental identity.

Dependent variable: environmental identity

method of measurement: Clayton's Environmental Identity Scale, (Clayton, 2003)

Independent variable: gender

H2c: Income has a positive effect on environmental identity. That is the higher the individual's income, the stronger their environmental identity.

Dependent variable: environmental identity

method of measurement: Clayton's Environmental Identity Scale, (Clayton, 2003)

Independent variable: income of a household

H2d: Age has a negative effect on environmental identity. That is, younger people have a stronger environmental identity.

Dependent variable: environmental identity

method of measurement: Clayton's Environmental identity Scale, (Clayton, 2003)

Independent variable: respondents' age

The relationship among values, society and the individual is emphasized (Beatty et al., 1985), because values are determined by the cultural socialization and depends on the individual's experiences. Values have a stronger role of influencing behaviour than attitude (Sudbury-Riley et al., 2014). Values can be grouped in different ways. According to the place of control, we distinguish internal and external values (Kahle, 1983). Environmental identity becomes stronger if it internalized the relationship of man and nature. Based on this, our initial hypothesis is the following:

H3: Internal values have a stronger effect than external values on environmental identity.

Dependent variable: environmental identity

method of measurement: Clayton's Environmental Identity Scale, (Clayton, 2003)

Independent variable: values

method of measurement: List of Value scale (Kahle, 1983)

The next research question of my dissertation refer to environmental concern, environmental attitude and the relationship between human and nature. Schultz (2004) suggests that the extent of connectedness to nature, that is how the individual feels part of the nature, determines concern types and situations that stimulate actions. Schultz

defined two extreme individual mindsets. One extremity is the individual who feels totally separated from nature, he or she considers human as above all natural laws and superior to plants and animals; this individual will be characterized with egoistic concern. The other extremity is the individual who feels part of nature as any other living creatures and who believes that humans, plans and animals should have the same rights. They are characterized with biospheric concern (Schultz, 2001; Schultz et al., 2005). Gosling and Williams (2010) used a group of farmers to confirm that environmental concern has a mediating effect on the commitment to nature and the protection of local vegetation. We examine this issue on a general sample of population, including a wider behaviour:

H4a: Environmental identity has a positive effect on environmental concern.

Dependent variable: environmental concern

method of measurement: Environmental concern scale (Schultz, 2001)

Independent variable: environmental identity

method of measurement: Clayton's Environmental Identity Scale, (Clayton, 2003)

H4b: Environmental identity has the strongest effect on biospheric concern compared to egotistic and altruistic concerns. That is, those individuals with a stronger environmental identity tend to have biospheric concerns whereas those individuals with low environmental identity tend to have egotistic concerns.

Dependent variable: environmental concern

method of measurement: Sub-scales of environmental concern scale (Schultz, 2001)

Independent variable: environmental identity

method of measurement: Clayton's Environmental Identity Scale, (Clayton, 2003)

H4c: Environmental concern has a positive effect on environmentally conscious behaviour.

Dependent variable: environmentally-friendly behaviour

method of measurement: Kaiser's and Wilson's General Environmentally-friendly behaviour Scale (GEB) (Kaiser & Wilson, 2004)

Independent variable: environmental concern

method of measurement: Environmental concern scale (Schultz, 2001)

Environmental attitude (worldview) examines individual's beliefs in relation to nature. Attitude scales do not examine the emotions relating to being in nature and the connectedness to nature. Research studies examining both concepts find positive correlation between the bond to nature and environmental attitude, although they also confirm that these concepts can be separated (Nisbet et al., 2009). Scales examining the environmental connectedness show a stronger direct relationship with the actual behaviour than attitude, therefore in my model I investigate the mediating effect of attitude between environmental identity and environmentally-friendly behaviour.

H5a: Environmental identity has a positive effect on environmental attitudes.

Dependent variable: environmental attitude

method of measurement: New Environmental Paradigm Scale (NEP) (Dunlap et al., 2000)

Independent variable: environmental identity

method of measurement: Clayton's Environmental Identity Scale, (Clayton, 2003)

H5b: Environmental attitudes have a positive effect on environmentally conscious behaviour.

Dependent variable: environmentally-friendly behaviour

method of measurement: Kaiser - Wilson's General Environmentally-friendly behaviour Scale (GEB) (Kaiser and Wilson, 2004)

Independent variable: environmental attitude

method of measurement: New Environmental Paradigm Scale (NEP) (Dunlap et al., 2000)

Personal norm is the last element of the theoretic model of this dissertation. As Heberlein defined (1977), personal norm is the internalization of moral attitude which originates from socially accepted norms, and which is different from it as the consequences of breaching personal norms relate to the individual's identity. Personal norms therefore are internalized social norms (Schwartz and Howard, 1980). The study of norms is beneficial if the behaviours examined have moral or ethical dimensions (Davies et al., 2002). Environmentally conscious behaviour definitely belongs to this category. Davies et al. (2002) recommend a precise study of the predicting effects of personal norms, they confirm the role of personal moral norm and responsibility in recycling. Based on this my hypothesis is the following:

H6a: Environmental identity has a positive effect on personal norms.

Dependent variable: personal norm

method of measurement: Stern's Personal Norm Scale (Stern, 1999, Stern et al., 1999)

Independent variable: environmental identity

method of measurement: Clayton's Environmental Identity Scale, (Clayton, 2003)

H6b: Personal norms have a positive effect on environmentally conscious behaviour.

Dependent variable: environmentally-friendly behaviour

method of measurement: Kaiser - Wilson's General Environmentally-friendly behaviour Scale (GEB) (Kaiser and Wilson, 2004)

Independent variable: personal norm

method of measurement: Stern's Personal Norm Scale (Stern, 1999, Stern et al., 1999)

8.2 RESEARCH METHODS APPLIED

8.2.1 IMPLICIT ASSOCIATION TEST - NATURE

The first research question referred to the measurement methods of environmental identity, where I applied IAT-Nature test, a version of Implicit Association Test adapted to measure the implicit connection between human and nature. IAT-Nature test implicitly measures the closeness of the relationship between human and nature by studying how quickly the individual associates self-related terms with the ones relating to nature or built environment. Two categories were used in the test: Me-Other and Nature-Built environment (Schultz et al., 2004).

The IAT-Nature study was conducted in the beginning of 2013 on a student sample. Students participated in the study in frame of the Consumer behaviour subject, their participation was rewarded by extra points. After completing the test, respondents filled out a questionnaire, too, which contained Clayton's Environmental Identity scale (2003), Roberts' Environmentally conscious consumer behaviour scale, the NEP environmental attitude scale (Dunlap et al., 2000) as well as demographical questions. In order to examine the hypothesis, I compared the strength of relationship among D-measurement, suitable to evaluate IAT-Nature, EID score and environmentally-friendly behaviours.

8.2.2 *THE STUDY OF THE RELATIONSHIP BETWEEN ENVIRONMENTAL IDENTITY AND ENVIRONMENTALLY CONSCIOUS BEHAVIOUR*

A quantitative research was conducted to answer hypotheses based on my theoretical model, in the frame of the project TÁMOP-4.2.1/B-09/1/KMR-2010-0005: Sustainable development, liveable region. The survey was made in April 2012. The questionnaire was made with on-line (CAWI) survey. The sample covered 954 persons, the sample is representative of Hungarian regular internet users, between the age of 15-69, according to gender, age, education, size of city and region.
The questionnaire served to study the originally planned variables and a wider research of environmentally conscious consumption (Hofmeister-Tóth et al., 2013).

Main goals in analysing data were:

- to test environmental identity scale with confirmatory factor analysis;
- to study the relationship between environmental identity and environmentally-friendly behaviour
    - I analysed the relationship between environmental identity and psycho-graphic factors influencing environmentally conscious behaviour with regression path model. I did not apply the methodology of structural equation modelling, as this research was exploratory. Environmental identity is strongly influenced by culture and social environment. No Hungarian research studies that I know of[19] have ever applied this concept, thus the relationships with psycho-graphic factors should be preliminarily explored. Hair et al. (2010) recommend structural equation modelling only for the purpose of confirmatory researches.
- to study factors determining the strength of Environmental Identity, the evaluation of the effects of demographical factors and values, in particular. I applied variance analysis and linear regression for the analysis.

Research methods applied are summarized in Table 10.

[19]International researches on student and specific sample.

Research method	Description of research method	Respondents	Sample size	Date of data collection	Method of analysis and processing
Qualitative preliminary study│Examining interpretation of nature	Narrative analysis, analysis of essays on positive and negative experiences of nature	First year university students (MA)	34 people (68 essays)	May 2011	Atlas Ti 5.2 qualitative analysis software with additional use of IBM SPSS software
Quantitative preliminary study│ scale testing	Online research	Third year university students (BA)	299 people	November 2011	Using IBM SPSS software package
Implicit Association Test	Measurement of the implicit relationship between the individual and nature	Second and third year university students (BA)	199 people	December 2012	D-Measurement, Using FreeIAT program, and the IBM SPSS software package
Quantitative research │ model making	Online research, national representative sample	Hungarian residents who are regular internet users	954 people	April 2012	Using IBM SPSS and AMOS software package

Table 10 Research methods
Source: own editing

9 THE APPLICATION OF IAT-NATURE FOR THE CONNECTION WITH NATURE

The objective of the primary research was the comparison between explicit and implicit methods applicable to study the connection between human and nature, as well as the study of the link between environmental identity and environmental attitude and environmentally conscious behaviour.
The survey was conducted in December, 2012 with 199 students from Corvinus University of Budapest.

9.1 PRESENTATION OF TOOLS AND STIMULUS OF THE RESEARCH

The respondents first participated in the IAT-Nature computerized implicit association test then filled out an online survey contained explicit scales for environmental attitude, environmental identity and environmentally conscious behaviour. I applied three scales among explicit measurements:

- New Ecological Paradigm scale for measuring environmental attitude (Dunlap and Van Liere, 1978; Dunlap et al., 2000);
- Clayton's (2003) Environmental Identity scale for measuring environmental identity (Clayton:, 2003); as well as
- Roberts' Ecologically Conscious Consumer Behaviour (ECCB) scale for measuring environmentally conscious consumer behaviour (Roberts and Bacon, 1997).

To implicitly measure the connection to nature, I applied IAT-Nature test by Schultz et al. (2004) mentioned earlier, with FreeIAT software application. At the beginning of the test, respondents were asked to match the relevant terms as quickly as possible. The process includes 5 blocks with 10 matching in each. I used four categories in the blocks (Me, Not me, Nature, Built) in the following structure:

- first block: 10 tasks to categorise words relating to the evaluative attributes of Nature or Built environment.

- second block: 10 tasks to sort out terms relating to Me or Not me attitude objects.
- third block: 10 tasks, the first pairing test with straight matching, ‘compatible pairings’. To sort out words connected to all 4 categories, one attitude object connects to one button with one assessing attribute, the other attitude object connects to the other button with another assessing attribute. Compatibility means that the categories of Me and Nature are placed against Built Environment and Not me.
- fourth block: 10 tasks to match terms relating to the evaluative attributes of Nature or Built environment, like in the first block but in a reverse keyboard use.
- fifth block: 10task, it is the second pairing test, with opposite matching. To sort out words connected to all 4 categories, one attitude object connects to one button with one assessing attribute, the other attitude object connects to the other button with another assessing attribute. Incompatible matching means that the keyboard is according to the fourth matching and the categories of Me and Built environment were placed against the categories of Nature and Not me.

Figure 12 IAT-Nature test example: compatible, peer test
Source: FreeIAT programme, own research

The strength of the relationship between the self and nature is shown by the difference of the association difficulty of compatible and incompatible pairing tests. Therefore, if the given person’s cognitive association is stronger with nature, then he or she will more easily, quickly complete the block (3rd block) during the linking of terms in

category Me and Nature than in case of the incompatible matching. The opposite will be true for a person who is more connected to built environment.

9.2 DESCRIPTION OF SAMPLE

Only those respondents participated in this analysis who followed the whole research process and participated in the explicit and implicit tests. Before starting to analyse IAT-Nature test, the database had to be cleaned in order to calculate the revised D-value recommended and further developed by Greenwald et al. (2003). Tests of longer response times than 10000 ms were excluded from the analysis. I also excluded those participants whose response latency were less than 300 ms in more than 10% of all tests. Final size of sample is 196 persons.

The proportion of women in the sample is higher (58.7%), place of residence is usually Budapest, 66.8% of the respondents live in Budapest. As a result of the sample of students, respondent usually have their completed secondary education (86.7%), according to their self-declaration their income is higher than the average (55.6%). Table 11 contains the description of the sample.

		Sample size	%
Gender	Female	115	58.7
	Male	81	41.3
	Total	*196*	*100*
Place of residence	Budapest	131	66.8
	County seat	23	11.7
	Other city	34	17.3
	Village	8	4.1
	Total	*196*	*100*
Educational attainment	Secondary, baccalaureate	170	86.7
	Bachelor degree	19	9.7
	Master degree	7	3.6
	Total	*196*	*100*
Living standard	Much worse than average	7	3.6
	Average	49	25.0
	Slightly better than average	109	55.6
	Much better than average	31	15.8
	Total	*196*	*100*
Age	Average	21.55	

Table 11 Demographical attributes of the sample
Source: own research

9.3 RESULTS OF IMPLICIT MEASUREMENT

I used the recommendation of Greenwald et al. to evaluate the results of IAT (see details: Greenwald et al., 2003 and Chapter 5.3.2.1).
The IAT-effect of 0.09 on average explains that respondents prefer natural and built environment almost to the same extent based on the response latency (M =0.09; SD=0.5578), which means that the power of implicit connectedness is almost the same as for nature and built environment. The maximum of D-values were 2.0, their minimum: -1.33.

Individuals connecting to nature more strongly compared to the built environment have a positive D-value, while the ones preferring built environment have a negative D-value. 36% of the respondents associate themselves with built environment (D-value < -0.1), 16% of the respondents' preference can be considered neutral (-0.1 < D-value < 0.1). 48% of the respondents feel closer to natural environment but with different strength (D-value> 0.1).

The comparison of the results with the international ones show that the preference of natural environment is lower than in similar researches where D-value was between 0.3-0.4 in student samples similar to the one we used. Direct comparison of the results is not obvious due to the different samples and different IAT-effect methods (IAT-Nature researches see: Bruni et al., 2012; Bruni and Schultz, 2010; Schultz et al., 2004; Schultz and Tabanico, 2007).

Regarding the reliability of the test, I have calculated the D-value for the first 5 stimuli of the blocks, and then for the second 5 stimuli separately, then I checked the relationship with correlation. The result is significant although having only weak positive relations ($r(194) = 0.201$, $p=0.005$), which raises the attention to carefully summarize the results.

Considering the sample and taking the demographical attributes into account, we can see a significant difference between the answers of men and women ($F(1.194)=4.666$, $p=0.032$). Results show that women have stronger relationship with nature than men in the sample ($M_{fem}=0.16$, $SD_{fem}=0.54$; $M_{male}=-0.01$, $SD_{male}=0.57$). Results are in

accordance with the earlier IAT-Nature studies of Schultz et al. (2007). Due to the homogeneous sample, we cannot see significant relation with demographical variable.

9.4 RESULTS OF THE EXPLICIT MEASUREMENTS

The objective of the New Environment Paradigm, NEP scale is the study of ecological worldview. NEP scale measures a person's beliefs on the reality of limits to growth, on the possibility of an ecocrisis and on the fragility of nature's balance. The individual's mindset on human and nature is part of the worldview: how much does the respondent feel superior to plants, animals and how much does the respondent emphasize human privilege. NEP scale is suitable to study environmental attitude and other socio-economic variables, to connect it with environmental values, to draw conclusions and to examine its relationship with environmentally-friendly behaviour (Milfont and Duckitt, 2004; Sudbury-Riley et al., 2014).

The score of the NEP scale is the sum of values resulted by the transformation of negative questions: the minimum is 15, maximum is 75. The average of the sample was 54.84 points (SD=7.33), which is similar to the values of domestic NEP researches (Hofmeister-Tóth et al., 2013) (in 2010: M=54.53; in 2012: M=58.51). For testing scale reliability, I used the Cronbach Alpha index whose value was 0.745 (N=190) based on which the scale shows strong internal consistency (Nunnally, 1967). Taking the demographical attributes into account with NEP, we can see a significant difference between the answers of men and women ($F(1.188)=14.469$, $p=0.000$). The environmental attitude of men is less stronger than that of women ($M_{fem}=56.47$, $SD_{fem}=5.89$; $M_{male}=52.50$, $SD_{male}=8.52$).

I used the shortened version of Clayton's Environmental Identity scale during the research (Clayton et al., 2011). The scale contains 11 items that I measured on a 7-point Likert scale. Descriptive statistics of the scale is summarized in Table 12.

The value of the scale shows the strength of environmental identity of the respondents. The average EID score is 51.96 (SD=11.86), which reflects a stronger connection with nature than the midrange. The value of Cronbach-alpha (testing internal consistency) is 0.863. In comparison with demographical variables, gender difference of indirect measurement was not observable for environmental identity.

EID scale (N=196)	M	SD
I spend a lot of time in natural settings (woods, mountains, desert, lakes, ocean).	3.72	1.487
I think of myself as a part of nature, not separate from it.	4.47	1.570
If I had enough time or money, I would certainly devote some of it to working for environmental causes.	4.25	1.752
If I am upset or stressed I can feel better by spending some time outdoors "communing with nature."	5.13	1.765
I feel that I have a lot in common with other species.	3.65	1.725
Behaving responsibly toward the Earth—living a sustainable lifestyle—is part of my moral code.	4.84	1.509
Learning about the natural world should be an important part of every child's upbringing.	6.01	1.152
I'd rather live in a small room or house with a nice view than in a bigger room or house facing other buildings.	5.32	1.677
I would feel that an important part of my life was missing if I was not able to get out and enjoy nature from time to time.	5.41	1.501
I have never seen a work of art that is as beautiful as a work of nature, like a sunset or a mountain range.	4.65	1.985
I feel that I receive spiritual sustenance from experiences with nature.	4.51	1.782

Table 12 Presentation of environmental identity
Source: own research

The evaluation of environmental problems may be reflected in consumer behaviour. In my study, I relied on Roberts' Ecologically Conscious Consumer Behaviour scale (ECCB, 1997), based on which respondents had to evaluate 16 items on a 5-point Likert scale. The score of the scale is between 16 and 80, in this sample, the average score is 45.43 (SD=10.43). The Cronbach α value of the scale is 0.854 which can be considered reliable, too.

In this sample, men perform significantly ($F(1.194)=9.335$, $p=0.003$) less environmentally-friendly activities than women ($M_{fem}=47.30$, $SD_{fem}=9.48$; $M_{male}=42.78$, $SD_{male}=11.18$).

9.5 LINK BETWEEN IMPLICIT AND EXPLICIT MEASUREMENTS

The second step of the analysis is the study of the relationship between explicit and implicit measurements. The indirect connection between human and nature (D-value from the IAT result) in previous studies showed weak positive relationship with explicit measurements (Schultz et al., 2004, Schultz and Tabanico, 2007). In this research I did not find significant relationship between implicit and explicit measurements (the results of correlation were as follows: relationship with environmental attitude: $r(194)=0.071$, $p=0.329$; relationship with environmental

identity: r(194)=0.044, p=0.542; relationship with environmentally-friendly consumer behaviour: r(194)=0.038, p=0.599)).

The explicit measurement of environmental identity has significant relationship both with environmental attitude and with environmentally conscious consumer behaviour. In case of direct measurements I found equally medium strong positive correlations between environmental attitude and environmental identity (r(188)=0.466, p=0.000). There is a similarly strong relationship between environmentally conscious consumer behaviour and environmental identity (r(194)=0.509, p=0.000).

A positive relationship can be observed between environmental attitude and environmentally conscious consumer behaviour but this relationship is weaker than between identity and behaviour (r(190)=0.377, p=0.000).

9.6 CONCLUSIONS

In the process of the indirect examination of the connection between nature and the individual I experienced similar preferences from the respondents between the built environment and the natural environment. In case of direct measurements I found equally medium strong positive correlations between environmental attitudes and environmentally-friendly behaviour as well as between environmental identity and environmentally-friendly behaviour.

This research aimed to answer the question of which method is to be used for environmental identity. The relevance of the research is that identity is not a conscious concept, it exists unconsciously in the individual and this can decrease the reliability of studies with explicit measurements. My research hypothesis was that the effect of implicit environmental identity on environmentally conscious consumer behaviour is stronger than that of the explicitly measured identity.
In our research, implicit measuring results of environmental identity do not show significant correlation with explicit measurements and with the appearance of additional environmental attitude and environmentally conscious actions.
Based on the results I discard my initial assumption.

Environmental identity scale as an explicit measurement shows positive correlation with the elements of environmentally consciousness. One explanation for this result is

that when we unconsciously answer environmental questions, we cease to have the compliance with social expectations and this may result in a weaker correlation with the environment. Environmental topics are present in our daily life, media, politics and this may result in their acceptance as norms, so in case of careful, explicit answers the opinions may be overwritten by positive answers.

It should be highlighted that IAT research method does not allow us to independently study the relationship with nature, results only show the preference between natural and built environment. The starting assumption of IAT is that if self-related words are associated with built environment more quickly, then we feel less connected with nature. From this, the next questions arises, if we feel nature as part of our self, does this entail our less respect toward built environment. Studies examining the development of environmental identity emphasize the importance of time spent in nature and the experiences (Chawla, 1999; Hofmeister-Tóth et al., 2012b), still built environment has an important role in our modern, urban life. My opinion is that it is not obvious that the love of natural environment would exclude the love of built environment. The extent of the lower implicit connectedness may originate from the distortion of this comparison. I believe that by evaluating the results of IAT-Nature, those individuals can be considered as connected to nature who have similar and low preference. I find it important to carry out further studies to interpret the difference in which I also use explicit measurement to examine the difference of the preference between natural and built environment.

The limitations of the research should also be considered when evaluation the results. Based on the split-file reliability, the internal reliability of IAT results are quite low. This may be caused by arbitrary sampling when sample is not filtered for the respondents' familiarity with IAT method, or the structure of the implicit association test can be different regarding the software applied. For IAT studies it is recommended to double the pairing tests and randomly present blocks; in this study the software did not allow us to do so.

The lack of relationship between environmental identity and environmentally-friendly behaviours measured by IAT-Nature calls the attention to the fact that the output, behavioural variable was explicitly measured with a scale of 16 items. A future study may bring interesting results for the implicit measurement of output variable.

10 RELATIONSHIP BETWEEN ENVIRONMENTAL IDENTITY AND ENVIRONMENTALLY CONSCIOUS BEHAVIOUR

10.1 OBJECTIVE AND CONDITIONS OF THE RESEARCH

The research was made in frame of the project TÁMOP-4.2.1/B-09/1/KMR-2010-0005: Sustainable development, liveable region. The aim of the project was to study sustainable consumption in Hungary. The research focused on the Hungarian environmentally conscious consumer behaviour. When studying environmentally-friendly behaviour we concentrated on knowledge, main psycho-graphic factors as well as the effect of factors on actual behaviour.

The survey was made in April 2012. The questionnaire was made with on-line (CAWI) survey. The sample covers 954 persons, the sample is representative of Hungarian regular internet users[20], between the ages of 18-69, according to gender, age, education, size of city and region. The data received were analysed with IBM SPSS Statistics 21 and IBM SPSS Amos.

The questionnaire consisted of 29 questions, 11 of which referred to demographical figures. Survey required approximately 25 minutes. Questions primarily referred to social values and norms, environmental concern, knowledge, environmentally conscious behaviours and environmental attitude. The structure of the questionnaire was as follows:

1. Values, norms

The objective of this block is to learn about respondents' values, personal norms and their priorities.

2. Knowledge and real behaviour

Questions focus on the interest in environment, sources of information, trust in the sources, as well as on the extent of environmentalist behaviour.

[20]In December 2012 internet penetration was 63% between the ages of 15-69. (Kurucz, 2012)

3. Examination of Environmental attitude

Beside environmental attitude we discuss environmental concern, the motives of environmental behaviour and the willingness to sacrifice. Our objective was to create links between the variables.

4. Volunteering

This block examined the frequency and the areas of volunteering.

5. Demography

Beyond general demographical issues (gender, age, place of residence, education, income), there is a particular emphasis on the components of the household including children, to understand possible effects of living together with children.

10.2 DESCRIPTION OF SAMPLE

The sample is representative of Hungarian regular internet users according to gender, age, education, size of city and region. Survey was made by NRC market research company on its online panel. No screening criteria was applied in selecting the sample. The initial database of 1000 persons was cleaned based on the validity of the responses, which resulted in a sample of 954 persons. The sample with the demographical attributes is shown in Table 13.

		Size of sample	**Percentage distribution**
Gender	Male	477	50.0%
	Female	477	50.0%
	Total	954	100.0%
Age	age 15-29	362	38.0%
	age 30-39	256	26.8%
	age 40-49	160	16.8%
	age 50-69	176	18.4%
	Total	954	100.0%
Educational attainment	Basic	381	39.0%
	Secondary, baccalaureate	373	39.1%
	University	200	21.0%
	Total	954	100.0%
Size of city	Budapest	203	21.3%
	City	525	55.0%
	Village	226	23.7%
	Total	954	100.0%

		Size of sample	Percentage distribution
Region of residence	Middle	243	25.5%
	North	197	20.6%
	North -Alföld	106	11.1%
	South-Alföld	135	14.1%
	South-Dunántúl	80	8.4%
	Middle-Dunántúl	91	9.5%
	West-Dunántúl	103	10.8%
	Total	954	100.0%
Family status	Single	224	23.5%
	In relationship but living separately	121	12.7%
	Married or in a partnership	516	54.1%
	Divorced	75	7.9%
	Widow	18	1.9%
	Total	954	100.0%
Income	under 80,000 HUF	113	11.8%
	80,000 HUF - 100,000 HUF	107	11.2%
	100,001 HUF - 150,000 HUF	170	17.8%
	150,001 HUF - 200,000 HUF	156	16.3%
	200,001 HUF - 250,000 HUF	88	9.2%
	250,001 HUF - 300,000 HUF	52	5.4%
	300,001 HUF - 350,000 HUF	19	2.0%
	350,001 HUF - 400,000 HUF	22	2.3%
	400,001 HUF - 450,000 HUF	6	0.6%
	450,001 HUF - 500,000 HUF	2	0.2%
	above 500,000 HUF	6	0.7%
	I do not know/respond	213	22.3%
	Total	954	100.0%

Table 13 Demographical description of the sample
Source: own editing

10.3 RELIABILITY OF ENVIRONMENTAL IDENTITY SCALE

As a first step of the analysis, I performed Clayton's environmental identity descriptive analyses and the reliability and validity test.

Respondents reached the biggest consensus regarding the role of nature in child's upbringing (M=6.34). The least agreeable factors were the time spent in nature (M=4.65) and the common feature with other living creatures (M=4.64). Table 14 contains the average values of scale items. In terms of scale reliability, it is important for the scale to provide similar result on a different sample (Ketskeméty et al., 2011). The results of this research are in accordance with the results of the student survey presented in the preliminary studies.

EID scale	**N**	**M**	**SD**
Learning about the natural world should be an important part of every child's upbringing.	951	6.34	1.175
I'd rather live in a small room or house with a nice view than in a bigger room or house facing other buildings.	952	5.98	1.522
I would feel that an important part of my life was missing if I was not able to get out and enjoy nature from time to time.	951	5.93	1.450
I have never seen a work of art that is as beautiful as a work of nature, like a sunset or a mountain range.	952	5.78	1.538
If I am upset or stressed I can feel better by spending some time outdoors "communing with nature."	953	5.70	1.533
I think of myself as a part of nature, not separate from it.	950	5.46	1.570
Behaving responsibly toward the Earth—living a sustainable lifestyle—is part of my moral code.	951	5.21	1.542
If I had enough time or money, I would certainly devote some of it to working for environmental causes.	953	5.19	1.725
I feel that I receive spiritual sustenance from experiences with nature.	949	5.04	1.842
I spend a lot of time in natural settings (woods, mountains, desert, lakes, ocean).	951	4.65	1.774
I feel that I have a lot in common with other species.	951	4.64	1.815

Table 14 Descriptive statistics of the EID scale
Source: own editing

The average score is 59.91 (SD=12.604) which is higher than the medium strong average 51.76 of the student sample. The minimum value of the score is 11, the maximum is 77 in the database. After checking the content of the survey responses submitted by the respondents I decided to keep respondents giving extreme values in the analysis.

For testing the reliability of the scale, I applied Cronbach-alpha indicator and item-scale correlations. Cronbach-alpha is a commonly used indicator for internal consistency (Cronbach, 1951; Cronbach and Meehl, 1968).

Reliability data are evaluated by these values:

- Item-scale correlation should be above 0.30 (Norusis, 1993).
- Cronbach α value should be above 0.7 (Nunnally, 1967).

	Items of EID scale	**Scale mean if item deleted**	**Corrected item - total correlation**	**α if item deleted**
EID1	I spend a lot of time in natural settings (woods, mountains, desert, lakes, ocean).	55.29	.560	.901
EID2	I think of myself as a part of nature, not separate from it.	54.45	.717	.892
EID3	If I had enough time or money, I would certainly devote some of it to working for environmental causes.	54.72	.651	.896
EID4	If I am upset or stressed I can feel better by spending some time outdoors "communing with nature."	54.22	.718	.892
EID5	I feel that I have a lot in common with other species.	55.27	.673	.895
EID6	Behaving responsibly toward the Earth—living a sustainable lifestyle—is part of my moral code.	54.71	.734	.891
EID7	Learning about the natural world should be an important part of every child's upbringing.	53.56	.628	.898
EID8	I'd rather live in a small room or house with a nice view than in a bigger room or house facing other buildings.	53.93	.544	.901
EID9	I would feel that an important part of my life was missing if I was not able to get out and enjoy nature from time to time.	53.98	.697	.894
EID10	I have never seen a work of art that is as beautiful as a work of nature, like a sunset or a mountain range.	54.14	.591	.899
EID11	I feel that I receive spiritual sustenance from experiences with nature.	54.86	.643	.897

Table 15 Internal consistency of the EID scale
Source: own editing

Cronbach-alpha value α=0.905, which shows appropriate reliability. There is no scale items whose exclusion could increase the Alpha value. Corrected item-total correlation includes the correlation coefficients between the item score and the corrected total

scale score calculated as a sum of scores given to all other items (Ketskeméty et al., 2011). Any item measuring a low value on this indicator seems to measure something else thus it is wise to be excluded. In case of EID-scale these values always exceed the expected 0.5.

The Split-half model is also a suitable methodology to test reliability. I have split the scale into the first 6 items and the last 5 items. Although the values of Cronbach-alpha for the two scales weakened (α_1=0.859 and α_2=0.785) they still remained to be suitable. The correlation coefficient between the items of the two scales is 0.809.

I tested the adequacy of the theoretical concept of the scale during the preliminary studies on two student sample and the exploratory factor analyses reflected the expected one-dimensional theoretical construction. Next phase of the scale development and testing is the confirmatory factor analysis (CFA) of the scale concept (Brown, 2006), when the theoretical construction is well-founded. Although the exploratory and confirmatory factor analysis is under constant debate by different scholars, there are fundamental questions which achieved a common position (Hurley et al., 1997):

- an a priory theory is necessary to apply CFA. Confirmatory factor analysis should not be wrongly used as an exploratory method.
- if the model is not working as expected, a new sample is needed to confirm the modified, re-specified model.

Based on previous researches we performed the confirmatory factor analysis of EID scale on the current database by IBM AMOS 21 software application[21]. For reliability testing, not only the Cronbach–alpha, due to its criticism (Malhotra and Simon, 2009), but composite reliability (CR) index was also examined, which shows the reliability on indicator level (Raykov, 1998; Raykov and Grayson, 2003). CR index is a calculated value of the standardized factor weights of indicators relating to latent variables and the measurment error. Its value above 0.7 is considered to be acceptable (Hair et al., 2010), but there are more rigorous (above 0.8) and permissive (above 0.6) views (Byrne, 2010).

[21]With the study of normality, I accepted the hypothesis that the given sample of 923 people is big enough to assume normal distribution of data. Respondents who failed to complete the questions were excluded from the analysis.

When testing the reliability of indicators, the correlation between the latent variable and its indicators is expected to be at least 0.7, which means that the factor weight of the variable should reach 0.7 (Henseler et al., 2009). Literature recommends the exclusion of the indicator if the factor weight is below 0.4 and its removal will improve CR index.

For testing the convergent validity of factor analysis, I applied the average variance extracted (AVE) index, whose value can be accepted above 0.5 (Fornell and Larcker, 1981).

Confirmatory factor analysis included 11 scale items of the environmental identity scale, as indicator, for the latent variable of environmental identity (see CFA in Annex). CR index meets the expected values above 0.7, while the AVE index is slightly below the expected 0.5. The reliability and validity results are shown in Table 16. Factor weights and the confirmatory factor analysis show that item 8 has the lowest correlation with the latent variable which is in line with the indications of previous exploratory factor analyses.

Variable	Factor weight	CR	AVE	Cronbach- alpha
Environmental identity		0.91	0.47	0.90
EID_1	0.610			
EID_2	0.767			
EID_3	0.679			
EID_4	0.761			
EID_5	0.698			
EID_6	0.766			
EID_7	0.648			
EID_8	0.539			
EID_9	0.746			
EID_10	0.605			
EID_11	0.693			

Table 16 Results of CFA analysis with reliability and validity indicators
Source: own analysis

Literature recommends several indicators to test the model fitting of CFA model (see details: Brown, 2006; Hair et al., 2010; Henseler et al., 2009). We examined the following indicators to determine the fitting of the big sample size. CMIN: 336.33 (df=44; p< 0.000); CMIN/df= 7.644; GFI= 0.930; TLI= 0.922; CFI = 0.937; RMSEA= 0.085. In case of GFI (which is an absolute fit index), TLI and CFI index (which are goodness of fit indexes), values above 0.9 represent acceptable fitting (Brown, 2006).

While RMSEA as a badness of fit index, recommendations accept values of best fitting below 0.05. Based on the recommendation of Homburg and Klarman, the RMSEA index is too rigorous so the value below 0.1 can be considered as an acceptable fitting (Homburg and Klarmann, 2006).

Based on the reliability and validity tests, the correlation among the scale items is proper, and it can be considered as one-dimensional based on the results of confirmatory factor analysis. This is in accordance with the scale structure referred to in the literature (Clayton, 2003). Based on the studies, the whole scale is used for further analyses, which is a scale value made from linear combination of indicators of all scale items.

It is worth mentioning that similarly to the preliminary studies, items 1, 8 and 10 of the scale, referring to the behaviour in nature and the aesthetic value of nature, slightly fall out from the other items, I will make recommendation in the conclusion part on how to further use these results.

10.4 DEMOGRAPHICAL DETERMINANTS OF ENVIRONMENTAL IDENTITY

The effects of the demographical variables on environmental identity are covered in hypothesis group 2. I applied analysis of variance to examine the relations, due to the measuring levels of the scales. I incorporated the following variables into the study: gender, age, family status, number of children in the household, education, income, place of residence and place of childhood. Among demographical variables, gender, age and family status proved to be significant, as opposed to my expectation.

Women have significantly stronger environmental identity then men [$F(1.920)=32.888$, $p=0.000$], which allows me to **accept hypothesis H2b**. The result is in line with the general view appearing during the study of environmentally-friendly consumer, that is, women perform environmentally-friendly activities more frequently (Straughan and Roberts, 1999), they have a more positive attitude and they have more concern about environment than men (Diamantopoulos et al., 2003). The stronger commitment of women toward nature is usually explained by gender roles and socialization (Zelezny et al., 2000). Socialization theory assumes that the individual behaviour is formed according to the expectations relating to the gender in that given

cultural environment. Women in most cultures are caring, sympathetic, cooperative, helpful and they are socialized to depend on someone, while men should be independent and competing (Eagly, 1987, quoted by Zelezny et al., 2000). These differences can influence different environmental attitude and, I believe, stronger environmental identity.

Concerning the age, international results relating to environmental consciousness do not show relationship or show only negative relationship (Diamantopoulos et al., 2003; Roberts, 1996), which means that the younger generation has a more positive environmental attitude and higher intention to act, although the older generation seems to be more active in real behaviour. According to Dunlap and Van Liere (1980), the negative relationship between age and environmental attitude can be justified with the fact that environmentally conscious behaviour requires the change of the prevailing social values, habits and the necessary reforms are mainly supported by the young.
In this research, we found positive correlation between environmental identity and age. This result, however, in is line with previous domestic studies in which younger population was found to be less environmentally conscious (Hofmeister-Tóth et al., 2012b). The one-way analysis of variance showed significant difference between age groups ($F(3.918)=5.551$, $p=0.001$). The Tukey HSD post-hoc test showed significant difference between older respondents (aged 50-69) and the ones between the ages of 15-29 and 30-39 (averages and standard deviations are summarized in detail in Table 17) There is no significant difference between respondents aged 40-49. Based on the results, I **reject H2d hypothesis** as I found positive correlation between environmental identity and age.

The two-way hierarchical ANOVA was used to study the interactions between demographical variables. The joint study of gender and age resulted in significant main effects (gender: $F(1.915)=33.671$; $p=0.000$; age: $F(3.915)=7.518$; $p=0.000$), although the interaction between them is not significant, both variables have independent effect. It is worth mentioning that in case of partial effects the effect of gender ($Beta^2=4\%$) and age ($Beta^2=2.3\%$) is strengthening. Provided that we keep the age effect under control, the difference between genders may become stronger and vice versa (the tables of the two-way ANOVA can be found in the Annex). The model accounts for 5.8% of the development of environmental identity ($R^2=0.0576$).

In case of age and family status, a reverse interference can be observed. If the hierarchical ANOVA contains age as the first variable, a significant main effect can be observed (F(3.905)=5.642, p=0.001). The main effect of the family status is significant (F(4.905)=5.058, p=0.000) without interaction in this model. Partial effect decrease by keeping the other independent variable under control. The explained variance of the model is 3.9% (R^2=0.039).

Variable	N	Mean	Standard deviation
GENDER			
Female	453	**62.30**	11.768
Male	469	57.61	12.965
Total	923	59.91	12.604
AGE			
15-29	350	58.46	13.690
30-39	249	59.31	12.321
40-49	156	60.77	10.820
50-69	167	**63.07**	11.643
Total	923	59.91	12.604
FAMILY STATUS			
Single	219	**55.92**	14.069
In relationship but living separately	118	60.23	13.851
Married or in a partnership	498	61.17	11.126
Divorced	72	62.12	13.286
Widow	16	63.18	11.649
Total	923	59.91	12.604
SIZE OF HOUSEHOLD			
1 person	98	57.41	14.814
2 persons	259	**62.48**	11.331
3 persons	231	59.25	13.561
4 persons	214	59.33	12.028
5 persons or more	121	58.77	11.660
Total	923	59.91	12.604

Table 17 Demographical differences in the values of environmental identity
Source: own analysis

Among the demographical factors family status has a significant effect on environmental identity. Concerning the study of family status, references aimed to explore the importance of marriage. When significant results were found, married people reported higher environmental concern and more environmentally-friendly activities (Diamantopoulos et al., 2003). The positive effect of marriage is justified with individuals' activity in communities, their life is determined by their social network (Dupont, 2004; Torgler and García-Valiñas, 2007). In addition, the problems of the local environment can be of their concern as they have their own house. "Parental effect" as worrying about the child's future can also appear.

The one-way ANOVA showed significant difference between family statuses (F(4.917)=7.782, p=0.000). The Tukey HSD post-hoc test showed significant difference between the group of singles and other family statuses. The average environmental identity of the singles of 55.92 is far less than that of the other groups (the means and standard deviations are shown in Table 17[22]).
The results of this research calls the attention to the importance of a relationship. This, however, does not entail the number of children, so the explanation should not focus on the responsibility toward children but the responsibility for others in general, which can lead to the responsibility about the wider environment, and commitment to natural environment.

This conclusion is supported by the significant effect of the size of the household on the strength of environmental identity (F(4.917)=4.226, p=0.002). According to the result of the Tukey HSD post-hoc test, the significant difference is justified with the strong (above average) environmental identity of the 2-person households (M=62.48; SD=11.331). This high value does not remain for bigger families which implies that relationship and marriage can be a milestone in one's life for change.

I found significant main and interaction effects during the two-way ANOVA analysis of gender and family status. The main effect of gender is: F(1.913)=34.083, p=0.000, the main effect of family status is: F(4.913)=6.081, p=0.000. Interaction between the gender and family status is: F(4.913)=4.087, p=0.003. As we can see from Figure 13, this is a disordinal interaction in which people living in marriage or partnership cease to have significant difference between genders. There is a different tendency in case of divorced and widow respondents by gender, women's environmental identity is the strongest, and men have weaker environmental identity compared to people living in marriage.

[22]In case of the widow group, the small sample size could not detect significant difference.

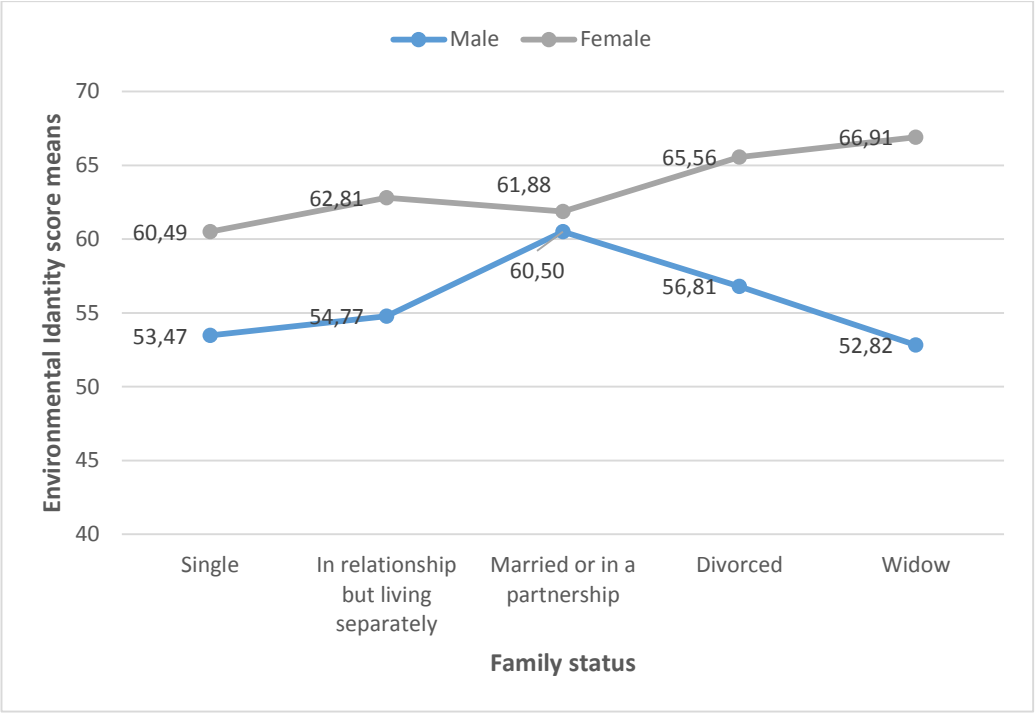

Figure 13 Interaction effect between the variables of Gender and Family Status
Source: own analysis

The parallel study of age and family status did not result in significant interaction effect ($F(10.905)=0.804$, $p=0.625$). Beta indicators (see Annex) demonstrate interference between the two factors. If we keep one of them under control, the explanatory power of the other will decrease. This is quite obvious as the number of singles decreases by age, thus family status also appears in the positive effect of age on environmental identity, and the reverse is true.

The number of children is often considered as a positive factor from the aspect of environmental attitude and environmental concern. In spite of this, not every research study finds significant difference between the variables (Diamantopoulos et al., 2003). In this research I did not find difference in terms of environmental identity in households having or not having children. Further studies on the family status, however, explored that we can find significant interaction ($F(4.913)=2.581$, $p=0.036$) if family status and the existence of children are analysed with two-way ANOVA. In case of the family status, there is a significant main effect ($F(4.913)=8.113$, $p=0.000$), in case of children, there is no main effect ($F(1.913)=1.136$, $p=0.287$). There is a disordinal, crossover interaction between the two variables (Figure 14). In case of singles and people living in partnership or marriage, there is not much difference based on having a child or not in the household, while the responses of divorced and widow

respondents show that people living with children have stronger environmental identity.

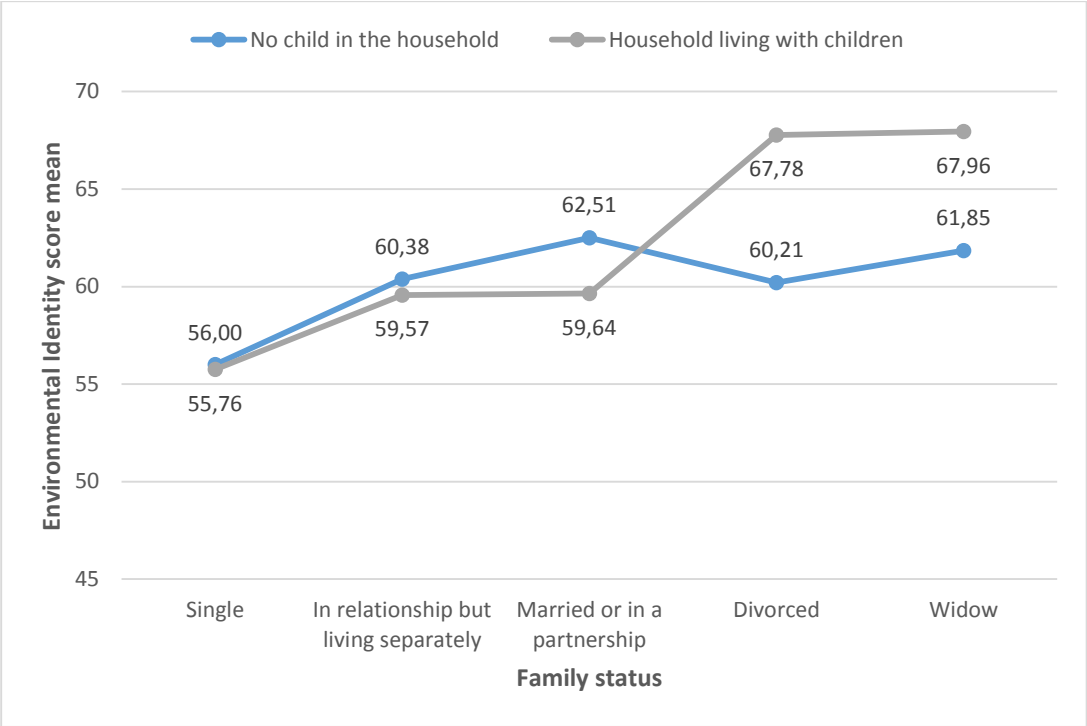

Figure 14 Interaction effect between the variables of Family Status and Child in the household
Source: own analysis

In summary, among the demographical factors, gender, age, size of household and family status have significant effects on the strength of environmental identity. The study of the four variables with hierarchical analysis of variance shows that they account for 7.8% of the strength of environmental identity (R^2=0.078). If we examine partial effects, gender has the biggest effect, this is followed by age, family status and the size of the household (Table 18)

	ETA	BETA	$BETA^2$
Gender	0.135	0.099	0.010
Age	0.133	0.104	0.011
Family status	0.181	0.103	0.011
Size of household	0.186	0.178	0.032

Table 18 Effect of demographical variables on environmental identity
Source: own analysis

Due to the lack of relationship, I rejected H2a and H2c hypotheses.

10.5 EFFECT OF VALUES ON ENVIRONMENTAL IDENTITY

In the research, we applied Kahle's LOV value scale (see details in Chapter 3.4.2). External values are the Sense of belonging, Security and Being well-respected. Security was the most important value for the population in 2012. Domestic research studies usually explore similar sequence (Nagy et al., 2012), Security is the most important, while the values of Being well-respected and Fun and enjoyment of life are at the last places.

N=799[23]	**Average**	**Standard deviation**
Security	8.31	1.215
Self-respect	7.97	1.432
Warm relationships with others	7.80	1.454
Sense of belonging	7.56	1.709
Self-fulfilment	7.41	1.586
Being well-respected	6.82	1.887
Sense of accomplishment	6.83	1.958
Fun and enjoyment of life	6.69	1.903

Table 19 Average LOV values for the whole sample
Source: own analysis

The H3 hypothesis refer to the effect of values. I performed linear regression to study the relationship between the values and environmental identity.

In order to perform regression analysis, data should meet the preconditions of homoscedasticity and normality, and a mild extent of multicollinearity and autocorrelation should be ensured. The correlation table (see Annex) demonstrates that there is no strong correlation between the independent variable, only the following factors show values above 0.5: sense of belonging, warm relationships with others, self-respect and self-fulfilment. Indicators of multicollinearity (Tolerance>0.1; VIF<10) meet the criteria (Hair et al., 2010), therefore the multicollinearity between the variables can be ignored. The Durbin-Watson indicator is suitable to test residual independence which, in our case, shows marginally low autocorrelation (Durbin-Watson=1.938)[24]. The scatterplot figure for testing homoscedasticity shows

[23]Missing and extreme values were removed from the regression analysis.
[24]In case of a sample size of more than 500 respondents, the value of Durbin-Watson should fall between 1.8 and 2.2. (Székelyi and Barna, 2008)

appropriate formation, and the histogram and chart, suitable to monitor the condition of normality, also show an acceptable fit and proper form (see Annex).

In case of the applied hierarchical, multiple linear regression[25], environmental identity was the dependent variable. As a first step, I included demographical variables (when necessary I used dummy variables), as gender and age. The 8 LOV values entered to the model in the second step. The sequence of incorporating the variables into the model aimed to filter the effect of demographical variables examined.

		First phase			Second phase		
		B	β^1	t	B	β^1	t
Demographical variables	Gender	4.912	.216	6.300**	3.590	.158	4.728**
	Age	.153	.175	5.099**	.098	.112	3.462**
LOV values	Sense of accomplishment				1.554	.269	7.621**
	Self-respect				1.063	.134	3.567*
	Security				.741	.079	2.222*
	R^2	0.070			0.209		
	Adjusted R^2	0.068			0.204		
	F	30.009**			41.846**		

*p<0.05. **p<0.001

Table 20 Results of the multiple linear regression on the influence of values on EI
Source: own analysis

In the first phase, the variables of Gender and Age were included thus I received a significant model (F(1.796)=26.004, p=0.000) by involving demographical variables, which explains 6.8 % of the variance of environmental identity. In the second phase when values were included, the percentage of explanation of the model on variance grew to 13.6%. The sense of accomplishment increased R^2 with 11.3%, by including Self-respect it was increased by 1.9%, and by including Security into the model, R^2 was increased with another 0.4%. In case of all three models the change was significant (F(1.795)=110.598 p=0.000; F(1.794)=20.104 p=0.000; F(1.793)=4.938 p=0.027).

After including all independent variables, beside demographical variables, Security, Self-respect and Sense of accomplishment proved to be significant predictor variable

[25] I applied stepwise method

for environmental identity. The most important variable based on the beta coefficient is the Sense of accomplishment followed by Self-respect. In total, the model accounts for 20.4% of the variance. Security has the least effect which is justifiable by the fact that this is in strong relationship with age. Security is getting more important with the growth of the age, but for the young, fun and enjoyment of life is most important[26].

Domestic researches studied the effect of values on environmental attitude (Sudbury-Riley et al., 2014) and on environmentally conscious behaviour (Nagy et al., 2012) with linear regression. Warm relationships with others and the Sense of accomplishment had positive effect on behaviour, but a negative effect was detected between the Being well-respected and environmentally-friendly behaviour. This research shows Security as the most important value for the Hungarian population compared to the other values, but it also has a significant effect on Environmental identity. The results made on a domestic senior sample showed (Sudbury-Riley et al., 2014) that only Security has an influence on environmental attitude. This result further confirms the link between the age and values explored in my study. The difference may evidence the distinction between environmental identity and attitude: we can see from the stronger effect of Security on attitude that concern (measured by NEP scale) plays a stronger role in attitude which justifies the salient emphasis of Security.

Sense of accomplishment and Self-respect are internal values which show, similarly to environmentally conscious behaviour, that environmental identity is stronger if driven by high motivation and internal(ized) values.
Security is an external value, its appearance in the model can be justified with the fact that it is the strongest value in Hungary.
H3 hypothesis was partially confirmed based on the results, as among the three significant values the two strongest values were internal.

[26]In this research, Fun and enjoyment of life had no significant relation to Environmental identity, but showed negative relationship with the value of being well-respected in several models.

10.6 PATH ANALYSIS: THE EFFECT OF ENVIRONMENTAL IDENTITY ON ENVIRONMENTALLY-FRIENDLY BEHAVIOUR

The main question of my dissertation is to confirm the practical usefulness of environmental identity by examining and evidencing its effect on environmentally-friendly behaviour. Supposing that the effect of environmental identity on environmentally-friendly behaviour is measurable, it means that future social marketing campaigns should not only focus on environmental attitude or environmental concern. They should aim at developing a stronger relationship with nature in the interest of educating environmentally-friendly consumers.

I applied regression path analysis to study the relationship between environmental identity and environmentally conscious behaviour. Path analysis is a sequence of regression models (Székelyi and Barna, 2008). We can predict links between the variables based on these regression equations. The concept of path analysis is that the values of a variable are caused by other variables thus it is inevitable to distinguish dependent variables from independent ones (Babbie, 2001). Dependent variable is an element of path analysis to which paths lead to from other variables. Dependent variables are called endogenous variables. Independent variables are called exogenous variables to which no path leads from other variables. One path analysis consists of as many regression equations as the number of dependent variables the model has.
In our research we examine the link between the following variables (see Figure 11 theoretical model):

- endogenous variable: environmentally conscious behaviour, environmental attitude, environmental concern and personal norm.
- exogenous variable: environmental identity.

Path analysis does not define causal relationships: the possible relationships between the variables are defined based on the literature review. I presented the justification of links between the variables in my hypotheses. Figure 15 presents the link between the regression model and the hypotheses.

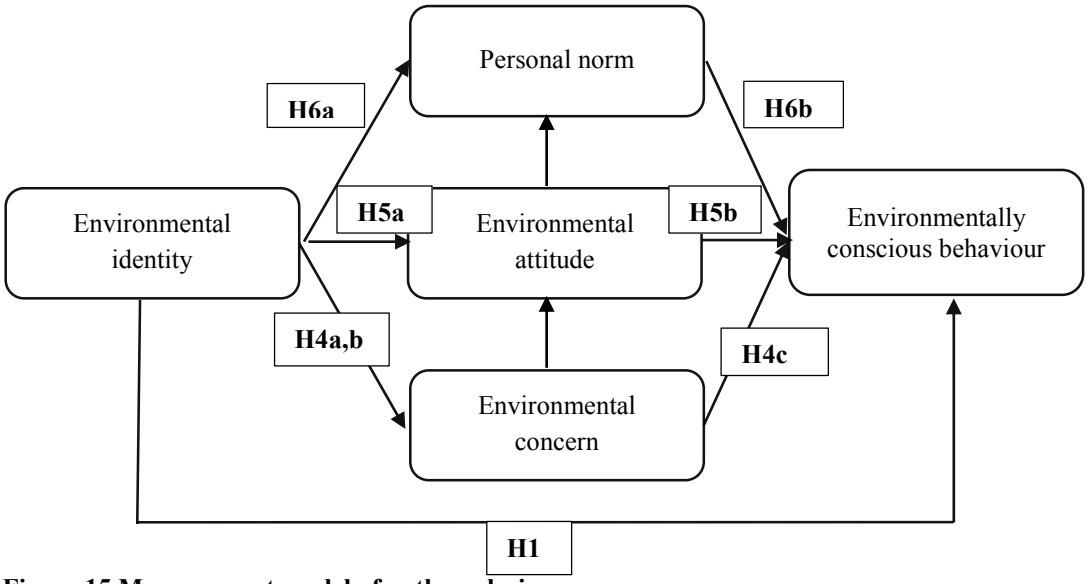

Figure 15 Measurement model of path analysis
Source: own editing

I applied partial F-test for stepwise regression. The method examines partial correlation coefficients when incorporating the variables into the model. It may happen that a variable albeit having a significant effect gets out of the equation after incorporating other variables into the model (Székelyi and Barna, 2008). Stepwise solution is suitable for my research since the sample is bigger than the number of explanatory variables.

A disadvantage of the model is that due to the correlation between the explanatory variables, important variables based on theory may be dropped while less important variables can get into the model (Sajtos and Mitev, 2007). In order to avoid possible negative consequences, I concentrated on following the logical links as suggested in the references and I checked the basic conditions of regression in case of each equation.

In order to examine model linearity, first I analysed the variables incorporated into the model by curve estimation fitting. The level of significance of the F-test (Sig. < 0.01) confirmed linear correlation in each case (see Annex).

10.6.1 PRESENTATION OF MEASURING SCALES

In order to develop the regression model, first I tested the scales for reliability. In the next part I will briefly introduce the scales applied from the aspect of their structure and score calculation. The reliability results are summarized in Table 21 which shows that the scales are suitable to be incorporated into the model.

Scale	Scale average	Standard deviation	Cronbach-alpha
General Environmental Behaviour Scale	21.63	5.928	0.792
New Environmental Paradigm Scale	59.34	7.777	0.757
Stern Personal norm	4.33	0.582	0.872
Norm relating to individual responsibility	3.98	0.846	0.839
Norm relating to governmental responsibility	4.50	0.644	0.809[27]
Norm relating to corporate responsibility	4.51	0.564	0.625[28]
Schultz Environmental Motives Scale	5.76	1.013	0.953
Biospheric concern	5.63	1.186	0.942
Altruistic concern	5.92	1.058	0.911
Egoistic concern	5.72	1.109	0.898

Table 21 Reliability test of scales applied in the model
Source: own analysis

General Ecological Behaviour scale, GEB, for **Environmentally-friendly behaviour** (Kaiser and Wilson, 2004). Kaiser developed a measuring tool, General Ecological Behaviour scale (GEB) in 1998 to measure environmentally-friendly behaviour based on the goal-oriented behaviour. The revised scale consisted of 50 items relating to environmentally-friendly activities, out of which 32 items are measured with the 5-point Likert scale and 18 items as yes or no questions. Respondents had an option of "not relevant to me" which authors suggest to decode as a NO answer.

The scale has 7 sub-scales: environmentally conscious transport (12 items), environmentally-friendly behaviour useful for the society (9 items), environmentally conscious consumer behaviour (9 items), water and energy saving consumption (11 items), waste reduction (5 items), and selective waste collection (4 items).

Authors suggest two ways of analysing the scale:

- transform items into dummy variables, calculate scores of the respondents, higher score will refer to the more environmentally conscious behaviour.
- by using Rasch model the difficulty of the activities can also be taken into consideration.

[27] The Cronbach's alpha indicator could be improved by removing the following item: Government should put pressure the international level in order to stop the decline of biodiversity (extinction of species, degradation of natural habitats and wildlife). I believe that the international concept of responsibility could give an extra background dimension to the item.

[28] The Cronbach's alpha indicator, similarly to the governmental responsibility, could be improved by removing the following item referring to the international level: Companies importing products from distant countries are responsible for preventing the loss of ecosystem in those countries.

In this research, we define the rate of environmental awareness of each respondent based on the GEB scale scores. The score of the GEB scale is the sum of values resulted by the transformation of negative questions. Thus the minimum score of GEB is 0, the maximum is 50.

We analysed **environmental attitude** with the **New Environmental Paradigm Scale** (NEP) (Dunlap et al., 2000) as presented in Chapter 3.4.2. In spite of the fact that the scale examines 5 major areas relating to environmental worldview (respect of the limits of growth, anti-anthropocentrism, belief in the fragility of natural balance, anti-exemptionalism, possibility to introduce ecocrisis), authors treat it as a one-dimensional structure based on the exploratory factor analysis (Dunlap et al., 2000). As a result, we consider the scale in its full unity. For NEP scale analysis, NEP score is calculated by the sum of all items (Hawcroft and Milfont, 2010). This the minimum value of NEP is 15, the maximum is 75.

We measured **norms** by using **Stern's Personal Norm Scale** (Stern et al., 1999). Personal norm is a sense of individual commitment which becomes an individual expectation (Schwartz, 1977). The sense of individual obligation can lead to environmentally-friendly activities (Stern et al., 1999), thus Stern and his colleagues used the Schwartz's norm activation theory and the items relating to personal norm. Normative beliefs are measured with 9 items, 3 items refer to personal obligations, 3 items refer to governmental obligations and 3 refer to corporate obligations. Due to the different effects of the three sub-scales on activity, it is worth studying them separately.

We measured **environmental concern** by using **Schultz's Environmental Motives Scale (2001).** The scale aims to study environmental concern by viewing who and how the damage to environment influences. The author splits the environmental concern into three sub-scales (Schultz, 2001):

- egoistic: if the concern influences ourselves, our future, our lifestyle and environmental pollution effects our health;
- altruistic: if the concern refers to all people, children, our children and people living in our country;
- biospheric concern: if the concern refers to plants, animals, marital living creatures and birds.

The author suggests the calculation based on scale scores (Schultz, 2001), and items are measured on a 7-point Likert scale. For calculating sub-scales, authors recommend the use of the average scores [29].

In summary, the initial reliability test supports the applicability of the scales.

10.6.2 REGRESSION MODELS EXAMINED

Based on the demonstrated model I applied eight regression equations (I examined personal norm and environmental concern by splitting them into sub-scales).
The estimate of the **environmentally-friendly behaviour, a dependent variable** was made by the variable incorporated in the four models and based on the following equation:

$$GEB = \beta_1 * EID + \beta_2 * NEP + \beta_3 * PN_{gov} + \beta_4 * PN_{org} + \beta_5 * PN_{ego} + \beta_6 * EMS_{bio} + \beta_7 * EMS_{altr} + \beta_8 * EMS_{ego} + Resid_1$$

In order to perform regression analysis, we had to ensure the low multicollinearity between the dependent and independent variable. Indicators of multicollinearity (Tolerance>0.1; VIF<10) meet the criteria (Hair et al., 2010), therefore the multicollinearity between the variables can be ignored. The Durbin-Watson indicator is suitable to test residual independence which, in our case, shows marginally low autocorrelation (Durbin-Watson=1.902). The scatterplot figure for testing homoscedasticity shows appropriate formation, and the histogram and chart suitable to monitor the condition of normality also shows a tight fit and proper form (see Annex).
In case of regression with stepwise method, the effect of four variables seemed to be significant: environmental identity, environmental attitude, norm relating to personal responsibility and norm relating to corporate responsibility.

[29] http://www.conpsychmeasures.com/scales/EMS.html

		B	β^1	t	R^2	Adjusted R^2	F
First step	Environmental identity (EID)	.224	.446	13.606**	.199	.198	185.126**
Second step	Environmental identity (EID)	.191	.380	10.980**	.227	.225	109.617**
	Environmental attitude (NEP)	.148	.181	5.247**			
Third step	Environmental identity (EID)	.151	.300	7.237**	.239	.236	77.999**
	Environmental attitude (NEP)	.135	.166	4.793**			
	Personal norm/ personal responsibility (PN_{ego})	.974	.139	3.411**			
Fourth step	Environmental identity (EID)	.157	.312	7.466**	.243	.239	59.747**
	Environmental attitude (NEP)	.147	.181	5.122**			
	Personal norm/ personal responsibility (PN_{ego})	1.216	.174	3.931**			
	Personal norm/ Corporate responsibility (PN_{org})	-.858	-.082	-2.009*			

*p<0.05. **p<0.001

Table 22 The result of the multiple linear regression on environmentally conscious behaviour

Source: own analysis

As a first step if incorporating environmental identity into the model, it accounts for 19.8% of the variance of environmentally-friendly behaviour. With the second step of incorporating environmental attitude, the model further strengthened to the explanatory power of 22.5% and the change of R^2 is significant (F(1.746)=27.532; p=0.000). By entering the norm relating to individual responsibility, the explanatory power of the model further grows with 1.2%. The change between the models is significant (F(1.745)=11.637; p=0.000). The norm relating to corporate responsibility implies an additional 0.4% of variance, the change between the models is still significant (F(1.745)=11.637; p=0.000). In total, the model accounts for 23.9% of the variance.

The regression equation is the following:

$$GEB = 0{,}312 * EID + 0{,}181 * NEP + 0{,}174 * PN_{ego} - 0{,}082 * PN_{org}$$

The most important variable based on the β-indicator is environmental identity, followed by environmental attitude. Results prove that environmental concern has effect only through environmental attitude, it has no direct effect on environmentally-friendly behaviour.

In case of personal norm, personal responsibility has a significant positive effect on environmentally-friendly behaviour, while corporate responsibility has a slight negative effect on environmentally-friendly behaviour. I believe that shifting the responsibility might cause this negative relationship. If the individual emphasizes corporate responsibility, then his or her own situation seems to be more bound to and dependent of corporate activities. The perceived efficiency of the individual may decrease which is harmful to the activity and intention to act in environmentally-friendly actions.

In order to explain **environmental attitude** based on the listed theories, I studied three sub-scales of environmental identity and environmental concern. Structure of the regression model:

$NEP = \gamma_1 * EID + \gamma_2 * EMS_{bio} + \gamma_3 * EMS_{altr} + \gamma_4 * EMS_{ego} + Resid_2$

The conditions of the regression analysis are met through the indicator number, and the equation is suitable for the analysis. There is a low multicollinearity between the dependent and independent variables (Tolerance>0.1; VIF<10). The values of the Durbin-Watson indicator suitable to test residual independence is 2.078, which shows marginally low autocorrelation. The conditions of homoscedasticity and normality are met, the scatterplot shows appropriate formation, and the histogram and chart of normality also show a tight fit and proper form (see Annex).

Two variables have significant effects on environmental attitude: environmental identity and biospheric concern, which is the concern about nature. Environmental concern has stronger effect on environmental attitude than environmental identity. Biospheric concern accounts for 15.3% of the variance of environmental attitude. By incorporating environmental identity, the explanatory power of the model grows to 17.6%. This R^2 gives significant difference between the two equations ($F(1.746)= 22.263$; $p=0.000$).

The regression equation on environmental attitude is the following:

$GEB= 0,198 * EID + 0,271 * NEP + 0,174 * PN_{ego} - 0,082 * PN_{org}$

Only the effect of biospheric concern on environmental attitude measured by NEP could be detected in our research. Neither egoistic, nor altruistic concern had significant effect. This result is explained by the structure of NEP since NEP items

emphasize a possible ecological crisis and the threat to natural environment, thus concern about ourselves and other people appear in a less extent.

		B	β^1	t	R^2	Adjusted R^2	F
First step	Biospheric concern (EMS_{bio})	2.412	.393	11.669**	.154	.153	136.169**
Second step	Biospheric concern (EMS_{bio})	1.665	.271	6.448**	.179	.176	81.154**
	Environmental identity (EID)	.123	.198	4.718**			

*p<0.05. **p<0.001

Table 23 The result of the multiple linear regression on environmental attitude
Source: own analysis

In case of **environmental concern**, based on the theoretical model, I study the effect of environmental identity. In order to confirm the H4b hypothesis, I examined the effect of environmental identity on all three types of concern in spite of the fact that environmental concern has no direct effect on environmentally conscious behaviour.

The regression equations are as follows:

$EMS_{bio} = \delta_1 * EID + Resid_3$

$EMS_{altr} = \delta_2 * EID + Resid_4$

$EMS_{ego} = \delta_3 * EID + Resid_5$

Regression models meet the preconditions (see detailed results in the Annex[30]). Environmental identity has a significant effect on all three types of concern. The explanatory power of the models are different, and varies between 20.7% and 37.6%, which coincides with my expectations.

The results of the regression support my hypothesis whereby environmental identity has the biggest effect on biospheric concern (37.6% explained variance). This is followed by the effect on concern about people and society (R^2= 29.8%), and finally the concern about ourselves (R^2= 20.8%).

[30]Linear regression is a robust to violate the requirement of normality, linearity and the variance of error term's constancy, it is possible to use it in cases where conditions are "not very" violated (Freedman et al., 2007). In case of EMS_{altr}, EMS_{ego}, PN_{org} and PN_{gov} the condition of normality is slightly damaged which should be considered when evaluating the results.

	B	β^1	t	R^2	Adjusted R^2	F	Tol.	Durbin-Watson
Biospheric concern (EMS_{bio})								
Environmental identity (EID)	.062	.614	21.245**	.377	.376	451.336**	1.000	1.947
Altruistic concern (EMS_{altr})								
Environmental identity (EID)	.049	.547	17.861**	.299	.298	318.998**	1.000	2.093
Egoistic concern (EMS_{ego})								
Environmental identity (EID)	.043	.456	14.011**	.208	.207	196.313**	1.000	2.080

*p<0.05. **p<0.001

Table 24 The result of the multiple linear regression on environmental concern
Source: own analysis

The regression equations of the environmental concern applied in path analysis are as follows:

$EMS_{bio} = 0.614 * EID$

$EMS_{altr} = 0.547 * EID$

$EMS_{ego} = 0.456 * EID$

For **personal norm**, I examined the effect of environmental attitude and environmental identity with linear regression. In this analysis, the norm relating to personal and corporate responsibility proved to be significant on environmentally-friendly behaviour, but in order to widely understand the effects of environmental identity, I keep discussing all three norms.

$PN_{ego} = \zeta_1 * EID + \zeta_2 * NEP + \zeta_3 * EMS_{bio} + \zeta_4 * EMS_{altr} + \zeta_5 * EMS_{ego} + Resid_6$

$PN_{gov} = \theta_1 * EID + \theta_2 * NEP + \theta_3 * EMS_{bio} + \theta_4 * EMS_{altr} + \theta_5 * EMS_{ego} + Resid_7$

$PN_{org} = \xi_1 * EID + \xi_2 * NEP + \xi_3 * EMS_{bio} + \xi_4 * EMS_{altr} + \xi_5 * EMS_{ego} + Resid_8$

Regression is suitable for the study, preconditions are met. (Tolerancia>0.1; VIF<10; Durbin-Watson (PN_{ego})=1.980; Durbin-Watson (PN_{gov})=2.073; Durbin-Watson (PN_{org})=2.039). Results are summarized in Table 25.

Regarding personal responsibility, environmental identity has the strongest effect which accounts for 37.3% of the variance of the personal norm. An interesting difference between the personal norms is that environmental attitude does not have a significant influence on personal norm. After the incorporation of biospheric and altruistic concern into the model the significant effect of environmental attitude disappears. The explained variance increased to 42.6 % in the final equation.

		B	β^1	t	R^2	Adjusted R^2	F
Personal norm - Personal responsibility							
First step	Environmental identity (EID)	.044	.612	21.135**	.374	.373	446.700**
Second step	Environmental identity (EID)	.032	.443	12.565**	.421	.420	271.403**
	Biospheric concern (EMS_{bio})	.196	.274	7.779**			
Third step	Environmental identity (EID)	.031	.425	11.933**	.428	.426	185.779**
	Biospheric concern (EMS_{bio})	.137	.193	4.317**			
	Altruistic concern (EMS_{altr})	.100	.125	2.972*			
Personal norm - Government's responsibility							
First step	Biospheric concern (EMS_{bio})	.236	.434	13.169**	.188	.187	173.416**
Second step	Biospheric concern (EMS_{bio})	.149	.274	6.741**	.231	.229	111.876**
	Environmental identity (EID)	.014	.261	6.406**			
Third step	Biospheric concern (EMS_{bio})	.124	.228	5.529**	.255	.252	85.018**
	Environmental identity (EID)	.012	.226	5.571**			
	Environmental attitude (NEP)	.015	.172	4.930**			
Fourth step	Biospheric concern (EMS_{bio})	.083	.154	2.996*	.261	.257	65.602**
	Environmental identity (EID)	.012	.211	5.135**			
	Environmental attitude (NEP)	.015	.167	4.794**			
	Altruistic concern (EMS_{altr})	.070	.115	2.394*			
Personal norm - Corporate responsibility							
First step	Biospheric concern (EMS_{bio})	.235	.493	15.505**	.243	.242	240.413**
Second step	Biospheric concern (EMS_{bio})	.153	.323	8.269**	.292	.290	153.634**
	Environmental identity (EID)	.013	.278	7.129**			
Third step	Biospheric concern (EMS_{bio})	.130	.274	6.958**	.318	.316	115.990**
	Environmental identity (EID)	.012	.242	6.237**			
	Environmental attitude (NEP)	.014	.180	5.396**			
Fourth step	Biospheric concern (EMS_{bio})	.095	.199	4.054**	.324	.321	89.250**
	Environmental identity (EID)	.011	.227	5.774**			
	Environmental attitude (NEP)	.014	.175	5.254**			
	Altruistic concern (EMS_{altr})	.062	.117	2.545*			

*p<0.05. **p<0.001

Table 25 The result of the multiple linear regression on personal norm

Source: own analysis

By incorporating biospheric concern into the model, variance increases with 4.7% ($F(1.746)=60.516$; $p=0.000$), then the altruistic concern adds up an additional 0.7% which means a significantly different model ($F(1.745)=8.832$; $p=0.003$). Environmental identity has the highest regression coefficient, concern is weaker but it has a positive effect on personal norm.

$$PN_{org} = 0.425 * EID + 0.175 * NEP + 0.193 * EMS_{bio} + 0.125 * EMS_{altr}$$

In case of the personal norm relating to governmental and corporate responsibility, the same variables appear with significant effect. Environmental identity has the strongest effect, this is followed by NEP and biospheric concern. Altruistic concern has a slightly weaker effect in the models. The appearance of NEP can be justified with the fact that NEP involves scepticism and trust of technology which has no effect on personal responsibility but plays a role in highlighting governmental and corporate responsibility.

$$PN_{gov} = 0.211 * EID + 0.167 * NEP + 0.154 * EMS_{bio} + 0.115 * EMS_{altr}$$

$$PN_{org} = 0.227 * EID + 0.175 * NEP + 0.199 * EMS_{bio} + 0.117 * EMS_{altr}$$

Based on the regression equation, environmentally conscious behaviour is explained with personal norm, environmental attitude, environmental concern and environmental identity in 23.9%. Non-specific variables outside the model account for the rest 76.1%. Regression weights are shown in Figure 16.

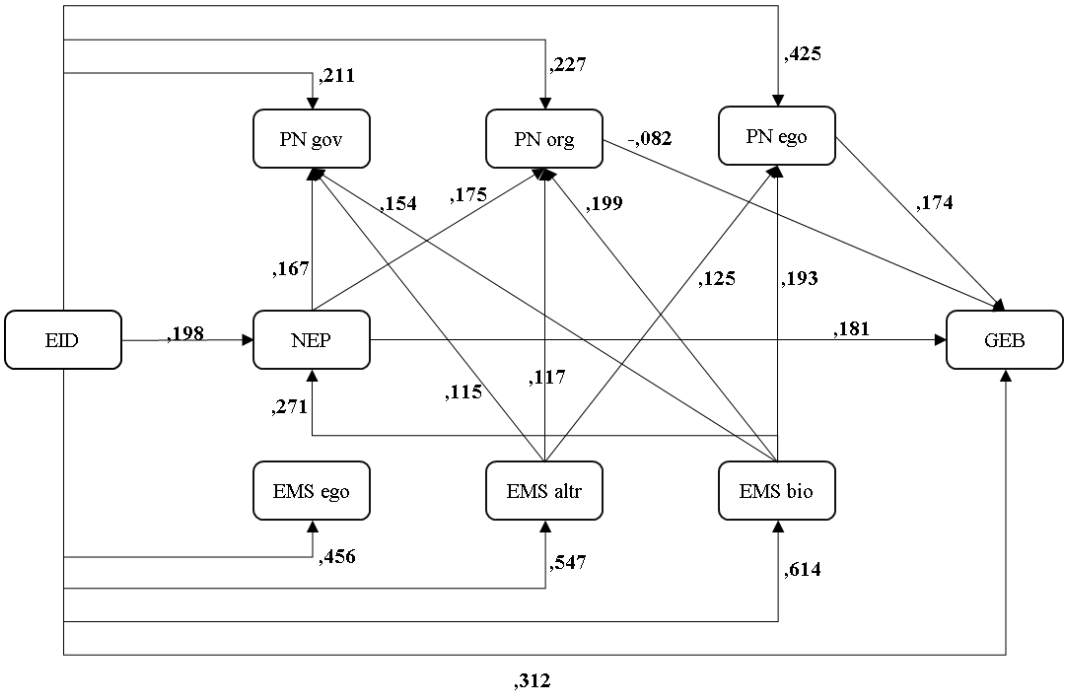

Figure 16 Path analysis of the relationship between environmentally conscious behaviour and environmental identity
Source: own editing

Based on this model it can be clearly seen that, among psycho-graphic factors examined, environmental identity has the strongest effect on environmentally-friendly behaviour. The direct effect of environmental identity has a regression beta coefficient of 0.312. In addition, the effect of environmental identity may act through endogenous variables which manifest the indirect effect. The model contains three double paths, six triple paths and one quadruple path from environmental identity to environmentally-friendly behaviour.

1. strength of path through NEP: 0.198*0.181=0.036
2. the strength of the path through the sub-scale relating to the individual's responsibility as personal norm: 0.425*0.174=0.074
3. the strength of the path through the sub-scale relating to the corporate responsibility as personal norm: 0.227*(-0.082)=-0.018
4. strength of path through biospheric concern and NEP 0.614*0.271*0.181=0.030
5. the strength of the path through biospheric responsibility and the sub-scale relating to the corporate responsibility as personal norm: 0.614*0.199*(-0.082)=-0.010

6. the strength of the path through biospheric responsibility and the sub-scale relating to the individual responsibility as personal norm: 0.614*0.193*0.174=0.021
7. the strength of the path through biospheric concern and NEP and the sub-scale relating to the corporate responsibility as personal norm: 0.614*0.271*0.175*(-0.082)=-0.002
8. the strength of the path through altruistic concern and the sub-scale relating to the corporate responsibility as personal norm: 0.547*0.117*(-0,082)= -0.005
9. the strength of the path through altruistic concern and the sub-scale relating to the individual responsibility as personal norm: 0.547*0.125*0.174=0.012
10. the strength of the path through NEP and the sub-scale relating to the corporate responsibility as personal norm: 0.198*0.175*(-0.082)=-0.003

The full indirect effect has a strength of 0.133, which, by adding the direct effect to this, gives the full effect of environmental identity on environmentally-friendly activity, as a total of 0.446. The direct effect of environmental identity on environmentally conscious activity is salient. The direct effects of internal factors examined are far from that of the environmental identity.

10.6.3 SUMMARY OF RESEARCH RESULTS

The path analysis examined a narrow scope of psycho-graphic factors influencing environmentally-friendly behaviour, focusing especially on the interpretation of the effect of environmental identity. The model has an explanatory power of 24%, the full effect of environmental identity is 0.446. In summary, we can state that the study of environmental identity from the aspect of environmentally-friendly behaviour is justifiable. By interpreting the model, our hypothesis tests are answered (see summary in Table 26).

Hypothesis	Acceptance
H1: Environmental identity positively affects environmentally-friendly behaviour. That is, the stronger the environmental identity, the more environmentally-friendly behaviour will be done.	Accepted
H4a: Environmental identity has a positive effect on environmental concern.	Accepted
H4b: Environmental identity has the strongest effect on biospheric concern compared to egotistic and altruistic concerns. That is, those individuals with a stronger environmental identity tend to have biospheric concerns whereas those individuals with low environmental identity tend to have egotistic concerns.	Accepted
H4c: Environmental concern has a positive effect on environmentally conscious behaviour.	Refused
H5a: Environmental identity has a positive effect on environmental attitudes.	Accepted
H5b: Environmental attitudes have a positive effect on environmentally conscious behaviour.	Accepted
H6a: Environmental identity has a positive effect on personal norms.	Accepted
H6b: Personal norms have a positive effect on environmentally conscious behaviour.	Partially accepted

Table 26 Hypothesis test results relating to regression path analysis
Source: own analysis

Environmental identity has a medium strong positive effect on environmentally-friendly activity and on psycho-graphic factors.

Taking internal factors into account, it has the strongest correlation with environmental concern, more particularly with biospheric concern as assumed in H4b hypothesis. If we feel close to nature, its vulnerability becomes more important for us and we worry more about it (Mayer and Frantz, 2004). Environmental identity has the weakest positive correlation with environmental attitude (β=0.198), which I believe is the result of two attributes of NEP scale structure. NEP is a strong factor in every research study due to its scepticism about technological progress, which does not entail or contradict the strength of environmental identity. A frequently studied environmentally-friendly segment is LOHAS, who are famous for the early adaptation of environmental innovations. NMI (Natural Marketing Institute) performed studies in 2009 in the US and distinguished 5 groups of green consumers: the LOHAS, the Naturalists, the Drifters, the Conventionalists and the Neutral (Ottman, 2011). Among these segments, the LOHAS (Lifestyle of Health and Sustainability) represent the environmentally

conscious group. As the naming suggests, this segment attributes a significant correlation between sustainable life, preservation of natural resources and the health status of the individuals. They only buy products that encourage the individual and global improvement of life style. The members of the group are married, education middle-age women with an income higher than the average. They are active participants in their homes and communities, beyond their environmentally conscious purchases they actively support related civil and political initiatives. Secondly, the general verbalisation of the NEP items gives opportunity for the respondents to dissociate his/herself from the environmental problems.

The counterpart of the same problem shifting can be a reason for the stronger positive relationship between environmental identity and personal norm. Environmental identity seemingly has a strong effect on the strength of individual responsibility. By strengthening the environmental identity, environmentally-friendly activity can literally be more personal which can lead to more active actions. The model also shows that the possibility of shifting the responsibility, for example “claiming” polluting corporations has a negative effect on the activities.

In this model, the personal norm reflecting corporate responsibility has a slight negative effect of environmentally-friendly activities. For this reason, our H6b hypothesis is only partially accepted, even if the direct effect of environmental identity on personal norm symbolizing personal responsibility is the biggest.

11 EVALUATION OF RESULTS, CONCLUSIONS

The hypothesis of my dissertation was that the limitations of environmentally conscious behaviour – even they are external (e.g.: infrastructural limitations, information shortfall) or internal (cognitive distortions, lack of trust, low perception of consumer efficiency) barriers (see: Hofmeister-Tóth et al., 2011) – can be reduced and the commitment to environmentally-friendly activities can be fostered by the development of environmental identity. Environmental identity strengthens the commitment in a way that the individual having strong environmental identity incorporates nature into his or her self-identity. Based on these, the protection of nature will become as important as the protection of ourselves.

Based on the theoretical summary, I studied the different measuring methods of environmental identity during the preliminary studies, then I applied Clayton's Environment Identity Scale (2003) to perform the quantitative research. The goal of the research was to examine the effect of environmental identity on environmentally-friendly behaviour in a theoretical model based on Stern's (1999) Value-Belief-Norm model.

I started the empiric research with a questions to study the relationship between environmental identity and environmentally-friendly behaviour. My initial assumption was that environmental identity has a strong effect of environmentally-friendly activities but I also assumed its appearance through mediating psycho-graphic factors. I studied environmental identity built into a model. The empiric study can be split into two phases: an exploratory qualitative study and, to confirm the connections a quantitative research. For the different phases, I split the research question into sub-questions:

1. What are the possible methods for measuring environmental identity?
    a. The study was made during the preliminary studies with qualitative and quantitative, implicit and explicit measurement methods.
2. Which factors have an effect on the strength of environmental identity?
    a. The study was made with linear regression based on the second quantitative research.

3. What kind of direction and strength has the effect of environmental identity on environmentally-friendly behaviour? Is there a direct effect of environmental identity, and if so, mediating effect of which psycho-graphic factors needs to be taken into consideration?
   a. The study was made with regression path analysis based on the second quantitative research.

11.1 SUMMARY OF RESULTS

During the course of my dissertation, certain research phases built on each other; thereby, I attempted to examine the questions of the effects and measurements of environmental identity in a detailed and structured manner. The starting point was a qualitative exploratory research and I went on to test my hypotheses during the quantitative analyses.

Qualitative Research – Preliminary Study

The goal of the research was to understand and analyse what the nature means to the respondents. Through the narration of the student's experiences, the positive and negative experiences relating to nature were revealed. These were the main conclusions of the research:

- Nature can be interpreted in a number of manners which depend strongly on positive or negative emotional experiences. The most commonly emerging negative phenomenon was the weather whereas hiking or walking in the forest as well as water experiences were listed as positive.

- Experiences as a small child (primary school) were mentioned more often that current experiences.

- In the case of parents, leading by example and the importance of common experiences were emphasised in the essays, whereas in the case of their contemporaries, common experiences, and relaxation were the emphasised viewpoint for socialising.

- The 5 dimensions of environmental identity – identification with nature, positive experiences in nature, salience of the identity, ideological support and the autobiographical component – which Clayton (2003) suggests for the interpretation of the concept, all appeared in the essays although with varying emphasis.

In summary, the research confirmed the broad interpretation of the concept of nature. In the narratives about the bonds to nature as well as emotional attitudes to nature the dimensions applied in the analysis of environmental identity were present. These confirmed the relevance and appropriate approach of the concept of environmental identity. On the basis of these results I have prepared the followed preliminary study which focused on the concrete possibilities for measurement of the concept of environmental identity.

Quantitative Research – Preliminary Study

The goal of the research was the testing of the scales developed for the examination of relationships with nature in the interest of choosing the appropriate measurement tool.

- The reliability and validity measures of the scales examined [Schultz (2001) Inclusion of nature in the self (INS) scale, Nisbet – Zelenski – Murphy (2009) Nature Relatedness (NR) scale, Clayton (2003) Environmental Identity (EID), short version] supported the application of Clayton's Environmental Identity scale.

- The EID scale showed appropriate reliability, the exploratory principal component analysis resulted 1 factor representing 47% of the variance.

The research promotes the choice of Clayton's Environmental Identity scale for application in the second quantitative research conducted for model development. However, the applicability related to implicit measurement draws attention to a more accurate research, on the basis of which I prepared my research with the use of the Implicit Association Test.

Implicit Association Test

In this section, the goal of the research was a deeper examination of the relationship between the individual and nature. In the analysis of Dunlap et al. (2000) the bond between the individual and the environment is not a conscious experience, we do not consider it regularly. Due to this, they recommend the application of implicit tests, of which I employed the Implicit Association Test based on the work of Schultz et al. (2004).

- In the process of the indirect examination of the connection between nature and the individual I experienced similar preferences from the respondents between the built environment and the natural environment. A weaker bond to nature was shown compared to previous experiences in an international comparison.

- There was no relationship between the results of the implicit measurement and environmentally-friendly activities.

- In the case of direct measurements I found equally medium strong positive correlations between environmental attitudes and environmentally-friendly behaviour as well as between environmental identity and environmentally-friendly behaviour.

The research confirms the applicability of explicit measurements on the basis of which I created my quantitative research concept for examining environmental identity and environmentally conscious behaviour.

Quantitative Research, Regression Path Analysis

The goal of the research was to examine the determining factors of environmental identity as well as an exploration of the effect of environmental identity on environmentally-friendly behaviour. Further psycho-graphic factors were also included in the analytical model and I tested the mediating effects of personal norms, environmental attitudes and environmental concerns.

- Clayton's Environmental Identity scale has the appropriate level of reliability (on the basis of the Cronbach Alpha and Split-half methods). The structure of the scale was examined with confirmatory factor analysis, which confirms the uni-dimensionality; however, among the fit indices the AVE index is slightly lower than expected (AVE=0.47) and the RMSEA index exceeds 0.05 (0.085). The results confirm that the scale is fundamentally well structured, but more refinements are required.

- Among the demographical factors of gender, age, family status and the size of household have a significant effect on environmental identity. Women and older people have a stronger environmental identity. Single people show a significantly weaker environmental identity which is also reflected in the size of household (the highest average on environmental identity scale was those households of 2 people).

- The sense of accomplishment, Self-fulfilment and Security are among the values that have a significant effect on environmental identity.

- The environmentally-friendly activity is explained as 24% in the model based on environmental identity, personal norm, environmental attitude and environmental concern.

- There is a positive relationship between environmental identity and environmentally-friendly activity, full effect of environmental identity has a regression coefficient of 0.446.

- Environmental identity, environmental attitude and personal norm related to personal responsibility have direct positive effect on environmentally-friendly activity.

- There is a weak negative effect of personal norms related to business responsibility, calling attention to the negative effects of passing responsibility to environmentally-friendly activities.

Research results can be summarized in a way that environmental identity has a medium strong positive effect on environmentally-friendly activity. I wish to outline that environmental identity has the most significant effect on behaviour compared to the psycho-graphic factors examined. The results are in line with researches incorporating social identity into the examination of environmentally-friendly behaviour (Davis et al., 2011; Dono et al., 2010; Hinds and Sparks, 2008), and that showed significant effect. My dissertation model emphasises the role of environmental identity thus focusing it for social marketing campaigns supporting environment.

In the current research we examined the effect of environmental attitudes in the framework of two concepts. In the case of an environmental worldview (NEP scale) we found a positive but weaker than medium level positive effect. On the basis of the factor analysis of a domestic sample with the New Environmental Paradigm scale, 3 main dimensions are examined (for more details see Hofmeister-Tóth et al., 2012), the belief in the superiority of individuals, scepticism in the face of environmental innovations, and concern over the environmental crisis. These concepts have a general approach and thus a strong direct relationship is not to be expected on the measurement of concrete environmentally conscious behaviour (Ajzen and Fishbein, 1977). Environmental concern has no direct effect on environmentally-friendly behaviour and merely affects the environmental worldview. Thus environmental identity does not just have a direct effect, but with the positive effect on biospheric environmental concern, it is a strong determining indirect variable on worldview. In the hypotheses of my research I took into account the measurement of environmental attitudes as a mediating factor, which was confirmed by the empirical research. Environmental identity has an effect on both concepts. It is also important to emphasise that the strong connection I supposed between environmental identity and environmental concern was confirmed

by the model. This coincides with Schultz's theory (2000) which proposes that if an individual views nature as a part of identity then they will have a stronger biospheric concern than altruistic or egotistical concern.

From a point of view of the practical usefulness of the results it is necessary to elaborate on the interpretation of personal norms. In every sub-scale, environmental identity has a generally perceivable positive effect on personal norms. Therefore, environmental identity also has a role in how much an individual accepts personal responsibility and to what extent they attribute responsibility to governments and businesses. The strongest effect of environmental identity was perceivable in the case of individual norms of responsibility, and norms also have a direct positive effect on environmentally-friendly behaviours. In my view, this relationship reflects the fact that individuals with a stronger environmental identity – through the fact that their identity is viewed as a part of nature – can more easily accept personal responsibility as they know that if their norms are breached, there will be a negative effect on what is important to them, which is nature (Stern, 2005). An individual takes into account the consequence of their own actions as it has an effect on their internalised and activated personal norms and thus actively carries out environmentally-friendly activities (Babcock, 2009). For the evolution of sustainable development, recognition of the responsibility of others concerned such as of governments and businesses is of course indispensable. The expectations of individuals and consumers towards governments and businesses can also put pressure on government regulations and business activities. The results however show that the internalisation of business responsibility as a norm has a weak negative effect on environmentally-friendly behaviour, which in my view can be explained by the possibility to pass the buck.

As a result, I summarize the results and hypotheses in Table 27 and list below my six final theses.

Final theses

1. Environmental identity has a medium strong positive effect on environmentally conscious behaviour even indirectly through mediating variables.
2. Among the demographical factors, gender, age, family status and the size of household have a significant effect on environmental identity.

3. The sense of accomplishment, Self-fulfilment and Security are among the values that have a significant effect on environmental identity.

4. Environmental identity has a positive effect on each type of concern. The strongest relationship appears in connection with biospheric concern.

5. Environmental attitude has a mediating role with positive effect on the relationship between environmental identity and environmentally conscious behaviour.

6. Environmental identity has a positive effect on personal norms. As for personal norms, individual responsibility has a positive effect while responsibility owing to business has negative effect on environmentally conscious behaviour.

Hypothesis	Acceptance	Final thesis
Preliminary assumption for IAT research: The positive effect of implicit environmental identity on environmentally conscious consumer behaviour is stronger than the positive effect of explicitly measured identity.	Not proven, no detectable effect	
H1: Environmental identity positively affects environmentally-friendly behaviour. That is, the stronger the environmental identity, the more environmentally-friendly behaviour will be done.	Proven	1. Environmental identity has a medium strong positive effect on environmentally conscious behaviour even indirectly through mediating variables.
H2a: The level of education has a positive effect on environmental identity. That is the higher the level of education, the stronger the environmental identity.	Not proven, no detectable effect	2. Among the demographical factors, gender, age, family status and the size of household have a significant effect on environmental identity.
H2b: Women have a stronger environmental identity.	Proven	
H2c: Income has a positive effect on environmental identity. That is the higher the individual's income, the stronger their environmental identity.	Not proven, no detectable effect	
H2d: Age has a negative effect on environmental identity. That is, younger people have a stronger environmental identity.	Not proven, positive effect	
H3: Internal values have a stronger effect than external values on environmental identity.	Partially proven	3. The sense of accomplishment, Self-fulfilment and Security are among the values that have a significant effect on environmental identity.

H4a: Environmental identity has a positive effect on environmental concern.	Proven	4. Environmental identity has a positive effect on each type of concern. The strongest relationship appears in connection with biospheric concern.
H4b: Environmental identity has the strongest effect on biospheric concern compared to egotistic and altruistic concerns. That is, those individuals with a stronger environmental identity tend to have biospheric concerns whereas those individuals with low environmental identity tend to have egotistic concerns.	Proven	
H4c: Environmental concern has a positive effect on environmentally conscious behaviour.	Not proven, no detectable effect	
H5a: Environmental identity has a positive effect on environmental attitudes.	Proven	5. Environmental attitude has a mediating role with positive effect on the relationship between environmental identity and environmentally conscious behaviour.
H5b: Environmental attitudes have a positive effect on environmentally conscious behaviour.	Proven	
H6a: Environmental identity has a positive effect on personal norms.	Proven	6. Environmental identity has a positive effect on personal norms. As for personal norms, individual responsibility has a positive effect while responsibility owing to business has negative effect on environmentally conscious behaviour.
H6b: Personal norms have a positive effect on environmentally conscious behaviour.	Partially proven	

Table 27 Summary of hypothesis test results
Source: own analysis

11.2 CONCLUSIONS ON THE MEASUREMENT OF ENVIRONMENTAL IDENTITY

I was concentrating on two questions when studying the measuring options of the concept of environmental identity. The first question was the difference between explicit and implicit measurements, the second question referred to the choice and application of explicit measurements.

In case of the implicit measurement, respondents showed almost the same preference for natural environment and built environment. This was lower compared to the strength of environmental identity measured with an explicit scale, implicit measurement showed weaker relationship with nature than explicit measurement. The result is in line with the difference between the Implicit Association Test and explicit measurements (Perkins et al., 2008). In this research, there was no significant link

between implicit and explicit tests which differs from the previous IAT-Nature experiences (Schultz et al, 2004; Schultz and Tabanico, 2007).

My results, the lack of correlation between explicit and implicit tests, can be interpreted in two ways: first, it may mean the concepts measured by indirect (IAT-Nature) scale and by direct (EID) scale can be different, that is they measure different concepts. Literature calls the attention to carefully compare implicit and explicit measurements. Depending on the research area (for example prejudice or stereotype) the correlation between the measuring methods can be missing or very low, while there are stronger correlations among socially sensitive, non-debated areas. Fazio and Olson (2003) suggest the application of MODE model for the interpretation. Based on the MODE (motivation and opportunity to deliberate) model, the relationship is determined by the possibility to consider the response and by motivation for consideration. A strong correlation is expected if there is no possibility or intention to consider responses in the explicit survey. On the contrary, if there is a possibility of intention for consideration, low correlation is expected (Fazio and Olson, 2003). In this research, respondents were given the possibility to consider their explicit responses.

In my dissertation I focused on explicit measurements but I do not reject the application of IAT, as an implicit measurement tool. For future research, I find the application of implicit measurements important and I plan to apply it in experiment along with the implicit measurement of behaviour.

Among explicit measurements I used Clayton's Environmental Identity Scale in Hungarian environment. Results listed supported the applicability of the scale. The scale consist of 11 items referring to several areas: salience, ideology, positive emotions and the identification with nature (the latter one with a higher emphasis). Compared to the scale of 24 items, the narrowed scale does not include the study of biographical elements.

For the appropriate adaptation of the scale, I performed an exploratory factor analysis. I tested the dimensionality and reliability of the scale with principle component analysis (see detailed tables in the Annex). The scale gathered into one factor, the result

of the factor analysis is reliable[31]. The factor accounts for 52.2% of the variance which is higher compared to the previous student sample. The communality of the items shows that the first and eights items[32] do not reach the required 0.5 value. The explanatory power of the factor can be increased by removing given items (55.8%). The analysis shows the separation of the two items and supports the removal of items from the scale. Item 8:

„*"I'd rather live in a small room or house with a nice view than in a bigger room or house facing other buildings."*

This is a dual statement expecting respondents to consider both the size of the room or house and the aesthetic issues of its location. When evaluating the response, we cannot be sure which aspect the respondent decided on. This can make results inconsistent. For this reason, this item is standing out of the others. For future use, I recommend to remove this item.

The number of items in the shortened scale is not balance within the dimensions. The first item for example measures alone the salience of actual behaviour.

"I spend a lot of time in natural settings (woods, mountains, desert, lakes, ocean)."

As a result of the different topic this item is also standing out of the others and its removal from the scale should be considered. Taking the behaviour dimension into account, scale reliability and validity could be improved by involving more items in the evaluation of behaviour dimension. This could be quite important as results show that the respondents who feel close to nature, gave a low evaluations to this item. Time spent in nature is constantly decreasing in our urbanised, fast-pace society. The interpret behaviour, not only direct but indirect and symbolic experiences should also be taken into consideration [33] (Kellert, 2002).

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[31]The theta reliability coefficient is 0.908 which supports the previous results on the reliability of the scale. Based on the result of the Bartlett test ($p<0,000$) null hypothesis can be discarded; the result of the KMO test is 0.940, so the result of the factor analysis is acceptable.

[32]The first item refers to the experiences obtained outdoors: I spend a lot of time in natural settings (woods, mountains, desert, lakes, ocean).
Item 8 compares built and natural environment: I'd rather live in a small room or house with a nice view than in a bigger room or house facing other buildings.

[33]Real, spontaneous physical contact in the nature can be considered as direct experience, when a child experiences nature through spontaneous activities in the garden or in the forest. We call it indirect experience if the physical contact with nature is planned and directed, thus manifested in a limited form, for example in the zoo, museum or when planting flowers in the garden. Symbolic experience is when there is no physical relation with nature and children perceive natural scenes in symbolic or realistic forms. The most frequent mediating form of this in the modern society is the public medium: television, book, magazines which broadcast natural images (Kellert, 2002).

I plan to perform further studies to test the scale after balancing the dimensions of the scale and after removing falling items.

11.3 THE THEORETICAL AND PRACTICAL SIGNIFICANCE OF EXAMINING ENVIRONMENTAL IDENTITY

In marketing and environmental protection, researches considered the concept of identity as a form of social identity relating to a product or a purchase situation (for example green consumer identity, see: Sparks and Shepherd, 1992; Whitmarsh and O'Neill, 2010). The aim of the current research is to analyse the identity outside concrete shopping situations, examining it on a general level in order to make a wider range of environmentally-friendly activities more explainable. In the interests of this, my research analyses in detail the concept of environmental identity – nature as a social environment interpretative identity. The concept is already established in the field of environmental psychology but the models place a different emphasis on the explorations. The significance of my dissertation is that I proved the existence of a direct and indirect effect between the relationship with nature and consumer behaviours.

The novelty of my research is the placing of environmental identity in a model, based on my previous studies and on the concept model of Stern Value – Belief – Norm (1999). Thereby I took into account the effects of environmental identity on environmental attitudes, environmental concerns and personal norms. The results explored by analysing in detail the effects of environmental identity demonstrated new relationships, that I summarized in my theses, strengthening the forecasting role of environmental identity in the determination of environmentally-friendly consumer behaviour. Involving psycho-graphic variables into the model means the first step in the testing of environmental identity in Hungary and in the preparation of its practical use. Environmental identity has a positive effect on both environmentally conscious behaviour and the mediating variables, thus the results support the application of environmental identity in the further researches on the concept of environmentally friendly behaviour.

The practical significance of the research is that in social marketing campaigns directed at developing environmentally-friendly activities, environmental identity is raised as a new factor to be introduced. The toolbox of social marketing is applicable for the support of behavioural change; however, the problem often arises that social marketing experts often do not receive the knowledge obtained by environmental psychology and consumer behaviour researchers (McKenzie-Mohr, 2000). With my dissertation I aim to further promote the flow of knowledge and communication between the two fields. Social marketing campaigns aimed at developing and supporting environmentally-friendly behaviour fundamentally approach it from two directions. On the one hand, ensuring the formation of positive attitudes and environmental knowledge, on the other hand a desire to influence people with economic motives. These concepts are built fundamentally on the concept of a rational individual who alter their behaviour according to economic and individual interests. The results of my dissertation, in accordance with the literature (Clayton, 2003, DeGroot and Steg, 2008, Schultz, 2000, Stern, 2005), emphasise however that biospheric value orientations and a close personal bond with nature can provide a basis for the development of environmentally-friendly behaviour. In the interests of this, campaigns should focus not only on overcoming the obstacles to environmentally-friendly behaviour but to the formation of environmental identity with the promotion of a close relationship with nature.

In approaching integrated marketing, a broad range of stakeholders can take part in the activities of social marketing. Direct experiences of nature have to be implemented alongside indirect and symbolic experiences of nature into environmental education more strongly, based on governmental policies. The civil sphere can promote the formation and internalisation of environmental personal norms, whilst businesses can encourage the appearance of environmental identity and environmentally-friendly activities with choice editing of consumers.

11.4 LIMITATIONS OF RESEARCH AND FUTURE RESEARCH POSSIBILITIES

Research results met the reliability and validity tests. The generalization of results, however, is partially possible. Preliminary studies were performed on student sample which require careful evaluation. Our closing quantitative research was made on a national sample which supports the stability and acceptance of the results.

A limit of the research is the application of a narrow analysis model which highlights only few factors even from the personal, internal variables. Further analysis of the environmental identity require a complex model which calculates with a wider scope of psycho-graphic factors (see for example Thøgersen's Motivation – Opportunity – Ability Model, 1995) and takes external possibilities of the consumers into account.

Beside widening the focus of quantitative research I find the experimental methodology a relevant opportunity in the future. This allows the evaluation of the real effects of implicit measurement by examining environmentally-friendly activities with implicit measurement.

In order to ensure the practical applicability of environmental identity I plan to apply further qualitative researches with a goal of exploring the background of environmental identity in detail. Although several references are available on this subject, I still find further research necessary to highlight the differences of the domestic cultural environment in relation to the international sample and to define intervention points where social marketing efforts can appear.

LIST OF REFERENCES

Achrol, R. S., és Kotler, P. (2012). Frontiers of the marketing paradigm in the third millennium. *Journal of the Academy of Marketing Science, 40*(1), 35-52. doi: 10.1007/s11747-011-0255-4

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior Kuhl, J. és Beckman, J. (Eds.), *Action control: From cognition to behavior* (pp. 11-39). Heidelberg: Springer

Ajzen, I. (1988). *Attitudes, personality, and behavior*. Milton Keynes: Open University Press.

Ajzen, I. (1991). The theory of planned behavior. *Organisational Behavior and Human Decision Processes, 50*(2), 179-211. doi: http://dx.doi.org/10.1016/0749-5978(91)90020-T

Ajzen, I. (2002). Perceived Behavioral Control, Self-Efficacy, Locus of Control, and the Theory of Planned Behavior. *Journal of Applied Social Psychology, 32*(4), 665 - 683. doi: http://dx.doi.org/10.1111/j.1559-1816.2002.tb00236.x

Ajzen, I., és Fishbein, M. (1977). Attitude–behavior relations: A theoretical analysis and review of empirical research. *Psychological Bulletin, 84*(5), 888–918. doi: http://dx.doi.org/10.1037/0033-2909.84.5.888

Ajzen, I., és Fishbein, M. (1980). *Understanding Attitudes and Predicting Social Behavior*. New Jersey: Prentice Hall.

Allport, G. W. (1954). The historical background of modern social psychology Lindzey, G. (Ed.), *A handbook of social psychology* (pp. 798-844). Worchester, MA: Clark University Press

Anderson, W. T., és Cunningham, W. H. (1972). The Socially Conscious Consumer. *The Journal of Marketing, 36*(3), 23-31.

Andreasen, A. (2006). *Social Marketing in the 21st Century*. Thousand Oaks, California: Sage Publications.

Antil, J. H. (1978). *The Construction and Validation of an Instrument to Measure Socially Responsible Consumer Behavior: A Study of the Socially Responsible Consumer*. Doctoral dissertation, The Pennsylvania State University.

Armitage, C., és Conner, M. (2001). Efficacy of the Theory of Planned Behaviour: a Meta-analytic Review. *British Journal of Social Psychology, 40*, 471-499. doi: http://dx.doi.org/10.1348/014466601164939

Aron, A., Aron, E. N., és Smollan, D. (1992). Inclusion of other in the self scale and the structure of interpersonal closeness. *Journal of Personality and Social Psychology, 63*, 596–612. doi: http://dx.doi.org/10.1037/0022-3514.63.4.596

Aron, A., Aron, E. N., Tudor, M., és Nelson, G. (1991). Close relationships as including other in the self. *Journal of Personality and Social Psychology, 60*, 241–253. doi: http://dx.doi.org/10.1037/0022-3514.60.2.241

Aronson, E., és Cope, V. (1968). My enemy's enemy is my friend. *Journal of Personality and Social Psychology, 8*(1), 8-12. doi: http://dx.doi.org/10.1037/h0021234

Aronson, E., és O'Leary, M. (1982). The relative effectiveness of models and prompts on energy conservation: A field experiment in a shower room. *Journal of Experimental Systems, 12*, 219–224.

Babbie, E. (2001). *A társadalomtudományi kutatás gyakorlata* (6 ed.). Budapest: Balassi Kiadó.

Babcock, H. M. (2009). Assuming Personal Responsibility for Improving the Environment: Moving Toward a New Environmental Norm. *Harvard Environmental Law Review, 33*, 117-175.

Baddeley, A. (2003). *Az emberi emlékezet*. Budapest: Osiris Kiadó.

Bagozzi, R. P., és Schnedlitz, P. (1985). Social Contingencies in the Attitude Model: A Test of Certain Interaction Hypotheses. *Social Psychology Quarterly, 48*(4), 366-373.

Baldwin, J. M. (1897). *Social and ethical interpretations in mental development*. New York: Macmillan.

Bamberg, S. (2003). How does environmental concern influence specific environmentally related behaviors? A new answer to an old question. *Journal of Environmental Psychology, 23*, 21-32. doi: http://dx.doi.org/10.1016/S0272-4944(02)00078-6

Bamberg, S., és Möser, G. (2007). Twenty years after Hines, Hungerford, and Tomera: A new meta-analysis of psycho-social determinants of pro-environmental behaviour. *Journal of Environmental Psychology, 27*(1), 14-25. doi: http://dx.doi.org/10.1016/j.jenvp.2006.12.002

Banerjee, S., és McKeage, K. (1994). How green is my value: exploring the relationship between environmentalism and materialism Allen, C. T. és John, D. R. (Eds.), *Advances in Consumer Research* (Vol. 21, pp. pp. 147-152). Provo, UT: Association for Consumer Research

Bar-Anan, Y., és Nosek, B. A. (2014). A comparative investigation of seven implicit measures of social cognition. *Behavior Research Methods, 46*(3), 668-688. doi: http://dx.doi.org/10.3758/s13428-013-0410-6

Bargh, J. A. (2006). What have we been priming all these years? On the development, mechanisms, and ecology of nonconscious social behavior? *European Journal of Social Psychology, 36*(2), 147–168. doi: http://dx.doi.org/10.1002/ejsp.336

Bartels, J., és Hoogendam, K. (2011). The role of social identity and attitudes toward sustainability brands in buying behaviors for organic products. *Journal of Brand Management, 18*(9), 697-708. doi: http://dx.doi.org/10.1057/bm.2011.3

Beatty, S. E., Kahle, L. R., Homer, P., és Misra, S. (1985). Alternative Measurement Approaches to Consumer Values: The List of Value Survey. *Psychology & Marketing, 2*(3), 181-201. doi: http://dx.doi.org/10.1002/mar.4220020305

Blumer, H. (1969). *Symbolic interactionism: Perspective and method*. Englewood Cliffs, NJ: Prentice-Hall.

Bolton, L. E., és Reed, A. (2004). Sticky priors: The perseverance of identity effects on judgment. *Journal of Marketing Research, 41*(3), 397–411. doi: http://dx.doi.org/10.1509/jmkr.41.4.397.47019

Bordens, K. S., és Horowitz, I. A. (2008). *Social Psychology*. United States of America: Freeload Press.

Bragg, E. A. (1996). Towards Ecological Self: deep ecology meets constructionist self-theory. *Journal of Environmental Psychology, 16*(2), 93-108. doi: http://dx.doi.org/10.1006/jevp.1996.0008

Brickman, P., és Horn, C. (1973). Balance theory and interpersonal coping in triads. *Journal of Personality and Social Psychology, 26*(3), 347-355. doi: http://dx.doi.org/10.1037/h0034444

Brown, T. A. (2006). *Confirmatory Factor Analysis for Applied Research* (Vol. 6). New York: The Guilford Press.

Bruni, C. M., Chance, R. C., Schultz, P. W., és Nolan, J. M. (2012). Natural Connections: Bees Sting and Snakes Bite, But They Are Still Nature. *Environment and Behavior, 44*(2), 197-215. doi: http://dx.doi.org/10.1177/0013916511402062

Bruni, C. M., és Schultz, P. W. (2010). Implicit beliefs about self and nature: Evidence from an IAT game. *Journal of Environmental Psychology, 30*(1), 95-102. doi: http://dx.doi.org/10.1016/j.jenvp.2009.10.004

Brügger, A., Kaiser, F. G., és Roczen, N. (2011). One for All? Connectedness to Nature, Inclusion of Nature, Environmental Identity, and Implicit Association with Nature. *European Psychologist, 16*(4), 324-333. doi: http://dx.doi.org/10.1027/1016-9040/a000032

Buda, B. (1968). A szociálpszichológia és modern kutatási irányzatai. *Szociológiai Közlemények, II*, 15-46.

Bulla, M., Foltányi, Z., és Varga, É. (Eds.). (1993). *Feladatok a XXI. századra – Az ENSz Környezet és Fejlődés Világkonferencia dokumentumai*. Budapest: Föld Napja Alapítvány.

Burke, P. J. (2006). Identity change. *Social Psychology Quarterly, 69*(1), 81–96. doi: http://dx.doi.org/10.1177/019027250606900106

Burke, P. J., és Cast, A. D. (1997). Stability and change in the gender identities of newly married couples. *Social Psychology Quarterly, 60*, 277–290.

Burke, P. J., és Reitzes, D. C. (1991). An Identity Theory Approach to Commitment. *Social Psychology Quarterly, 54*(3), 239-251.

Burke, P. J., és Stets, J. E. (1999). Trust and Commitment through Self-Verification. *Social Psychology Quarterly, 62*(4), 347-366.

Burke, P. J., és Stets, J. E. (2009). *Identity Theory*. New York: Oxford University Press.

Byrne, B. M. (2010). *Structural Equation Modeling with AMOS: Basic concepts, applications, and programming*. London: Routledge.

Cantrill, J. G., és Senecah, S. L. (2001). Using the "sense of self-in-place" construct in the context of environmental policy-making and landscape planning.

Environmental Science and Policy, 4(4-5), 185-203. doi: http://dx.doi.org/10.1016/S1462-9011(01)00023-5

Carson, R. (1962). *Silent Spring*. Boston: Houghton-Mifflin.

Carver, C. S., és Scheier, M. F. (2006). *Személyiségpszichológia*. Budapest: Osiris Kiadó.

Catton, W. R., Jr., , és Dunlap, R. E. (1980). A new ecological paradigm for post-exuberant sociology *American Behavioral Scientist, 24*(15–47). doi: http://dx.doi.org/10.1177/000276428002400103

Chattaraman, V., Lennon, S. J., és Rudd, N. A. (2010). Social Identity Salience: Effects on Identity-Based Brand Choices of Hispanic Consumers. *Psychology & Marketing, 27*(3), 263-284. doi: http://dx.doi.org/10.1002/mar.20331

Chawla, L. (1998). Significant life experiences revisited: A review of research on sources of environmental sensitivity. *Journal of Environmental Education, 29*(3), 11-22. doi: http://dx.doi.org/10.1080/00958969809599114

Chawla, L. (1999). Life paths into effective environmental action. *Journal of Environmental Education, 31*(1), 15-26. doi: http://dx.doi.org/10.1080/00958969909598628

Chawla, L. (2006). Research methods to investigate significant life experiences: review and recommendations. *Environmental Education Research, 12*(3), 359-374. doi: http://dx.doi.org/10.1080/13504620600942840

Cialdini, R. B., Demaine, L. J., Sagarin, B. J., Barrett, D. W., Rhoads, K., és Winter, P. L. (2006). Managing social norms for persuasive impact. *Social Influence, 1*(1), 3-15. doi: http://dx.doi.org/10.1080/15534510500181459

Cialdini, R. B., Reno, R. R., és Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology, 58*(6), 1015–1026. doi: http://dx.doi.org/10.1037/0022-3514.58.6.1015

Clayton, S. (2003). Environmental Identity: A Conceptual and an Operational Definition Clayton, S. és Opotow, S. (Eds.), *Identity and the Natural Environment: The Psychological Significance of Nature* (pp. 45-67). Cambridge, Massachusetts: The MIT Press

Clayton, S., Fraser, J., és Burgess, C. (2011). The Role of Zoos in Fostering Environmental Identity. *Ecopsychology, 3*(2), 87-96. doi: http://dx.doi.org/10.1089/eco.2010.0079

Clayton, S., és Opotow, S. (2003). Introduction: Identity and the Natural Environment Clayton, S. és Opotow, S. (Eds.), *Identity and the Natural Environment: The Psychological Significance of Nature*. Cambridge, Massachusetts: The MIT Press

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*, 155–159. doi: http://dx.doi.org/10.1037/0033-2909.112.1.155

Cook, A. J., Kerr, G. N., és Moore, K. (2002). Attitudes and intentions towards purchasing GM food. *Journal of Economic Psychology, 23*(5), 557-572. doi: http://dx.doi.org/10.1016/S0167-4870(02)00117-4

Cooley, C. H. (1902). *Human nature and the social order*. New York: Scribner.

Cordano, M., Welcomer, S., Scherer, R. F., Pradenas, L., és Parada, V. (2011). A Cross-Cultural Assessment of Three Theories of Pro-Environmental Behavior: A Comparison Between Business Students of Chile and the United States. *Environment & Behavior, 43*(5), 634-657. doi: http://dx.doi.org/10.1177/0013916510378528

Cordano, M., Welcomer, S. A., és Scherer, R. F. (2003). An Analysis of the Predictive Validity of the New Ecological Paradigm Scale. *The Journal of Environmental Education, 34*(3), 22-28. doi: http://dx.doi.org/10.1080/00958960309603490

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16*(3), 297-334. doi: http://dx.doi.org/10.1007/BF02310555

Cronbach, L. J., és Meehl, P. E. (1968). Construct validity in psychological tests Feigl, H. és Scriven, M. (Eds.), *The Foundations of Science and the Concepts of Psychology and Psychoanalysis* (pp. 174-204). Minnesota: University of Minnesota

Csurgó, B. (2002). Környezet és társadalom, A Magyar Szociológiai Társaság 2001. évi közgyűlése és konferenciája. *Szociológiai Szemle, 1*, 177-186.

Csutora, M. (2012). One More Awareness Gap? The Behaviour–Impact Gap Problem. *Journal of Consumer Policy, 35*, 145-163. doi: http://dx.doi.org/10.1007/s10603-012-9187-8

Csutora, M., és Kerekes, S. (2004). *A környezetbarát vállalatirányítás eszközei*. Budapest: KJK-KERSZÖV.

Daly, H. (1992). *Steady State Economics*. London: Earthscan.

Daly, H. (1993). The perils of free trade. *Scientific American, 269*(5), 50-57. doi: 10.1038/scientificamerican1193-50

Davidson, D. J., és Freudenburg, W. R. (1996). Gender and Environmental Risk Concerns. *Environment and Behavior, 28*(3), 302-339. doi: http://dx.doi.org/10.1177/0013916596283003

Davies, J., Foxall, G. R., és Pallister, J. (2002). Beyond the Intention–Behaviour Mythology: An Integrated Model of Recycling. *Marketing Theory, 2*(1), 29-113. doi: http://dx.doi.org/10.1177/1470593102002001645

Davis, J. J. (1995). The effects of message framing on response to environmental communications. *Journalism and Mass Communication Quarterly, 72*(2), 285–299. doi: http://dx.doi.org/10.1177/107769909507200203

Davis, J. L., Green, J. D., és Reed, A. (2009). Interdependence with the environment: Commitment, interconnectedness, and environmental behavior. *Journal of Environmental Psychology, 29*(2), 173-180. doi: http://dx.doi.org/10.1016/j.jenvp.2008.11.001

Davis, J. L., Le, B., és Coy, A. E. (2011). Building a Model of Commitment to the Natural Environment to Predict Ecological Behavior and Willingness to Sacrifice. *Journal of Environmental Psychology, 31*(3), 257-265. doi: http://dx.doi.org/10.1016/j.jenvp.2011.01.004

De Groot, J. I. M., és Steg, L. (2008). Value orientations to explain environmental attitudes and beliefs: How to measure egoistic, altruistic and biospheric value

orientations. *Environment and Behavior, 40*, 330–354. doi: http://dx.doi.org/10.1177/0013916506297831

De Young, R. (2000). Expanding and Evaluating Motives for Environmentally Responsible Behavior. *Journal of Social Issues, 56*(3), 509-526.

DeLamater, J. D., és Myers, D. J. (2011). *Social psychology*. Belmont, CA: Wadsworth Cengage Learning.

Diamantopoulos, A., Schlegelmilch, B. B., Sinkovics, R. R., és Bohlen, G. M. (2003). Can socio-demographics still play a role in profiling green consumers? A review of the evidence and an empirical investigation. *Journal of Business Research, 56*(6), 465-480. doi: http://dx.doi.org/10.1016/S0148-2963(01)00241-7

Dobson, A. (2007). Environmental Citizenship: Towards Sustainable Development. *Sustainable Development, 15*(5), 276-285. doi: http://dx.doi.org/10.1002/sd.344

Doherty, T. J. (2009). Ecopsychology Roundtable: Identity, Well-Being, and Sustainability. *Ecopsychology, 1*(4), 169-174. doi: http://dx.doi.org/10.1089/eco.2010.0006

Dono, J., Webb, J., és Richardson, B. (2010). The relationship between environmental activism, pro-environmental behaviour and social identity. *Journal of Environmental Psychology, 30*(2), 178-186. doi: http://dx.doi.org/10.1016/j.jenvp.2009.11.006

Doppelt, B. (2012). *From Me to We: The Five Transformational Commitments Required to Rescue the Planet, Your Organization, and Your Life*. Sheffield: Greenleaf Publishing

Drexhage, J., és Murphy, D. (2010). Sustainable Development: From Brundtland to Rio 2012.

Dunlap, R. E. (2002). Environmental Sociology Bechtel, R. B. és Churhman, A. (Eds.), *Handbook of Environmental Psychology*. New York: John Wiley & Sons, Inc.

Dunlap, R. E., és Van Liere, K. D. (1978). The new environmental paradigm:A proposed measuring instrument. *The Journal of Environmental Education, 9*(1), 10-19. doi: http://dx.doi.org/10.1080/00958964.1978.10801875

Dunlap, R. E., Van Liere, K. D., Mertig, A. G., és Jones, R. E. (2000). Measuring Endorsement of the New Ecological Paradigm: A Revised NEP Scale. *Journal of Social Issues, 56*(3), 425-442. doi: http://dx.doi.org/10.1111/0022-4537.00176

Dupont, D. P. (2004). Do children matter? An examination of gender differences in environmental valuation. *Ecological Economics, 49*(3), 273-286. doi: http://dx.doi.org/10.1016/j.ecolecon.2004.01.013

Dutcher, D., Finley, J. C., Luloff, A. E., és Johnson, J. B. (2007). Connectivity with nature as a measure of environmental values. *Environment and Behavior, 39*(4), 474-493. doi: http://dx.doi.org/10.1177/0013916506298794

Eagly, A. (1987). *Gender differences in social behavior: A social role interpretation*. Hillsdale, NJ: Lawrence Erlbaum.

Eagly, A., és Chaiken, S. (1993). *The psychology of attitudes*. Fort Worth, Texas: Harcourt Brace Jovanovich College Publishers

Ellen, P. S., Wiener, J. L., és Cobb-Walgren, C. (1991). The Role of Perceived Consumer Effectiveness in Motivating Environmentally Conscious Behaviors. *Journal of Public Policy and Marketing, 10*(2), 102-117.

Engel, J., Blackwell, R., és Miniard, P. (1990). *Consumer Behavior*. Chicago: Dryden Press.

ENSZ (1987). Közös jövőnk, Brundtland-jelentés.

EurópaiBizottság (2010). Átgondoltabban, tisztábban. Fenntartható fogyasztás és termelés.

Fazio, R. H., Chen, J., McDonel, E. C., és Sherman, S. J. (1982). Attitude accessibility, attitude behavior consistency, and the strength of the object evaluation association. *Journal of Experimental Social Psychology, 18*(4), 339-357. doi: http://dx.doi.org/10.1016/0022-1031(82)90058-0

Fazio, R. H., és Olson, M. A. (2003). Implicit measures in social cognition research: Their Meaning and Use. *Annual Review of Psychology, 54*(1), 297. doi: http://dx.doi.org/10.1146/annurev.psych.54.101601.145225

Fazio, R. H., Sanbonmatsu, D. M., Powell, M. C., és Kardes, F. R. (2008). On the automatic activation of attitudes Fazio, R. H. és Petty, R. E. (Eds.), *Attitudes: Their structure, function, and consequences* (pp. 17-32). New York: Psychology Press

Festinger, L. (1954). A theory of social comparison processes. *Human Relations, 7*, 117–140.

Festinger, L. (2000). *A kognitív disszonancia elmélete*. Budapest: Osiris Kiadó.

Fielding, K. S., McDonald, R., és Louis, W. R. (2008). Theory of planned behaviour, identity and intentions to engage in environmental activism. *Journal of Environmental Psychology, 28*(4), 318-326. doi: 10.1016/j.jenvp.2008.03.003

Forehand, M., Deshpande, R., és Reed, A. (2002). Identity Salience and the Influence of Differential Activation of the Social Self-schema on Advertising Response. *Journal of Applied Psychology, 87*(6), 1086-1099. doi: http://dx.doi.org/10.1037/0021-9010.87.6.1086

Forehand, M. R., és Deshpandé, R. (2001). What we see makes us who we are: Priming ethnic self-awareness and advertising response. *Journal of Marketing Research, 38*(3), 336-348. doi: http://dx.doi.org/10.1509/jmkr.38.3.336.18871

Fornell, C., és Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39–50.

Frantz, C., Mayer, F. S., Norton, C., és Rock, M. (2005). There is no "I" in nature: The influence of self-awareness on connectedness to nature. *Journal of Environmental Psychology, 25*(4), 427-436. doi: http://dx.doi.org/10.1016/j.jenvp.2005.10.002

Freedman, D., Pisani, R., és Purves, R. (2007). *Statistics* (4 ed.). New York: Norton and Company.

Fromm, E. (1993). *A szeretet művészete*. Budapest: Háttér Kiadó.

Füstös, L., és Szalma, I. (2010). Európa értékrendszere. Magyarország értéktere – Európa értéktere.

Gatersleben, B. (2012). Measuring environmental behaviour Steg, L., Van Den Berg, A. E. és De Groot, J. I. M. (Eds.), *Environmental Psychology*. Oxford: BPS Blackwell

Gatersleben, B., Steg, L., és Vlek, C. (2002). Measurement and Determinants of Environmentally Significant Consumer Behavior. *Environment & Behavior, 34*(3), 335-362. doi: http://dx.doi.org/10.1177/0013916502034003004

Giddings, B., Hopwood, B., és O'Brien, G. (2002). Environment, economy and society: fitting them together into sustainable development. *Sustainable Development, 10*, 187-196.

Goffman, E. (1959). *The presentation of self in everyday life*. New York: Anchor.

Gonzales, M. H., Aronson, E., és Costanzo, M. A. (1988). Using social cognition and persuasion to promote energy conservation: A quasi-experiment. *Journal of Applied Social Psychology, 18*(12), 1049–1066. doi: http://dx.doi.org/10.1111/j.1559-1816.1988.tb01192.x

Gosling, E., és Williams, K. J. H. (2010). Connectedness to nature, place attachment and conservation behaviour: Testing connectedness theory among farmers. *Journal of Environmental Psychology, 30*(3), 298-304. doi: http://dx.doi.org/10.1016/j.jenvp.2010.01.005

Greenwald, A. G., és Banaji, M. R. (1995). Implicit social cognition: Attitudes, self-esteem, and stereotypes. *Psychological Review, 102*(1), 4-27. doi: http://dx.doi.org/10.1037/0033-295X.102.1.4

Greenwald, A. G., és Farnham, S. D. (2000). Using the Implicit Association Test to Measure Self-Esteem and Self-Concept. *Journal of Personality and Social Psychology, 79*(6), 1022-1038. doi: http://dx.doi.org/10.1037/0022-3514.79.6.1022

Greenwald, A. G., McGhee, D. E., és Schwartz, J. L. K. (1998). Measuring individual differences in implicit cognition: The Implicit Association Test. *Journal of Personality and Social Psychology, 74*(6), 1464-1480. doi: http://dx.doi.org/10.1037/0022-3514.74.6.1464

Greenwald, A. G., Nosek, B. A., és Banaji, M. R. (2003a). Understanding and Using the Implicit Association Test: I. An Improved Scoring Algorithm. *Journal of Personality and Social Psychology, 85*(2), 197-216. doi: http://dx.doi.org/10.1037/0022-3514.85.2.197

Greenwald, A. G., Nosek, B. A., és Banaji, M. R. (2003b). Understanding and using the Implicit Association Test: I. An improved scoring algorithm. *Journal of Personality and Social Psychology, 85*(2), 197–216.

Greenwald, A. G., Nosek, B. A., és Sriram, N. (2006). Consequential validity of the Implicit Association Test: Comment on the article by Blanton and Jaccard. *American Psychologist, 61*, 56–61.

Grob, A. (1995). A structural model of environmental attitudes and behaviour. *Journal of Environmental Psychology, 15*(3), 209-220. doi: http://dx.doi.org/10.1016/0272-4944(95)90004-7

Groot, J. I. M. d., és Steg, L. (2010). Relationships between value orientations, self-determined motivational types and pro-environmental behavioural intentions. *Journal of Environmental Psychology, 30*(4), 368-378. doi: http://dx.doi.org/10.1016/j.jenvp.2010.04.002

Gross, S. J., és Niman, C. M. (1975). Attitude-Behavior Consistency: A Review. *The Public Opinion Quarterly, 39*(3), 358-368. doi: http://dx.doi.org/10.1086/268234

Gunderson, K. I. (1989). *The state of environmental education in Montana public schools.* University of Montana, Missoula.

Hair, J. F. J., Black, W. C., Babin, B. J., és Anderson, R. E. (2010). *Multivariate Data Analysis: A Global Perspective* (7 ed.). New Jersey: Pearson Education Inc.

Harangozó, G. (2011). A visszapattanó hatás jelentősége az energiafelhasználás csökkentésében Csutora, M. (Ed.), *Az ökológiai lábnyom ökonómiája* (pp. 108-118). Budapest: AULA Kiadó

Hawcroft, L. J., és Milfont, T. L. (2010). The use (and abuse) of the new environmental paradigm scale over the last 30 years: A meta-analysis. *Journal of Environmental Psychology, 30*(2), 143-158. doi: http://dx.doi.org/10.1016/j.jenvp.2009.10.003

Heberlein, T. A. (1977). Norm Activation and Environmental Action: A Rejoinder to R. E. Dunlap and K. D. Van Liere. *Journal of Social Issues, 33*(3), 207-211. doi: http://dx.doi.org/10.1111/j.1540-4560.1977.tb01892.x

Heider, F. (1958.). *The psychology of interpersonal relations*. New York: Wiley.

Henion, K. E., és Kinnear, T. C. (1976). Ecological Marketing.

Henseler, J., Ringle, C. M., és Sinkovics, R. R. (2009). The use of partial least squares path modeling in international marketing. *Advances in International Marketing, 20*, 277–319.

Herzog, T. R., Black, A. M., Fountaine, K. A., és Knotts, D. J. (1997). Reflection and attentional recovery as distinctive benefits of restorative environments. *Journal of Environmental Psychology, 17*(2), 165-170. doi: http://dx.doi.org/10.1006/jevp.1997.0051

Hinds, J., és Sparks, P. (2008). Engaging with the natural environment: The role of affective connection and identity. *Journal of Environmental Psychology, 28*(2), 109-120. doi: http://dx.doi.org/10.1016/j.jenvp.2007.11.001

Hines, J. M., Hungerford, H. M., és Tomera, A. N. (1986). Analysis and synthesis of research on responsible pro-environmental behavior: a meta-analysis. *The Journal of Environmental Education, 18*(2), 1-8. doi: http://dx.doi.org/10.1080/00958964.1987.9943482

Hirsh, J. B. (2010). Personality and environmental concern. *Journal of Environmental Psychology, 30*(2), 245-248. doi: http://dx.doi.org/10.1016/j.jenvp.2004.09.001

HoffmannIstvánné. (2006). A fenntartható fogyasztás társadalmi elfogadottsága. In Bulla, M. és Tamás, P. (Eds.), Fenntartható fejlődés Magyarországon (pp. 311-322). Budapest: Új Mandátum Könyvkiadó. Retrieved from www.socio.mta.hu/dynamic/5_fenntarthato_fejlodes.pdf.

Hofmeister-Tóth, Á., Kasza-Kelemen, K., és Piskóti, M. (2013). A környezetbarát fogyasztói magatartás formái, motivációi és a hátterükben álló pszichográfiai tényezők vizsgálata Magyarországon. [Motivations and psychographic factors of environmentally friendly consumer behaviour in Hungary]. *Marketing és Menedzsment, 47*(3), 34-42.

Hofmeister-Tóth, Á., Kelemen, K., és Piskóti, M. (2011). Environmentally Conscious Consumption Patterns in Hungarian Households. *Society and Economy in Central and Eastern Europe 33*(1), 51-68. doi: http://dx.doi.org/10.1556/SocEc.33.2011.1.6

Hofmeister-Tóth, Á., Kelemen, K., és Piskóti, M. (2012a). Life paths in Hungary in the light of commitment to sustainability. *Interdisciplinary Environmental Review, 13*(4), 323-339. doi: http://dx.doi.org/10.1504/IER.2012.051449

Hofmeister-Tóth, Á., Kelemen, K., és Piskóti, M. (2012b). Segmentation of the Hungarian consumers using the new ecological paradigm (NEP) scale. *Interdisciplinary Environmental Review, 13*(1), 21-41. doi: http://dx.doi.org/10.1504/IER.2012.046098

Hofmeister-Tóth, Á., és Törőcsik, M. (1996). *Fogyasztói magatartás*. Budapest: Nemzeti Tankönyvkiadó.

Hogg, M. A., Terry, D. J., és White, K. M. (1995). A Tale of Two Theories: A Critical Comparison of Identity Theory with Social Identity Theory. *Social Psychology Quarterly, 58*(4), 255-269.

Homburg, C., és Klarmann, M. (2006). Die Kausalanalyse in der betriebswirtschaftlichen Forschung – Problemfelder und Anwendungsempfehlungen. *DBW - Die Betriebswirtschaft, 66*(6), 727-748.

Homer, P., és Kahle, L. R. (1988). A Structural Equation Test of the Value-Attitude-Behavior Hierarchy. *Journal of Personality and Social Psychology, 54*(4), 638-646. doi: http://dx.doi.org/10.1037/0022-3514.54.4.638

Hovland, C. I., és Weiss, W. (1951). The influence of source credibility on communication effectiveness. *Public Opinion Quarterly, 15*(4), 635-650. doi: http://dx.doi.org/10.1086/266350

Hurley, A. E., Scandura, T. A., Schriesheim, C. A., Brannick, M. T., Seers, A., Vanderberg, R. J., és Williams, L. J. (1997). Exploratory and con®rmatory factor analysis: guidelines, issues, and alternatives. *Journal of Organizational Behavior, 18*, 667-683.

Jackson, T. (2005a). Live Better by Consuming Less? Is There a "Double Dividend" in Sustainable Consumption? *Journal of Industrial Ecology, 9*(1-2), 19-36. doi: http://dx.doi.org/10.1162/1088198054084734

Jackson, T. (2005b). Motivating Sustainable Consumption: a review of evidence on consumer behaviour and behavioural change Retrieved from http://www.compassnetwork.org/images/upload/MotivatingSCfinal.pdf

Jackson, T. (2009). Prosperity without Growth?

James, W. (1890). *Principles of psychology*. New York: Holt.

Joireman, J. A., Lasane, T. P., Bennett, J., Richards, D., és Solaimani, S. (2001). Integrating social value orientation and the consideration of future

consequences within the extended norm activation model of proenvironmental behaviour. *British Journal of Social Psychology, 40*(1), 133-155. doi: http://dx.doi.org/10.1348/014466601164731

Jones, R. E., és Dunlap, R. E. (1992). The social bases of environmental concern: Have they changed over time? *Rural Sociology, 57*, 28–47.

Kahle, L. R. (1983). *Social Values and Social Change: Adaptation to Life in America*. New York: Praeger.

Kahle, L. R., Beatty, S. E., és Homer, P. (1986). Alternative Measurement Approaches to Consumer Values: The List of Values (LOV) and Values and Life Style (VALS). *Journal of Consumer Research, 13*(3), 405-409.

Kaiser, F. G., Byrka, K., és Hartig, T. (2010). Reviving Campbell's Paradigm for Attitude Research. *Personality and Social Psychology Review, 14*(4), 351-367. doi: http://dx.doi.org/10.1177/1088868310366452

Kaiser, F. G., és Wilson, M. (2004). Goal-directed conservation behavior: the specific composition of a general performance. *Personality and Individual Differences 36*(7), 1531-1544. doi: http://dx.doi.org/10.1016/j.paid.2003.06.003

Kamakura, W. A., és Novak, T. P. (1992). Value-System Segmentation: Exploring the Meaning of LOV. *Journal of Consumer Research, 19*(1), 119-132.

Kaplan, S. (1995). The restorative benefits of nature: Toward an integrative framework. *Journal of Environmental Psychology, 15*(3), 169-182. doi: http://dx.doi.org/10.1016/0272-4944(95)90001-2

Kaplan, S. (2000). Human Nature and Environmentally Responsible Behavior. *Journal of Social Issues, 56*(3), 491-508. doi: http://dx.doi.org/10.1111/0022-4537.00180

Karp, D. G. (1996). Values and their effect on pro-environmental behavior. *Environment & Behavior, 28*(1), 111-133. doi: http://dx.doi.org/10.1177/0013916596281006

Kellert, S. R. (1993). Attitudes, knowledge, and behavior toward wildlife among the industrial superpowers: United States, Japan, and Germany. *Journal of Social Issues, 49*(1), 53-69. doi: http://dx.doi.org/10.1111/j.1540-4560.1993.tb00908.x

Kellert, S. R. (2002). Experiencing Nature: Affective, Cognitive, and Evaluative Development in Children Kahn, P. H. és Kellert, S. R. (Eds.), *Children and Nature. Psychological, Sociocultural, and Evolutionary Investigations* (pp. 117-152). Cambridge, Massachusetts: The MIT Press

Kerekes, S. (2011). Boldogság, környezetvédelem és piacgazdaság Csutora, M. és Hofmeister-Tóth, Á. (Eds.), *Fenntartható fogyasztás?* (pp. 4-10). Budapest: Aula Nyomda (ISBN:978-963-503-465-9).

Kerekes, S. (2012). A környezetügy ötven éve Kerekes, S. és Csutora, M. (Eds.), *Fenntartható fogyasztás? Trendek és lehetőségek Magyarországon* (pp. 9-20). Budapest: AULA Kiadó

Ketskeméty, L., Izsó, L., és KönyvesTóth, E. (2011). *Bevezetés az IBM SPSS Statistics programrendszerbe* (3 ed.). Budapest: Artéria Stúdió Kft. (ISBN:978-963-08-1100-2).

Kiesling, F. M., és Manning, C. M. (2010). How green is your thumb? Environmental gardening identity and ecological gardening practices. *Journal of Environmental Psychology, 30*(3), 315-327. doi: http://dx.doi.org/10.1016/j.jenvp.2010.02.004

Kilbourne, W. E., és Beckmann, S. C. (1998). Review and critical assessment of research on marketing and the environment. *Journal of Marketing Management, 14*, 513-532.

Kiss, A., és Pikó, B. (2004). Az elidegenedett én a modern, fogyasztói társadalomban. *Valóság, XLVII*(7).

Kleine, R. E., Kleine, S. S., és Kernan, J. B. (1993). Mundane consumption and the self: A social identity perspective. *Journal of Consumer Psychology, 2*(3), 209-235. doi: http://dx.doi.org/10.1016/S1057-7408(08)80015-0

Koger, S. M., és Scott, B. A. (2007). Psychology and environmental sustainability: a call for integration. *Teaching of psychology, 34*(1), 10-18.

Kollmuss, A., és Agyeman, J. (2002). Mind the gap: why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental Education Research, 8*(3), 239-260.

Kónya, A. (Ed.). (1990). *Az emberi emlékezet pszichológiai elméletei*. Budapest: Tankönyvkiadó.

Kotler, P., és Zaltman, G. (1971). Social Marketing: an Approach to Planned Social Change. *Journal of Marketing, 35*(3), 3-12.

Kraus, S. J. (1995). Attitudes and the Prediction of Behavior: A Meta-Analysis of the Empirical Literature. *Personality and Social Psychology Bulletin, 21*(1), 58-75. doi: http://dx.doi.org/10.1177/0146167295211007

Kuhn, M. H. (1964). Major trends in symbolic interaction theory in the past twenty-fi ve years. *The Sociological Quarterly, 5*, 61–84.

Kurucz, I. (2012). Hogyan tovább, internetpenetráció? *Marketingkutató, 1*(3), 23-25. Retrieved from marketingkutato.hu website: http://marketingkutato.hu/kurucz-imre-hogyan-tovabb-internetpenetracio/

Lányi, A. (2007). *A fenntartható társadalom*. Budapest: L'Harmattan.

Lányi, K. (2008). *A környezetvédő viselkedés és az egészségviselkedés összefüggése.* doktori disszertáció, Debreceni Egyetem, Debrecen.

Laroche, M., Bergeron, J., és Barbaro-Forleo, G. (2001). Targeting consumers who are willing to pay more for environmentaly friendly products. *Journal of Consumer Marketing, 18*(6), 503-520. doi: http://dx.doi.org/10.1108/EUM0000000006155

Laverie, D. A., Kleine, R. E., és Kleine, S. S. (2002). Re-examination and extension of Kleine, Kleine, and Kernan's Social identity model of mundane consumption: The mediating role of the appraisal process. *Journal of Consumer Research, 28*(4), 659-669. doi: http://dx.doi.org/10.1086/338208

Leary, M. R. (2007). Motivational and emotional aspects of the self. *Annual Review of Psychology, 58*, 317-344.

Leary, M. R., és Tangney, J. P. (2003). *Handbook of self and identity* New York: The Guilford Press.

Leonidou, L. C., Leonidou, C. N., és Kvasova, O. (2010). Antecedents and outcomes of consumer environmentally friendly attitudes and behaviour. *Journal of Marketing Management, 26*(13-14), 1319-1344. doi: http://dx.doi.org/10.1080/0267257X.2010.523710

Leopold, A. C. (1949). *A Sand County Almanac*. New York: Oxford University Press.

Leopold, A. C. (2004). Living with the Land Ethic. *BioScience, 54*(2), 149-154. doi: http://dx.doi.org/10.1641/0006-3568(2004)054[0149:LWTLE]2.0.CO;2

Levin, J. D. (1992). *Theories of the Self* Washington, DC: Hemisphere Publisher Corporation.

Levitt, L., és Leventhal, G. (1986). Litter reduction: How effective is the New York State Bottle Bill? *Environment and Behavior, 18*(4), 467–479. doi: http://dx.doi.org/10.1177/0013916586184003

Lewis, J. D., és Smith, R. L. (1980). *American sociology and pragmatism: Mead, Chicago sociology, and symbolic interaction*. Chicago: University of Chicago Press.

Maccoby, N., és Maccoby, E. E. (1961). Homeostatic Theory in Attitude Change. *The Public Opinion Quarterly, 25*(4), 538-545. doi: http://dx.doi.org/10.1086/267049

Madrigal, R. (2001). Social identity effects in a belief - attitude - intentions hierarchy: Implications for corporate sponsorship *Psychology and Marketing, 18*(2), 145-165. doi: http://dx.doi.org/10.1002/1520-6793(200102)18:2<145::AID-MAR1003>3.0.CO;2-T

Maison, D., Greenwald, A. G., és Bruin, R. (2001). The Implicit Association Test as a measure of implicit consumer attitudes. *Polish Psychological Bulletin, 32*(1), 61-69.

Malhotra, N. K., és Simon, J. (2009). *Marketingkutatás*. Budapest: Akadémiai Könyvkiadó.

Maloney, M. P., és Ward, M. P. (1973). Ecology: Let's hear from the people: An objective scale for the measurement of ecological attitudes and knowledge. *American Psychologist, 28*(7), 583-586. doi: http://dx.doi.org/10.1037/h0034936

Markus, H., és Cross, S. (1990). The interpersonal self Pervin, L. A. (Ed.), *Handbook of Personality* (pp. 576–608). New York: Guilford Press

Mayer, F. S., és Frantz, C. M. (2004). The connectedness with nature scale: a measure of individuals' feeling in community with nature. *Journal of Environmental Psychology, 24*(4), 503-515. doi: http://dx.doi.org/10.1016/j.jenvp.2004.10.001

Mayer, F. S., Frantz, C. M., Bruehlman-Senecal, E., és Dolliver, K. (2009). Why Is Nature Beneficial? *Environment and Behavior, 41*(5), 607-643. doi: http://dx.doi.org/10.1177/0013916508319745

McBroom, W. H., és Reed, F. W. (1992). Toward a Reconceptualization of Attitude-Behavior Consistency. *Social Psychology Quarterly, 55*(2), 205-216.

McCall, G. J. (2013). Interactionist Perspectives in Social Psychology DeLamater, J. és Ward, A. (Eds.), *Handbook of Social Psychology*. Dortrecht: Springer

McGuire, W. J. (1979). Az attitűdök természete és az attitűdváltozás Halász, L., Hunyady, G. és Marton, M. L. (Eds.), *Az attitűd pszichológiai kutatásának kérdései* (pp. 57-104). Budapest: Akadémiai Kiadó

McGuire, W. J., és McGuire, C. V. (1988). Content and process in the experience of self Berkowitz, L. (Ed.), *Advances in experimental social psychology* (Vol. 21, pp. 97-144). New York: Academic Press

McKenzie-Mohr, D. (2000). Promoting Sustainable Behavior: An Introduction to Community-Based Social Marketing. *Journal of Social Issues, 56*(3), 543-554.

McKenzie-Mohr, D., Nemiroff, L. S., Beers, L., és Desmarais, S. (1995). Determinants of responsible environmental behavior. *Journal of Social Issues, 51*(4), 139-156.

McKibben, W. (1989). *The end of nature*. New York: Random House.

Mead, G. H. (2000). A pszichikum, az én és a társadalom szociálbehaviorista szempontból Felkai, G., Némedi, D. és Somlai, P. (Eds.), *Olvasókönyv a szociológia történetéhez. Szociológiai irányzatok a XX. század elejéig* (pp. 258-271). Budapest: Új Mandátum Könyvkiadó

Meffert, H., és Kirchgeorg, M. (1993). *Marktorientiertes Umweltmanagement. Grundlagen und Fallstudien*. Stuttgart: Schäffer Verlag.

Merchant, C. (1992). *Radical ecology: The search for a livable world*. New York: Routledge, Chapman and Hall.

Milfont, T. L., és Duckitt, J. (2004). The structure of environmental attitudes:A first- and second-order confirmatory factor analysis. *Journal of Environmental Psychology 24*(3), 289-303. doi: http://dx.doi.org/10.1016/j.jenvp.2004.09.001

Moisander, J. (2007). Motivational complexity of green consumerism. *International Journal of Consumer Studies, 31*(4), 404-409. doi: http://dx.doi.org/10.1111/j.1470-6431.2007.00586.x

Naess, A. (1985). Identification as a source of deep ecological attitudes Tobais, M. (Ed.), *Deep ecology* (pp. 256-270). San Diego: Avant Books

Naess, A. (2005). Önmegvalósítás Lányi, A. és Jávor, B. (Eds.), *Környezet és Etika* (pp. 221-236). Budapest: L'Harmattan Kiadó

Nagy, S., Piskóti, I., Molnár, L., és Marien, A. (2012). The relationship between values and general environmental behaviour. *Economics and Management, 17*(1), 272-278. doi: http://dx.doi.org/10.5755/j01.em.17.1.2278

NationalGeographics, és Globescan (2012). Greendex 2012: Consumer Choice and the Environment - A Worldwide Tracking Survey. Elérhető: http://environment.nationalgeographic.com/environment/greendex/

NationalGeographics, és Globescan (2014). Greendex 2014: Consumer Choice and the Environment – A Worldwide Tracking Survey. Elérhető: http://images.nationalgeographic.com/wpf/media-content/file/2014_Global_Report-cb1411689801.pdf

Nelson, M. R., Shavitt, S., Schennum, A., és Barkmeier, J. (1997). Prediction of long-term advertising effectiveness: New cognitive response approaches Wells, W. D. (Ed.), *Measuring advertising effectiveness: Advertising and consumer*

psychology (pp. 133-155). Mahwah, New Jersey: Lawrence Erlbaum Associates, Inc,

Neulinger, Á. (2001). Fogyasztói értékek és vásárlói magatartás. *Marketing és Menedzsment, 35*(1), 30-36.

NFFT (2010). Jövőkereső. A Nemzeti Fenntartható Fejlődési Tanács jelentése a magyar társadalomnak.

Nielsen (2011). Sustainable Efforts and Environmental Concerns around the World. Elérhető: http://www.nielsen.com/us/en/insights/reports-downloads/2011/sustainable-efforts-environmental-concerns.html

Nisbet, E. K., Zelenski, J. M., és Murphy, S. A. (2009). The Nature Relatedness Scale. *Environment and Behavior, 41*(5), 715-740. doi: http://dx.doi.org/10.1177/0013916508318748

Norusis, M. J. (1993). *SPSS for Windows: Base System User's Guide*. Englewood Cliffs: Prentice Hall. (ISBN:0131788566, 9780131788565).

Nosek, B. A., Hawkins, C. B., és Frasier, R. S. (2011). Implicit social cognition: from measures to mechanisms. *Social Trends in Cognitive Sciences, 15*(4), 152–159. doi: http://dx.doi.org/10.1016/j.tics.2011.01.005

Nunnally, J. C. (1967). *Psychometric theory*. New York: McGraw-Hill. (ISBN:0070474656).

Oakes, P. J., Haslam, S. A., és Turner, J. C. (1999). Megismerés és csoport: társas identitás és önkategorizáció Hunyady, G., Hamilton, D. L. és Nguyen Luu, L. A. (Eds.), *A csoportok percepciója* (pp. 446-470). Budapest: Akadémiai Kiadó

Olivos, P., és Aragonés, J.-I. (2011). Psychometric properties of the Environmental Identity Scale (EID). *Psyecology, 2*(1), 65-74. doi: http://dx.doi.org/10.1174/217119711794394653

Olivos, P., Aragonés, J.-I., és Amérigo, M. (2011). The Connectedness to nature Scale and its relationship wuth Environmental Beliefs and Identity. *International Journal of Hispanic Psychology, 4*(1), 5-19.

Olson, J., és Zanna, M. (1993). Attitudes and attitude change. *Annual Review of Psychology, 44*, 117–154. doi: http://dx.doi.org/10.1146/annurev.ps.44.020193.001001

Opotow, S., és Clayton, S. (1994). Green justice: conceptions of fairness and the natural world. *Journal of Social Issues, 50*(3), 1-11. doi: http://dx.doi.org/10.1111/j.1540-4560.1994.tb02416.x

Ottman, J. (2011). *The New Rules of Green Marketing: Strategies, Tools, and Inspiration for Sustainable Branding*. Sheffield: Greenleaf Publishing Limited.

Owens, T. J., és Samblanet, S. (2013). Self and Self-Concept DeLamater, J. és Ward, A. (Eds.), *Handbook of Social Psychology* (pp. 225-250). Dordrecht: Springer

Ölander, F., és Thøgersen, J. (1995). Understanding Consumer Behaviour as Prerequisite for Environmental Protection. *Journal of Consumer Policy, 18*(4), 345-385. doi: http://dx.doi.org/10.1007/BF01024160

Palmer, J. A. (1993). Development of concern for the environment and formative experiences of educators. *The Journal of Environmental Education, 24*(3), 26-30. doi: http://dx.doi.org/10.1080/00958964.1993.9943500

Palmer, J. A., és Suggate, J. (1996). Influences and experiences affecting the pro-environmental behavior of educators. *Environmental Education Research, 2*(1), 109-121. doi: http://dx.doi.org/10.1080/1350462960020110

Pataki, F. (2008). Az "eltünt én" nyomában. *Magyar Pszichológiai Szemle, 63*(3), 409-470. doi: http://dx.doi.org/10.1556/MPSzle.63.2008.3.1

Perkins, A., Forehand, M., Greenwald, A., és Maison, D. (2008). Measuring the Nonconscious: Implicit Social Cognition in Consumer Behavior Haugtvedt, C. P.-., Herr, P. M. és Kardes, F. R. (Eds.), *Handbook of Consumer Psychology*. New York: Taylor & Francis Group, LLC

Perrin, J. L., és Benassi, V. A. (2009). The connectedness to nature scale: A measure of emotional connection to nature? *Journal of Environmental Psychology, 29*(4), 434-440. doi: http://dx.doi.org/10.1016/j.jenvp.2009.03.003

Piskóti, M. (2013). Nature and Self - The presence of Environmental Identity in narratives in Hungary. *Global Business & Economics Anthology, 1*, 262-274.

Rauwald, K. S., és Moore, C. F. (2002). Environmental attitudes as predictors of policy support across three countries *Environment and Behavior, 34*(6), 709–739. doi: http://dx.doi.org/10.1177/001391602237243

Raykov, T. (1998). Cronbach's Coefficient Alpha and the reliability of composite scales with interrelated non-homogeneous items. *Applied Psychological Measurement, 22*, 375-385.

Raykov, T., és Grayson, D. A. (2003). A test for change of composite reliability in scale development. *Multivariate Behavioral Research, 38*, 143–159.

Reed, A. (2002). Social Identity as a Useful Perspective for Self-Concept-based Consumer Research. *Psychology & Marketing, 19*(3), 235-266. doi: 10.1002/mar.10011

Reed, A. (2004). Activating the self-importance of consumer selves: Exploring identity salience effects on judgments. *Journal of Consumer Research, 31*(2), 286–295. doi: http://dx.doi.org/10.1086/422108

Reed, A., és Forehand, M. (2003). *Social identity and marketing research: An integrative framework* Retrieved from https://marketing.wharton.upenn.edu/profile/204/research/?pubFilter=workingPaper

Roberts, J. A. (1996). Green consumers in the 1990s: profile and implications for advertising. *Journal of Business Research, 36*(3), 217-231. doi: http://dx.doi.org/10.1016/0148-2963(95)00150-6

Roberts, J. A., és Bacon, D. R. (1997). Exploring the subtle relationships between environmental concern and ecologically conscious consumer behavior. *Journal of Business Research, 40*(1), 79-89.

Rokeach, M. (1973). *The nature of human values*. New York: Free Press.

Rosenberg, M. J., és Hovland, C. I. (1960). Cognitive, affective and behavioral components of attitudes Hovland, C. I. és Rosenberg, M. J. (Eds.), *Attitude organisation and change*. New Haven: Yale University Press

Roszak, T. (1992). *The voice of the earth: An exploration of eco-psychology*. New York: Simon & Schuster.

Roszak, T., Gomes, M. E., és Kanner, A. D. (Eds.). (1995). *Ecopsychology: Restoring the earth, healing the mind*. San Francisco: Sierra Club Books.

Ryan, M., és Bate, A. (2001). Testing the Assumptions of Rationality, Continuity and Symmetry when applying discrete choice experiments in health care. *Applied Economics, 8*(1), 59-63. doi: http://dx.doi.org/10.1080/135048501750041312

Sajtos, L., és Mitev, A. (2007). *SPSS kutatási és adatelemzési kézikönyv*. Budapest: Alinea Kiadó.

Schuett, M. A., és Ostergren, D. (2003). Environmental concern and involvment of individuals in selected voluntary associations. *The Journal of Environmental Education, 34*(4), 30-38. doi: http://dx.doi.org/10.1080/00958960309603485

Schultz, P. W. (2000). Empathizing With Nature: The Effects of Perspective Taking on Concern for Environmental Issues. *Journal of Social Issues, 56*(3), 391-406. doi: http://dx.doi.org/10.1111/0022-4537.00174

Schultz, P. W. (2001). The Structure of Environmental Concern: Concern for Self, Other People, and the Biosphere. *Journal of Environmental Psychology, 21*(4), 327-339. doi: http://dx.doi.org/10.1006/jevp.2001.0227

Schultz, P. W., Gouveia, V. V., Cameron, L. D., Tankhur, G., Schmuck, P., és Franeˇk, M. (2005). Values and their relationship to environmental concern and conservation behaviour. *Journal of Cross-Cultural Psychology, 36*(4), 457–475. doi: http://dx.doi.org/10.1177/0022022105275962

Schultz, P. W., és Oskamp, S. (1996). Effort as a Moderator of the Attitude-Behavior Relationship: General Environmental Concern and Recycling. *Social Psychology Quarterly, 59*(4), 375-383.

Schultz, P. W., Shriver, C., Tabanico, J. J., és Khazian, A. M. (2004). Implicit connections with nature. *Journal of Environmental Psychology, 24*(1), 31-42. doi: http://dx.doi.org/10.1016/S0272-4944(03)00022-7

Schultz, P. W., és Tabanico, J. J. (2007). Self, Identity, and Natural Environment: Exploring Implicit Connections with Nature. *Journal of Applied Social Psychology, 37*(6), 1219-1247. doi: http://dx.doi.org/10.1111/j.1559-1816.2007.00210.x

Schultz, P. W., és Zelezny, L. (1999). Values as Predictors of Environmental Attitudes: Evidence for Consistency across 14 Countries. *Journal of Environmental Psychology, 19*(3), 255-265. doi: http://dx.doi.org/10.1006/jevp.1999.0129

Schwartz, J., és Miller, T. (1991). The earth's best friends. *American Demographics, 13*(2), 26-35.

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

Schwartz, S. H. (1992). Universals in the content of and the structure of values: Theoretical advances and empirical tests in 20 countries Zanna, M. (Ed.), *Advances in Experimental Social Psychology* (pp. 1-65). Orlando, FL: Academic Press

Schwartz, S. H. (1994). Are there universal aspects in the structure and contents of human values? *Journal of Social Issues, 50*(4), 19-45. doi: http://dx.doi.org/10.1111/j.1540-4560.1994.tb01196.x

Schwartz, S. H. (1999). A Theory of Cultural Values and Some Implications for Work. *Applied Psychology: An International Review, 48*(1), 23-47. doi: http://dx.doi.org/10.1111/j.1464-0597.1999.tb00047.x

Schwartz, S. H. (2007). Basic Human Values: theory, methods, and application. *RISORSA UOMO, 2*, 261-283.

Schwartz, S. H., és Howard, J. A. (1980). Explanations of the moderating effect of responsibility denial on the personal norm-behavior relationship. *Social Psychology Quarterly, 43*, 441–446.

Schwartz, S. H., és Howard, J. A. (1982). Helping and cooperation: A selfbased motivational model Derlega, V. J. és Grzelak, J. (Eds.), *Cooperation and helping behavior: Theories and research* (pp. 327–353). New York: Academic press

Scitovsky, T. (1990). *Az örömtelen gazdaság. Gazdaságlélektani alapvetések*. Budapest: Közgazdasági és Jogi Könyvkiadó.

Sheth, J. N., Sethia, N. K., és Srinivas, S. (2011). Mindful consumption: a customer - centric approach to sustainability. *Journal of the Academy of Marketing Science, 39*(1), 21-39. doi: http://dx.doi.org/10.1007/s11747-010-0216-3

Simmons, D. D., Binney, S. E., és Dodd, B. (1992). Valuing "a clean environment.". *Journal of Social Behavior and Personality, 7*, 649-658.

Simmons, I. G. (1993). *Interpreting nature: Cultural constructions of the environment*. New York: Routledge.

Smith, A. (1759). *The theory of moral sentiments*. London: W. Strahan.

Smith, E. R., és Mackie, D. M. (2004). *Szociálpszichológia*. Budapest: Osiris Kiadó.

Smith, R. E., és Swinyard, W. R. (1983). Attitude-Behavior Consistency: The Impact of Product Trial Versus Advertising. *Journal of Marketing Research, 20*(3), 257-267. doi: http://dx.doi.org/10.2307/3151829

Solomon, M. R. (1983). The role of products as social stimuli: A symbolic interactionism perspective. *Journal of Consumer Research, 10*(3), 319-329.

Somogyi, M., és Bernáth, L. (2014). A Rassz Implicit Asszociációs Teszt interneten gyűjtött adatainak elemzése magyar mintán. *Alkalmazott Pszichológia, 14*(1), 73-92.

Sparks, P., és Guthrie, C. A. (1998). Self-identity and the theory of planned behavior: A useful addition or an unhelpful artifice? *Journal of Applied Social Psychology, 28*(15), 1393–1410. doi: http://dx.doi.org/10.1111/j.1559-1816.1998.tb01683.x

Sparks, P., és Shepherd, R. (1992). Self-Identity and the Theory of Planned Behavior: Assesing the Role of Identification with "Green Consumerism". *Social Psychology Quarterly, 55*(4), 388-399.

Stayman, D. M., és Deshpande, R. (1989). Situational ethnicity and consumer behavior. *Journal of Consumer Research, 16*(3), 361–371.

Steg, L., és Vlek, C. (2009). Encouraging pro-environmental behaviour: An integrative review and research agenda. *Journal of Environmental Psychology, 29*(3), 309-317. doi: http://dx.doi.org/10.1016/j.jenvp.2008.10.004

Stern, P. C. (1999). Information, Incentives, and Proenvironmental Consumer Behavior. *Journal of Consumer Policy, 22*, 461-478.

Stern, P. C. (2000). New Environmental Theories: Toward a Coherent Theory of Environmentally Significant Behavior. *Journal of Social Issues, 56*(3), 407-424. doi: http://dx.doi.org/10.1111/0022-4537.00175

Stern, P. C. (2005). Understanding Individuals' Environmentally Significant Behavior. *Environmental Law Reporter, 35*(11).

Stern, P. C., Aronson, E., Darley, J. M., Hill, D. H., Hirst, E., Kempton, W., és Wilbanks, T. J. (1985). The effectiveness of incentives for residential energy conservation. *Evaluation Review, 10*(2), 147–176. doi: http://dx.doi.org/10.1177/0193841X8601000201

Stern, P. C., és Dietz, T. (1994). The value basis of environmental concern. *Journal of Social Issues, 50*(3), 65-84. doi: http://dx.doi.org/10.1111/j.1540-4560.1994.tb02420.x

Stern, P. C., Dietz, T., Abel, T., Guagnano, G. A., és Kalof, L. (1999). A Value-Belief-Norm Theory of Support for Social Movements: The Case of Environmentalism. *Research in Human Ecology, 6*(2), 81-97.

Stets, J. E., és Burke, P. J. (2003). A Sociological Approach to Self and Identity Leary, M. R. és Tangney, J. P. (Eds.), *Handbook of Self and Identity* (pp. 128-152). New York: The Guilford Press

Stets, J. E., és Serpe, R. T. (2013). Identity Theory DeLamater, J. és Ward, A. (Eds.), *Handbook of Social Psychology*. Dordrecht: Springer

Straughan, R. D., és Roberts, J. A. (1999). Environmental segmentation alternatives: a look at green consumer behavior in the new millennium. *Journal of Consumer Marketing, 16*(6), 558-575. doi: http://dx.doi.org/10.1108/07363769910297506

Stryker, S. (1987). Identity Theory: Developments and Extensions Yardley, K. és Honess, T. (Eds.), *Self and Identity* (pp. 89-104). New York: Wiley

Stryker, S. ([1980] 2002). *Symbolic interactionism: A social structural version*. Caldwell, NJ: Blackburn Press.

Stryker, S., és Burke, P. J. (2000). The past, present, and future of an identity theory. *Social Psychology Quarterly, 63*, 284 – 297.

Stryker, S., és Serpe, R. T. (1994). Identity salience and psychological centrality: Equivalent, overlapping, or complementary concepts? *Social Psychology Quarterly, 57*, 16–35.

Sudbury-Riley, L., Hofmeister-Toth, A., és Kohlbacher, F. (2014). A cross-national study of the ecological worldview of senior consumers. *International Journal of Consumer Studies, 38*(5), 500-509. doi: http://dx.doi.org/10.1111/ijcs.12126

SustainableConsumptionRoundtable (2006). I will if You will, Towards sustainable consumption.

Swann, W. B., Jr. , és Hill, C. A. (1982). When Our Identities Are Mistaken: Reaffirming Self Conceptions through Social Interaction. *Journal of Personality and Social Psychology, 43*, 59-66.

Swann, W. B. J., Chang-Schneider, C., és Larsen McClarty, K. (2007). Do people's self-views matter? Self-concept and self-esteem in everyday life. *American Psychologist, 62*, 84–94.

Székely, M. (2003). A fogyasztói magatartás alapjai: a lélek- és a gazdaságtan alapfeltevései a fogyasztásról Hunyady, G. és Székely, M. (Eds.), *Gazdaságpszichológia* (pp. 231-297). Budapest: Osiris Kiadó

Székelyi, M., és Barna, I. (2008). *Túlélőkészlet az SPSS-hez. Többváltozós elemzési technikákról társadalomkutatók számára*. Budapest: Typotex.

Szlávik, J. (2014). Lépések a fenntartható gazdálkodás irányába. Gondolatok Láng István és Kerekes Sándor Megalakult a Túlélés Szellemi Kör című vitairatához. *Magyar Tudomány, Január*, 99-109.

Szokolszky, Á. (2004). *Kutatómunka a pszichológiában*. Budapest: Osiris.

Tajfel, H. (1978). *Differentiation between Social Groups*. London: Academic Press.

Tajfel, H. (1982). Social psychology of intergroup relations. *Annual Review of Psychology, 33*, 1-39. doi: http://dx.doi.org/10.1146/annurev.ps.33.020182.000245

Tamás, P. (2006). Fenntartható Magyarország - Vázlatok egy zöld társadalompolitikáról Bulla, M. és Tamás, P. (Eds.), *Fenntartható fejlődés Magyarországon, Jövőképek és forgatókönyvek* (pp. 12-109). Budapest: Új Mandátum Könyvkiadó

Tanner, T. (1980). Significant life experiences. *The Journal of Environmental Education, 11*(4), 20-24. doi: http://dx.doi.org/10.1080/00958964.1980.9941386

Terry, D. J., Hogg, M. A., és White, M. A. (1999). The theory of planned behavior: Self-identity, social identity, and group norms. *British Journal of Social Psychology, 38*(3), 225–244. doi: http://dx.doi.org/10.1348/014466699164149

Theodorakis, Y. (1994). Planned behavior, attitude strength, role identity, and the prediction of exercise behavior. *The Sport Psychologist, 8*, 149–165.

Thøgersen, J. (2006). Norms for environmentally responsible behaviour: An extended taxonomy. *Journal of Environmental Psychology, 26*(4), 247–261. doi: http://dx.doi.org/10.1016/j.jenvp.2006.09.004

Thøgersen, J., és Ölander, F. (2002). Human values and the emergence of a sustainable consumption pattern: A panel study. *Journal of Economic Psychology, 23*, 605–630.

Thøgersen, J., és Ölander, F. (2003). Spillover of environment-friendly consumer behaviour. *Journal of Environmental Psychology, 23*(3), 225–236. doi: http://dx.doi.org/10.1016/S0272-4944(03)00018-5

Thøgersen, J., és Ölander, F. (2006). To what degree are environmentally beneficial choices reflective of a general conservation stance? . *Environment and Behavior, 38*, 550–569.

Thomashow, M. (1995). *Ecological Identity: Becoming a reflective environmentalist*. Cambridge, Massachusetts: MIT Press.

Thorbjørnsen, H., Pedersen, P. E., és Nysveen, H. (2007). "This Is Who I Am": Identity Expressiveness and the Theory of Planned Behavior. *Psychology and Marketing, 24*(9), 763-785. doi: http://dx.doi.org/10.1002/mar.20183

Torgler, B., és García-Valiñas, M. A. (2007). The determinants of individuals' attitudes towards preventing environmental damage. *Ecological Economics, 63*(2-3), 536–552. doi: http://dx.doi.org/10.1016/j.ecolecon.2006.12.013

Turner, R. H. (1978). The role and the person. *The American Journal of Sociology, 84*, 1–23.

UNEP. (2001). Fenntartható fogyasztási lehetőségek. Retrieved from http://www.rec.hu/hftf/doc/SCOPEhu.pdf

Vadovics, E. (2007). *Alulról jövő kezdeményezések („kreatív közösségek") tanulsága és üzenete a fenntartható fogyasztást meghatározó politikák és kutatás számára*. Konferencia cikk a Fenntartható Fogyasztás Magyarországon 2007 konferencián, Budapest.

Valkó, L. (2003). *Fenntartható/környezetbarát fogyasztás és a magyar lakosság környezeti tudata* [The sustainable/ environmentally friendly consumption and the environmentally consciousness of the Hungarian population]. Budapest: A Budapesti Közgazdaságtudományi és Államigazgatási Egyetem Környezettudományi Intézet.

Vermeir, I., és Verbeke, W. (2006). Sustainable food consumption: Exploring the consumer "attitude - behavioral intention" gap. *Journal of Agricultural and Environmental Ethics, 19*(2), 169-194. doi: http://dx.doi.org/10.1007/s10806-005-5485-3

Watson, J. J., és Wright, K. (2000). Consumer ethnocentrism and attitudes toward domestic and foreign products. *European Journal of Marketing, 34*(9-10), 1149-1166. doi: http://dx.doi.org/10.1108/03090560010342520

Webster, F. E. (1975). Determining the characteristics of the Socially Conscious Consumer. *Journal of Consumer Research, 2*(3), 188-196.

WEF (2011). The Consumption Dilemma. Leverage Points for Accelerating Sustainable Growth. Elérhető: http://www.weforum.org/reports/consumption-dilemma-leverage-points-accelerating-sustainable-growth

Werner, C. M., Turner, J., Shipman, K., Shawn Twitchell, F., Dickson, B. R., Bruschke, G. V., és von Bismarck, W. B. (1995). Commitment, behavior, and attitude change: An analysis of voluntary recycling. *Journal of Environmental Psychology, 15*(3), 197-208. doi: http://dx.doi.org/10.1016/0272-4944(95)90003-9

Wheeler, C. S., és Berger, J. (2007). When the same prime leads to different effects. *Journal of Consumer Research, 34*(3), 357–368. doi: 10.1086/518547

Wheeler, S. C., Petty, R. E., és Bizer, G. Y. (2005). Self-Schema Matching and Attitude Change: Situational and Dispositional Determinants of Message

Elaboration. *Journal of Consumer Research, 31*(4), 787-797. doi: http://dx.doi.org/10.1086/426613

Whitmarsh, L., és O'Neill, S. (2010). Green identity, green living? The role of pro-environmental self-identity in determining consistency across diverse pro-environmental behaviours. *Journal of Environmental Psychology, 30*(3), 305-314. doi: http://dx.doi.org/10.1016/j.jenvp.2010.01.003

Wilson, E. O. (1984). *Biophilia: The human bond with other species*. Cambridge, Mass.: Harvard University Press.

Winter, D. D. N., és Koger, S. M. (2004). *The psychology of environmental problems*. Mahwah, New Jersey: Lawrence Erlbaum Associates, Inc.

Zavestoski, S. (2003). Constructing and Maintaining Ecological Identities Clayton, S. és Opotow, S. (Eds.), *Identity and the Natural Environment: the psychological significance of nature* (pp. 297-316). Cambridge, Massachusetts: The MIT Press

Zelezny, L. C., Chua, P. P., és Aldrich, C. (2000). Elaborating on gender differences in environmentalism. *Journal of Social Issues, 56*(3), 443-457. doi: http://dx.doi.org/10.1111/0022-4537.00177

Zhang, Y., és Khare, A. (2009). The Impact of Accessible Identities on the Evaluation of Global versus Local Products. *Journal of Consumer Research, 36*(3), 524-537. doi: http://dx.doi.org/10.1086/598794

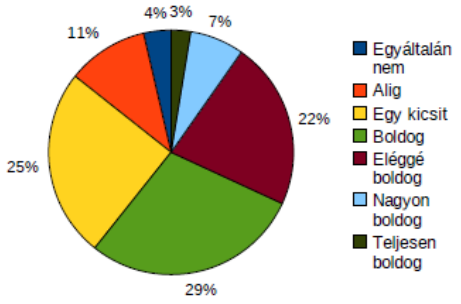
Zsóka, Á., MarjainéSzerényi, Z., Széchy, A., és Kocsis, T. (2013). Greening due to environmental education? Environmental knowledge, attitudes, consumer behavior and everyday pro-environmental activities of Hungarian high school and university students. *Journal of Cleaner Production, 48*(June), 126-138. doi: http://dx.doi.org/10.1016/j.jclepro.2012.11.030

Zsóka, Á. N. (2007). *A fenntartható fogyasztás alapfeltétele: a környezettudatos egyéni magatartás*. Konferencia cikk a Fenntartható fogyasztás Magyarországon 2007 konferencián, Budapest. http://www.tve.hu/attachment/file/31/Fenntarthato_fogyasztas_konferenciakotet.pdf

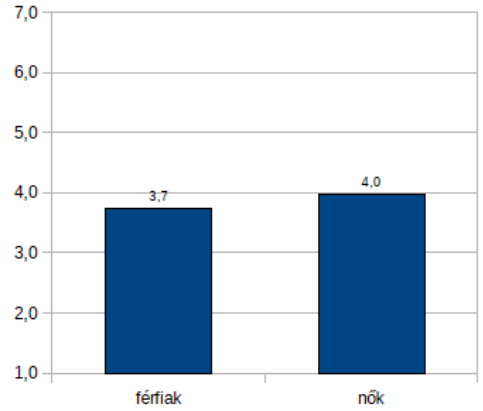
ANNEX

1. ANNEX: ACCORDING TO KSH (NATIONAL STATISTICS OFFICE) FIGURES ON THE HAPPINESS IN HUNGARY, SOURCE: NFFT 2010, P. 99-100.

1 – egyáltalán nem boldog; **2** – alig boldog; **3** – egy kicsit boldog; **4** – boldog;
5 – eléggé boldog; **6** – nagyon boldog; **7** – teljesen boldog

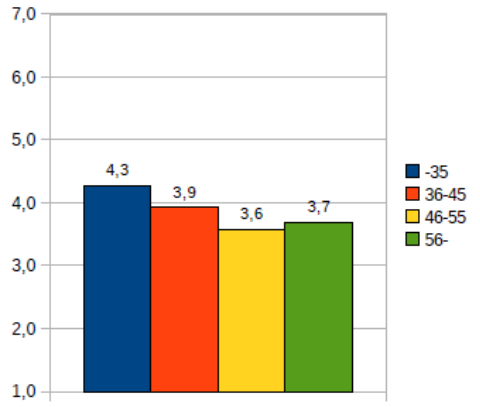


104. ábra **Mennyire boldog a magyar ember?**

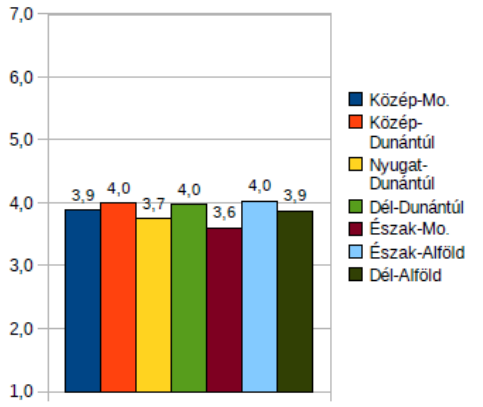


105. ábra **A férfiak és nők boldogságindexe**

1 – egyáltalán nem boldog; **2** – alig boldog; **3** – egy kicsit boldog; **4** – boldog;
5 – eléggé boldog; **6** – nagyon boldog; **7** – teljesen boldog



106. ábra **Boldogságindex korcsoportonként**



107. ábra **Boldogságindex régiónként**

2. ANNEX: ENVIRONMENTAL IDENTITY SCALE, 24 ITEMS

To what extent do you agree with the following items? (1=completely disagree; ... ; 5=fully agree)

1. I spend a lot of time in natural settings (woods, mountains, desert, lakes, ocean).
2. Engaging in environmental behaviours is important to me.
3. I think of myself as a part of nature, not separate from it.
4. If I had enough time or money, I would certainly devote some of it to working for environmental causes.
5. When I am upset or stressed I can feel better by spending some time outdoors "communing with nature."
6. Living near wildlife is important to me; I would not want to live in a city all the time.
7. I have a lot in common with environmentalists as a group.
8. I believe that some of today's social problems could be cured by returning to a more rural life-style in which people live in harmony with the land.
9. I feel that I have a lot in common with other species.
10. My own interests usually seem to coincide with the position advocated by environmentalists.
11. Being a part of the ecosystem is an important part of who I am.
12. I feel that I have roots to a particular geographic location that had a significant impact on my development.
13. Behaving responsibly toward the Earth—living a sustainable lifestyle—is part of my moral code.
14. Learning about the natural world should be an important part of every child's upbringing.
15. Being part of the natural world is an important part of my self-image.
16. I'd rather live in a small room or house with a nice view than in a bigger room or house facing other buildings.
17. I really enjoy camping and hiking outdoors.
18. Sometimes I feel like parts of nature—certain trees, or storms, or mountains—have a personality of their own.
19. I would feel that an important part of my life was missing if I was not able to get out and enjoy nature from time to time.
20. I take pride in the fact that I could survive outdoors on my own for a few days.
21. I have never seen a work of art that is as beautiful as a work of nature, like a sunset or a mountain range.
22. I like to garden.
23. I feel that I receive spiritual sustenance from experiences with nature.
24. I keep mementos from the outdoors in my room, such as shells or rocks or feathers.

3. ANNEX: ENVIRONMENTAL IDENTITY SCALE, 11 ITEMS

To what extent do you agree with the following items? (1=completely disagree; ... ; 5=fully agree)

1. I spend a lot of time in natural settings (woods, mountains, desert, lakes, ocean).
2. I think of myself as a part of nature, not separate from it.
3. If I had enough time or money, I would certainly devote some of it to working for environmental causes.
4. If I am upset or stressed I can feel better by spending some time outdoors "communing with nature."
5. I feel that I have a lot in common with other species.
6. Behaving responsibly toward the Earth—living a sustainable lifestyle—is part of my moral code.
7. Learning about the natural world should be an important part of every child's upbringing.
8. I'd rather live in a small room or house with a nice view than in a bigger room or house with a view of other buildings.
9. I would feel that an important part of my life was missing if I was not able to get out and enjoy nature from time to time.
10. I have never seen a work of art that is as beautiful as a work of nature, like a sunset or a mountain range.
11. I feel that I receive spiritual sustenance from experiences with nature.

4. ANNEX: QUOTES FROM THE NARRATIVE ANALYSIS TO INTERPRET NATURE:

Interpretation of nature.	*"It was raining so heavily which I have never seen since then." The wind was blowing so strongly almost twisting the plants in our garden. And then a loud thunderstorm began. "I felt so miserably alone and literally scared."(25-year-old female, county seat)*
	"Clean salty water, cool wind, light sandy beach and the harmony of the palm trees above us are unforgettable" Although I was a small child, it was such a mystical feeling to see all these. This may not be the most proper description but comes from my heart: I felt peace and exposure to the tremendous water at the same time I still have this feeling any time I am on the seaside, and I love this feeling because it clears my head from the every day's problems and it helps me to think of myself." (23-year-old female, county seat)
Timeliness of the stories	*"Nature has always played an important role in my life, since I live near Bükk hills and we went hiking with my parents since early childhood. Until the age of 10-12 we went hiking every winter, and picked snow flowers." (23-year-old female, county seat)*
	"When I was a child going to elementary school, I could join organized tours, so called "Tour camp"."(23-year-old male, Budapest)
	I admit I was scared because it was darker in the wood than I expected. The Moon did not give us much light through the thick leaves, but at least I saw the trekking path." (23-year-old female, Budapest
Social characteristics of the stories	*"I think that nature alone is amazing, can show wonderful colours, trees and plants are amazing, but I enjoy nature the best if am with my beloved and can show them what I like." (23-year-old female, city)*
	"I like being alone in the nature concentrating on my thoughts" (24-year-old female, village)
Positive emotions	*"We were so much impressed when we arrived that, is was so beautiful, so picturesque. Our room had view to the see and it was such a nice feeling to sniff the salty see breeze" (23-year-old female, Budapest)*
	"It was a deliberating feeling that it was just us being there, nobody disturbed us" (23-year-old female, county seat)
	"To be really honest, on this tour the challenge is not to find the right directions, to tackle natural obstacles but to win ourselves." You should be physically and mentally well-prepared for this tour: if you have pain everywhere then you need a real willpower. I tend to listen to birds singing instead or just let myself be impressed by nature" (23-year-old female, village)

Biographical elements	*"I have always been loving water, I feel home in the water, maybe because I spent all my summers in my childhood near the water, and maybe because I was a swimmer for years at a swimming club." (23-year-old female, Budapest)*
Salience	*"I regularly go hiking and visit forests, I am always should be close to nature" (24-year-old female, village)*
Identification	*"First in my life I really felt the closest to nature, I felt that being lost in the forest would not make me die of hunger, the forest is there to protect me, at least from starvation" (23-year-old female, county seat)*
Ideology	*"I was so nice to grow up in such environment, I believe that I really had a happy childhood. If I will have a child, I would like to ensure similar conditions" (23-year-old female, county seat)*

5. ANNEX: DESCRIPTIVE STATISTICS OF THE NR SCALE

NR scale	**N**	**M**	**SD**
NR_1 I enjoy being outdoors, even in unpleasant weather.	297	2.71	1.144
NR_2 Some species are just meant to die out or become extinct.	297	2.07	1.227
NR_3 Humans have the right to use natural resources anyway we want.	297	1.84	,978
NR_4 My ideal vacation spot would be a remote, wilderness area.	297	2.56	1.129
NR_5 I always think about how my actions affect the environment.	297	2.69	,979
NR_6 I enjoy digging in the earth and getting dirt on my hand.	297	2.40	1.251
NR_7 My connection to nature and the environment is a part of my spirituality.	297	2.74	1.184
NR_8 I am very aware of environmental issues.	297	2.54	,972
NR_9 I take notice of wildlife wherever I am.	297	3.09	1.104
NR_10 I do not often go out in nature.	297	2.63	1.138
NR_11 Nothing I do will change problems in other places on the planet.	297	2.70	1.191
NR_12 I am not separate from nature, but a part of nature.	297	3.26	1.080
NR_13 The thought of being deep in the woods, away from civilization, is frightening.	297	2.73	1.300
NR_14 My feelings about nature do not affect how I live my life.	297	2.86	1.109
NR_15 Animals, birds and plants should have fewer rights than humans.	297	2.55	1.281
NR_16 Even in the middle of the city, I notice nature around me.	297	3.67	1.010
NR_17 My relationship to nature is an important part of who I am.	297	2.98	1.117
NR_18 Conservation is unnecessary because nature is strong enough to recover from any human impact.	297	1.66	,910
NR_19 The state of nonhuman species is an indicator of the future for humans	297	3.26	1.095
NR_20 I think a lot about the suffering of animals.	297	2.57	1.220
NR_21 I feel very connected to all living things and the earth.	297	2.40	1.096

6. ANNEX: QUANTITATIVE QUESTIONNAIRE

Welcome to the questionnaire on the most recent study of NRC!

On behalf of Corvinus Universitiy of Budapest we conduct a survey on environmentally-friendly behaviour of the Hungarian population. Filling out the survey takes less than 30 minutes.

Thank you for supporting our research with your response.

Please help us in this research by sharing information with us. Information obtained will be handled according to the act on privacy and will not be disclosed to third party.

After the closure of the questionnaire, you will be randomly selected to win a gift.

K0a. You will find the list of items that are the most expected or sought by the most people. Please evaluate the following values based on how important they are in your life!

Please give you score by using a 9-point scale where 1 means "absolutely not important" and 9 means "very important".

	1. - Absolutely not important	2	3	4	5	6	7	8	9- Very important
Sense of belonging	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7	⊙8	⊙9
Warm relationships with others	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7	⊙8	⊙9
Self-fulfilment	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7	⊙8	⊙9
Being well-respected	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7	⊙8	⊙9
Fun and enjoyment of life	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7	⊙8	⊙9
Security	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7	⊙8	⊙9
Self-respect	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7	⊙8	⊙9
Protection of nature.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7	⊙8	⊙9
Sense of accomplishment	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7	⊙8	⊙9

K0b. Which listed values are the most important for you?

1. Sense of belonging
2. Warm relationships with others
3. Self-fulfilment
4. Being well-respected
5. Fun and enjoyment of life
6. Security
7. Self-respect
8. Protection of nature.
9. Sense of accomplishment

K1. There are no good or bad answers to the following questions, we are interested in your opinion regarding the following items.
To what extent do you agree with the following items?

Please give you score by using a 5-point scale where 1 means "completely disagree" and 5 means "fully agree".

	1. - completely disagree	2	3	4	5- fully agree
Government must undertake stronger action to remove toxic substances from the environment.	1	2	3	4	5
It is my personal obligation to prevent climate change.	1	2	3	4	5
It is my personal obligation to enhance the disposal of harmful materials from the air, water and soil.	1	2	3	4	5
To prevent climate change, both the business and industry sectors should reduce the emission of harmful materials.	1	2	3	4	5
Government should put pressure on the international level in order to stop the decline of biodiversity (extinction of species, degradation of natural habitats and wildlife)	1	2	3	4	5
Government must undertake stronger action to decrease the emission of harmful substances to prevent climate change.	1	2	3	4	5
Companies importing products from distant countries are responsible for preventing the loss of ecosystem in those countries.	1	2	3	4	5
People like me should do their best to stop the decline of biodiversity (extinction of species, degradation of natural habitats and wildlife) all over the world.	1	2	3	4	5
Chemicals industry should clean the environment from toxic waste.	1	2	3	4	5

K2. Do you seek information on environmental issues?

Obligatory: YES

⊙ 1. yes

⊙ 2. no

K3a. How often do you use the following information sources to get updated regarding environmental issues?

Please give you score by using a 5-point scale where 1 means "never" and 5 means "frequently".

	1- never	2	3	4	5- frequently
Newspapers	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
Journals	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
TV news	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
Radio	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
Films and documentaries in TV	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
Discussion with relatives, family members	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
Discussion with friends, neighbours, colleagues	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
Websites, articles, browsers	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
Blogs, forums, social media sites	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
Books	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
Articles, publications, leaflets	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
Conferences, exhibitions, trade shows, festivals	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
Publications and events of civil associations	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
Other sources:.....	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
Other sources:.....	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
Other sources:.....	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5

K3b. How much do you trust the given information source in environmental issues?

Please give you score by using a 5-point scale where 1 means "do not trust at all" and 5 means "very much".

	1- never	2	3	4	5- very much
Newspapers	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
Journals	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
TV news	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
Radio	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
Films and documentaries in TV	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
Discussion with relatives, family members	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
Discussion with friends, neighbours, colleagues	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
Websites, articles, browsers	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5

Blogs, forums, social media sites	⊙1	⊙2	⊙3	⊙4	⊙5
Books	⊙1	⊙2	⊙3	⊙4	⊙5
Articles, publications, leaflets	⊙1	⊙2	⊙3	⊙4	⊙5
Conferences, exhibitions, trade shows, festivals	⊙1	⊙2	⊙3	⊙4	⊙5
Publications and events of civil associations	⊙1	⊙2	⊙3	⊙4	⊙5
Other sources:.....	⊙1	⊙2	⊙3	⊙4	⊙5
Other sources:.....	⊙1	⊙2	⊙3	⊙4	⊙5
Other sources:.....	⊙1	⊙2	⊙3	⊙4	⊙5

K4a. How often do you use the following information sources in general?

Please give you score by using a 5-point scale where 1 means "never" and 5 means "frequently".

	1- never	2	3	4	5- frequently
Newspapers	⊙1	⊙2	⊙3	⊙4	⊙5
Journals	⊙1	⊙2	⊙3	⊙4	⊙5
TV news	⊙1	⊙2	⊙3	⊙4	⊙5
Radio	⊙1	⊙2	⊙3	⊙4	⊙5
Films and documentaries in TV	⊙1	⊙2	⊙3	⊙4	⊙5
Discussion with relatives, family members	⊙1	⊙2	⊙3	⊙4	⊙5
Discussion with friends, neighbours, colleagues	⊙1	⊙2	⊙3	⊙4	⊙5
Websites, articles, browsers	⊙1	⊙2	⊙3	⊙4	⊙5
Blogs, forums, social media sites	⊙1	⊙2	⊙3	⊙4	⊙5
Books	⊙1	⊙2	⊙3	⊙4	⊙5
Articles, publications, leaflets	⊙1	⊙2	⊙3	⊙4	⊙5
Conferences, exhibitions, trade shows, festivals	⊙1	⊙2	⊙3	⊙4	⊙5
Publications and events of civil associations	⊙1	⊙2	⊙3	⊙4	⊙5
Other sources:.....	⊙1	⊙2	⊙3	⊙4	⊙5
Other sources:.....	⊙1	⊙2	⊙3	⊙4	⊙5
Other sources:.....	⊙1	⊙2	⊙3	⊙4	⊙5

K4b. How much do you trust the given information sources?

Please give you score by using a 5-point scale where 1 means "do not trust at all" and 5 means "very much".

	1- never	2	3	4	5- very much
Newspapers	⊙1	⊙2	⊙3	⊙4	⊙5
Journals	⊙1	⊙2	⊙3	⊙4	⊙5
TV news	⊙1	⊙2	⊙3	⊙4	⊙5
Radio	⊙1	⊙2	⊙3	⊙4	⊙5

Films and documentaries in TV	⊙1	⊙2	⊙3	⊙4	⊙5
Discussion with relatives, family members	⊙1	⊙2	⊙3	⊙4	⊙5
Discussion with friends, neighbours, colleagues	⊙1	⊙2	⊙3	⊙4	⊙5
Websites, articles, browsers	⊙1	⊙2	⊙3	⊙4	⊙5
Blogs, forums, social media sites	⊙1	⊙2	⊙3	⊙4	⊙5
Books	⊙1	⊙2	⊙3	⊙4	⊙5
Articles, publications, leaflets	⊙1	⊙2	⊙3	⊙4	⊙5
Conferences, exhibitions, trade shows, festivals	⊙1	⊙2	⊙3	⊙4	⊙5
Publications and events of civil associations	⊙1	⊙2	⊙3	⊙4	⊙5
Other sources:.....	⊙1	⊙2	⊙3	⊙4	⊙5
Other sources:.....	⊙1	⊙2	⊙3	⊙4	⊙5
Other sources:.....	⊙1	⊙2	⊙3	⊙4	⊙5

K4a_1. Please check the following items and select how often do you demonstrate the given behaviour!
Choose "Not relevant" option if you cannot answer. (eg.: in case of a question relating to driving if you do not have a driving licence.)

	Never	Sometimes	Occasionally	Often	Always	Not relevant
I go to work and school by bike or by using public transport.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6
I buy meat or other products having an ecolabel.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6
I take a shower rather than bath.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6
I used to buy canned drinks.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6
I use oven cleaning spray to clean it.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6
I buy furniture made from domestic wood.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6
I run the washing machine only when fully loaded.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6
I used to drive in the city.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6
I keep the windows open for a long time in winter to have fresh air in the room.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6
I wash dirty clothes without using the pre-wash function.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6

K4a_2. Please check the following items and select how often do you demonstrate the given behaviour!
Choose "Not relevant" option if you cannot answer. (eg.: in case of a question relating to driving if you do not have a driving licence.)

	Never	Sometimes	Occasionally	Often	Always	Not relevant
On the motorway I drive at 100 km/hour.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6
I fly if the distance is longer than 6 hours.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6
I always accept plastic bags in stores.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6
I use public transport or bike for short distances (within 30 km).	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6
I collect used paper and carry it to a selective waste containers.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6
I place empty bottles in a selective waste container.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6
I happened to call someone's attention to their behaviour of polluting the environment.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6
I used to provide financial support to environmental organizations.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6
I buy milk in returnable bottles.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6
I buy bleached or coloured toilet paper.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6
I used to buy convenience food products.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6

K4a_3. Please check the following items and select how often do you demonstrate the given behaviour!
Choose "Not relevant" option if you cannot answer. (eg.: in case of a question relating to driving if you do not have a driving licence.)

	Never	Sometimes	Occasionally	Often	Always	Not relevant
I buy products placed in refill package.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6
I am boycotting corporate polluters.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6
I buy seasonal products.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6
I used electric clothes-dryer.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6
I used to read about environmental issues.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6

I used to discuss environmental issues with my friends.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6
I do not stop the engine when waiting at a railroad crossing or in a traffic.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6
I do not stop the engine when I am at a red light.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6
I use pesticides to kill pests.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6
If I leave my flat in winter for longer than 4 hours, I switch off the heating.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6
I drive to point from where I can start hiking.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6

K4b_1. Please check the following items whether they apply to you or not.
Choose "Not relevant" option if you cannot answer.

	yes	no	Not relevant
I often use my shopping bags.	⊙1	⊙2	⊙3
In winter I turn on heating so that I should not wear a pullover.	⊙1	⊙2	⊙3
I use softener when washing.	⊙1	⊙2	⊙3
I drop used batteries into the dustbin.	⊙1	⊙2	⊙3
After eating, I pour the leftover into the toilet.	⊙1	⊙2	⊙3
I use air freshener in the bathroom.	⊙1	⊙2	⊙3
I am a member of an environmentalist organization.	⊙1	⊙2	⊙3
When I stay at a hotel, I have my towels changed daily.	⊙1	⊙2	⊙3
I have energy saver household appliances.	⊙1	⊙2	⊙3

K4b_2. Please check the following items whether they apply to you or not.
Choose "Not relevant" option if you cannot answer.

	yes	no	Not relevant
When I' m picnicking, I leave the area as it was before.	⊙1	⊙2	⊙3
I bought solar collectors to generate energy.	⊙1	⊙2	⊙3
I consider the pros and cons of installing own solar collectors.	⊙1	⊙2	⊙3
I have asked for a quote to install solar collectors.	⊙1	⊙2	⊙3
I use renewable energy resources.	⊙1	⊙2	⊙3
I do not have a car.	⊙1	⊙2	⊙3
We use a car together.	⊙1	⊙2	⊙3
I drive to minimise fuel consumption.	⊙1	⊙2	⊙3
My car is fuel-efficient (uses less than 7 liter/100 km)	⊙1	⊙2	⊙3

K6. There are no good or bad answers to the following questions.
We are interested in your feelings and opinion regarding the following items.

Please give you score by using a 5-point scale where 1 means "completely disagree" and 5 means "fully agree".

	1. - completely disagree	2	3	4	5- fully agree
The number of the population tends to reach the limit the Earth can supply.	⊙1	⊙2	⊙3	⊙4	⊙5
People have the right to adjust nature to their requirements.	⊙1	⊙2	⊙3	⊙4	⊙5
When we intervene into the environment, if often has catastrophic consequences.	⊙1	⊙2	⊙3	⊙4	⊙5
Human ingenuity is the guarantee for not making the life on the Earth unbearable.	⊙1	⊙2	⊙3	⊙4	⊙5
People cause too much damage to the environment.	⊙1	⊙2	⊙3	⊙4	⊙5
The Earth has many natural resources, we just need to learn how to exploit them.	⊙1	⊙2	⊙3	⊙4	⊙5
Plants and animals have the same rights for life as humans.	⊙1	⊙2	⊙3	⊙4	⊙5
The balance of nature is stable enough to tackle the industrial effects.	⊙1	⊙2	⊙3	⊙4	⊙5
In spite of their special skills, people are still subordinated to the laws of nature.	⊙1	⊙2	⊙3	⊙4	⊙5
The so called "ecological crisis" threatening humankind is overemphasized.	⊙1	⊙2	⊙3	⊙4	⊙5
The Earth is like a spaceship where space and resources are limited.	⊙1	⊙2	⊙3	⊙4	⊙5
People are destined to rule nature.	⊙1	⊙2	⊙3	⊙4	⊙5
The balance of nature is very sensitive and vulnerable.	⊙1	⊙2	⊙3	⊙4	⊙5
People will have enough knowledge on how nature works to control it.	⊙1	⊙2	⊙3	⊙4	⊙5
If things are continued in this way, we will soon face an ecological catastrophe.	⊙1	⊙2	⊙3	⊙4	⊙5

K7. We are interested in your opinion regarding the following items.
To what extent do you agree with the following items?

Please give you score by using a 5-point scale where 1 means "completely disagree" and 5 means "fully agree".

	1. - completely disagree	2	3	4	5- fully agree
The effect of environmental pollution on public health is worse than what we perceive.	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
Environmental protection contributes to the improvement of people's quality of life.	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
Local environmental pollution is harmful to the people all over the world.	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
Environmental protection is beneficial for everybody.	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
We do not have to worry to much about the environment since the future generation will know better how to tackle these problems.	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
Statements saying we change the environment seem to be exaggerating.	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
In the forthcoming decades, thousands of plant and animal species will die out.	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
Modern development threatens the world.	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
Although some local plants and animals were damaged by the deterioration of environment, this has just a slight effect on the whole world.	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
Environmental protection has a good effect on my health.	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
A cleaner environment provides better relaxation for me.	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
Environmental protection threatens the workplace of people similar to me.	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
Environmental legislation limits my freedom to choose and my personal freedom.	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5

K8. Facing the consequences of damage to the environment, people worry about environmental problems all over the world. This can, however, vary by persons about which problems worry the most.

I worry about environmental problems that can have an effect on...

Please rate each of the following items from 1 (not relevant to me) to 7 (especially relevant to me) in response to the questions!

	1- not relevant to me	2	3	4	5	6	7 - especially relevant to me

.... to plants.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7
... to me.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7
... to people in my environment.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7
... to see life.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7
... to my lifestyle.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7
... to people.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7
... to birds.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7
... to my health.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7
... to children.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7
... to animals.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7
... to my future.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7
... to the next generation.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7

K9. How much do these items reflect your opinion?

Please give you score by using a 9-point scale where 1 means "completely disagree" and 9 means "fully agree".

	1. - completely disagree	2	3	4	5	6	7	8	9- fully agree
I am willing to give up my favourite activities which harm the environment.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7	⊙8	⊙9
I am willing to take obligations that help to protect nature.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7	⊙8	⊙9

I am willing to do things for the sake of environment even if nobody will thank me for this.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7	⊙8	⊙9
I am willing to do what is best for the environment even if that is uncomfortable for me.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7	⊙8	⊙9
I am willing to make extra efforts to make environment better.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7	⊙8	⊙9

K15. Please mark which items are true of you!

Please give you score by using a 7-point scale where 1 means "Not at all true of me" and 7 means " Very true of me".

	1- not at all true of me	2	3	4	5	6	7- completely true of me
I spend a lot of time in natural settings (woods, mountains, desert, lakes, ocean).	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7
I think of myself as a part of nature, not separate from it.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7
If I had enough time or money, I would certainly devote some of it to working for environmental causes.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7
If I am upset or stressed I can feel better by spending some time outdoors "communing with nature."	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7
I feel that I have a lot in common with other species.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7
Behaving responsibly toward the Earth—living a sustainable lifestyle—is part of my moral code.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7
Learning about the natural world should be an important part of every child's upbringing.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7
I'd rather live in a small room or house with a nice view than in a bigger room or house facing other buildings.	⊙1	⊙2	⊙3	⊙4	⊙5	⊙6	⊙7

I would feel that an important part of my life was missing if I was not able to get out and enjoy nature from time to time.	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5	⊙ 6	⊙ 7
I have never seen a work of art that is as beautiful as a work of nature, like a sunset or a mountain range.	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5	⊙ 6	⊙ 7
I feel that I receive spiritual sustenance from experiences with nature.	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5	⊙ 6	⊙ 7

K16. Please give your opinion regarding the following items!

Please give you score by using a 5-point scale where 1 means "completely disagree" and 5 means "fully agree".

	1. - completely disagree	2	3	4	5- fully agree
I think of myself as environmentally conscious consumer.	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
I think of myself as environmentally concerned.	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
I would be confused when associated with environmentally-friendly life style.	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5
I would not want my family and friends thinks of me as environmentally concerned.	⊙ 1	⊙ 2	⊙ 3	⊙ 4	⊙ 5

You will find questions regarding volunteering.

K18. Volunteering is a personal or group activity for a good cause, performed regularly or occasionally, in the country or abroad voluntarily without any financial compensation. Volunteering does not involve direct financial benefit for the actor, and also volunteering is not a substitute for a paid workforce.
Have you ever volunteered?

- ⊙ 1. yes
- ⊙ 2. no

K19. Where did/do you volunteer?

- ☑ 1. in my country
- ☑ 2. abroad

K20. How often do you volunteer?

- ⊙ 1. Less than once a year
- ⊙ 2. Once a year
- ⊙ 3. Once in a quarter
- ⊙ 4. Once a month
- ⊙ 5. Once a week
- ⊙ 6. More than once a week

K21. Please list below where, at which organization did you volunteer

1. ..... *Length:100*
2. ..... *Length:100*
3. ..... *Length:100*
4. ..... *Length:100*
5. ..... *Length:100*
6. .....

K22. Please list your voluntary activities

1. ..... *Length:100*
2. ..... *Length:100*
3. ..... *Length:100*
4. ..... *Length:100*
5. ..... *Length:100*

K2122. Please list below where, at which organization did you volunteer

	Organization	Activity
	.....	.....
	.....	.....
	.....	.....
	.....	.....

	.....	.....
	.....	.....
	.....	.....

K23. Please choose your place of residence from the drop-down list!

You can easily select the place from the menu by opening it then typing some part of it. By doing so, menu will automatically show the place you gave.

⊙ 1.

K24. Please select your temporary address from the drop-down list!

You can easily select the place from the menu by opening it then typing some part of it. By doing so, menu will automatically show the place you gave.

⊙ 1.

K25. Your childhood residence (until age 14):

⊙ 1. Budapest
⊙ 2. County seat
⊙ 3. City
⊙ 4. Village

K26. What is your highest education?

⊙ 1. Non-completed primary school
⊙ 2. Completed primary school
⊙ 3. Completed secondary school
⊙ 4. Bachelor degree
⊙ 5. Master degree

K27. What is your family status?

⊙ 1. Single
⊙ 2. In a relationship but living separately
⊙ 3. Married or in a partnership
⊙ 4. Divorced
⊙ 5. Widow

K28. How many people live permanently in the household including yourself?

⊙ 1. 1 person
⊙ 2. 2 persons
⊙ 3. 3 persons
⊙ 4. 4 persons
⊙ 5. 5 persons or more

K29. How many children (under age 18) live in the household?

1. .....child

K30. What is the age of children in your household?

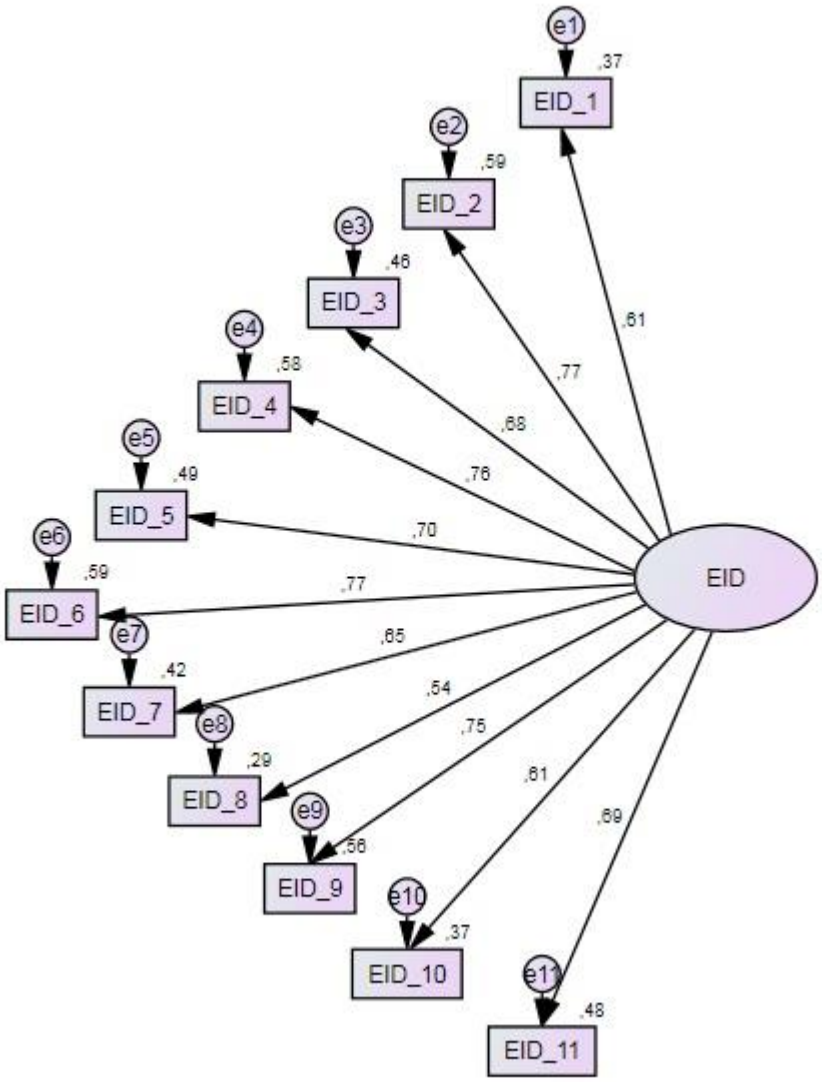
1. .....year old
2. .....year old
3. .....year old
4. .....year old
5. .....year old
6. .....year old
7. .....year old
8. .....year old

K31. Which category applies to you based on the monthly net income of the whole household?

1. under 80,000 HUF
2. 80,000 HUF- 100,000 HUF
3. 100,001 HUF- 150,000 HUF
4. 150,001 HUF- 200,000 HUF
5. 200,001 HUF- 250,000 HUF
6. 250,001 HUF- 300,000 HUF
7. 300,001 HUF- 350,000 HUF
8. 350,001 HUF- 400,000 HUF
9. 400,001 HUF- 450,000 HUF
10. 450.001 HUF - 500.000 HUF
11. 500.000 HUF -
12. I do not know/ respond

Thank you for helping our work with your reponses.

7. ANNEX: FIGURE OF CONFIRMATORY FACTOR ANALYSIS



8. ANNEX: RESULTS OF PCA FACTOR ANALYSIS

	Component
I spend a lot of time in natural settings (woods, mountains, desert, lakes, ocean).	.633
I think of myself as a part of nature, not separate from it.	.782
If I had enough time or money, I would certainly devote some of it to working for environmental causes.	.721
If I am upset or stressed I can feel better by spending some time outdoors "communing with nature."	.782
I feel that I have a lot in common with other species.	.737
Behaving responsibly toward the Earth—living a sustainable lifestyle—is part of my moral code.	.793
Learning about the natural world should be an important part of every child's upbringing.	.705
I'd rather live in a small room or house with a nice view than in a bigger room or house facing other buildings.	.627
I would feel that an important part of my life was missing if I was not able to get out and enjoy nature from time to time.	.765
I have never seen a work of art that is as beautiful as a work of nature, like a sunset or a mountain range.	.669
I feel that I receive spiritual sustenance from experiences with nature.	.710

Source: own editing

9. ANNEX: 2-WAY ANOVA RESULTS, DEPENDENT VARIABLE EID SCALE

a. IN CASE OF VARIABLES INDEPENDENT OF GENDER AND AGE

ANOVA[a]

			Hierarchical Method				
			Squares	df	Mean Square	F	Sig.
EID_score	Main Effects	(Combined)	8438,833	4	2109,708	14,056	,000
		Nem	5053,775	1	5053,775	33,671	,000
		Korcsoport	3385,058	3	1128,353	7,518	,000
	2-Way Interactions	Nem * Korcsoport	687,818	3	229,273	1,528	,206
	Model		9126,651	7	1303,807	8,687	,000
	Residual		137300,615	915	150,094		
	Total		146427,266	922	158,855		

a. EID_score by Nem, Korcsoport

Factor Summary[a]

		Eta	Beta Adjusted for Factors
EID_score	Nem	,186	,201
	Korcsoport	,133	,153

a. EID_score by Nem, Korcsoport

Model Goodness of Fit

	R	R Squared
EID_score by Nem, Korcsoport	,240	,058

b. IN CASE OF VARIABLES INDEPENDENT OF AGE AND FAMILY STATUS

ANOVA[a]

			Hierarchical Method				
			Sum of Squares	df	Mean Square	F	Sig.
EID_score	Main Effects	(Combined)	5727,199	7	818,171	5,308	,000
		Korcsoport	2608,872	3	869,624	5,642	,001
		Mi az Ön családi állapota?	3118,328	4	779,582	5,058	,000
	2-Way Interactions	Korcsoport * Mi az Ön családi állapota?	1239,214	10	123,921	,804	,625
	Model		6966,413	17	409,789	2,659	,000
	Residual		139460,853	905	154,140		
	Total		146427,266	922	158,855		

a. EID_score by Korcsoport, Mi az Ön családi állapota?

Factor Summary[a]

		Eta	Beta Adjusted for Factors
EID_score	Korcsoport	,133	,085
	Mi az Ön családi állapota?	,181	,159

a. EID_score by Korcsoport, Mi az Ön családi állapota?

Model Goodness of Fit

	R	R Squared
EID_score by Korcsoport, Mi az Ön családi állapota?	,198	,039

c. IN CASE OF VARIABLES INDEPENDENT OF GENDER AND FAMILY STATUS

ANOVA[a]

			Hierarchical Method				
			Sum of Squares	df	Mean Square	F	Sig.
EID_score	Main Effects	(Combined)	8660,576	5	1732,115	11,682	,000
		Nem	5053,775	1	5053,775	34,083	,000
		Mi az Ön családi állapota?	3606,801	4	901,700	6,081	,000
	2-Way Interactions	Nem * Mi az Ön családi állapota?	2424,116	4	606,029	4,087	,003
	Model		11084,692	9	1231,632	8,306	,000
	Residual		135342,574	913	148,278		
	Total		146427,266	922	158,855		

a. EID_score by Nem, Mi az Ön családi állapota?

Factor Summary[a]

		Eta	Beta Adjusted for Factors
EID_score	Nem	,186	,166
	Mi az Ön családi állapota?	,181	,158

a. EID_score by Nem, Mi az Ön családi állapota?

Model Goodness of Fit

	R	R Squared
EID_score by Nem, Mi az Ön családi állapota?	,243	,059

d. IN CASE OF VARIABLES INDEPENDENT OF AGE AND FAMILY STATUS

ANOVA[a]

			Hierarchical Method				
			Sum of Squares	df	Mean Square	F	Sig.
EID_score	Main Effects	(Combined)	5727,199	7	818,171	5,308	,000
		Korcsoport	2608,872	3	869,624	5,642	,001
		Mi az Ön családi állapota?	3118,328	4	779,582	5,058	,000
	2-Way Interactions	Korcsoport * Mi az Ön családi állapota?	1239,214	10	123,921	,804	,625
	Model		6966,413	17	409,789	2,659	,000
	Residual		139460,853	905	154,140		
	Total		146427,266	922	158,855		

Factor Summary[a]

		Eta	Beta Adjusted for Factors
EID_score	Korcsoport	,133	,085
	Mi az Ön családi állapota?	,181	,159

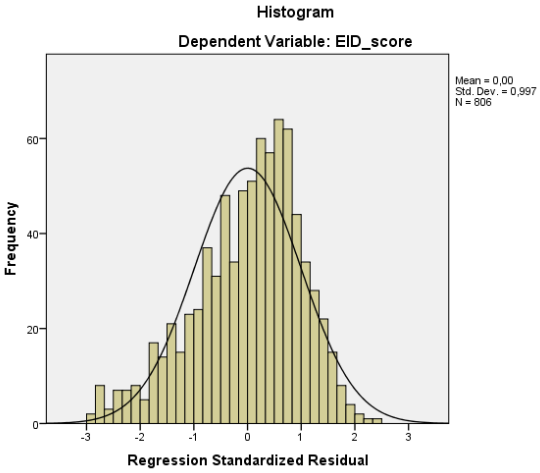
a. EID_score by Korcsoport, Mi az Ön családi állapota?

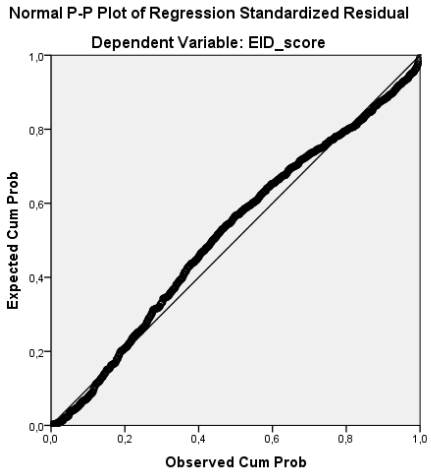
Model Goodness of Fit

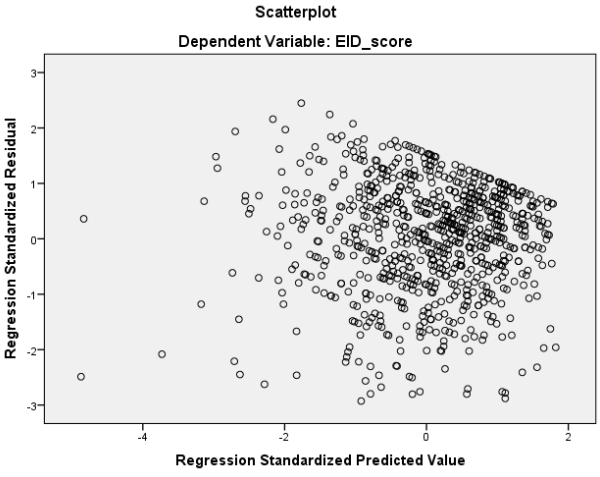
	R	R Squared
EID_score by Korcsoport, Mi az Ön családi állapota?	,198	,039

10. ANNEX: REGRESSION ANALYSIS TO STUDY VALUES AND ENVIRONMENTAL IDENTITY

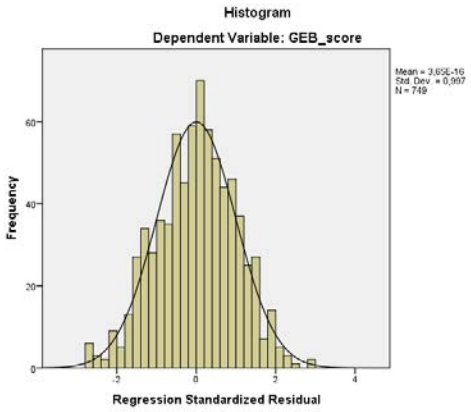
		EID_score	Gender	Age	Sense of belonging	Warm relationships with others	Self-fulfilment	Being well-respected	Fun and enjoyment of life	Security	Self respect	Sense of accomplishment
Pearson Correlation	EID_score	1.000	,199	,154	,208	,208	,293	,185	,102	,254	,320	,360
	Gender	,199	1.000	-,097	,231	,130	,143	,139	-,057	,248	,233	,004
	Age	,154	-,097	1.000	,109	,048	-,028	-,036	-,187	,120	,057	,150
	Sense of belonging	,208	,231	,109	1.000	,531	,370	,412	,221	,482	,357	,237
	Warm relationships with others	,208	,130	,048	,531	1.000	,432	,404	,343	,418	,413	,300
	Self-fulfilment	,293	,143	-,028	,370	,432	1.000	,471	,401	,335	,561	,501
	Being well-respected	,185	,139	-,036	,412	,404	,471	1.000	,323	,380	,410	,355
	Fun and enjoyment of life	,102	-,057	-,187	,221	,343	,401	,323	1.000	,177	,316	,252
	Security	,254	,248	,120	,482	,418	,335	,380	,177	1.000	,418	,245
	Self-respect	,320	,233	,057	,357	,413	,561	,410	,316	,418	1.000	,408
	Sense of accomplishment	,360	,004	,150	,237	,300	,501	,355	,252	,245	,408	1.000
Sig. (1-tailed)	EID_score	.	,000	,000	,000	,000	,000	,000	,002	,000	,000	,000
	Gender	,000	.	,003	,000	,000	,000	,000	,055	,000	,000	,456
	Age	,000	,003	.	,001	,086	,213	,157	,000	,000	,054	,000
	Sense of belonging	,000	,000	,001	.	,000	,000	,000	,000	,000	,000	,000
	Warm relationships with others	,000	,000	,086	,000	.	,000	,000	,000	,000	,000	,000
	Self-fulfilment	,000	,000	,213	,000	,000	.	,000	,000	,000	,000	,000
	Being well-respected	,000	,000	,157	,000	,000	,000	.	,000	,000	,000	,000
	Fun and enjoyment of life	,002	,055	,000	,000	,000	,000	,000	.	,000	,000	,000
	Security	,000	,000	,000	,000	,000	,000	,000	,000	.	,000	,000
	Self-respect	,000	,000	,054	,000	,000	,000	,000	,000	,000	.	,000
	Sense of accomplishment	,000	,456	,000	,000	,000	,000	,000	,000	,000	,000	.

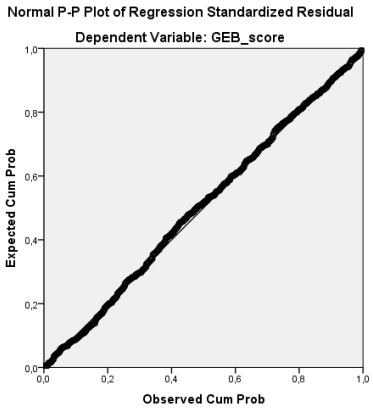

Histogram
Dependent Variable: EID_score
Mean = 0,00
Std. Dev. = 0,997
N = 806
Frequency
Regression Standardized Residual

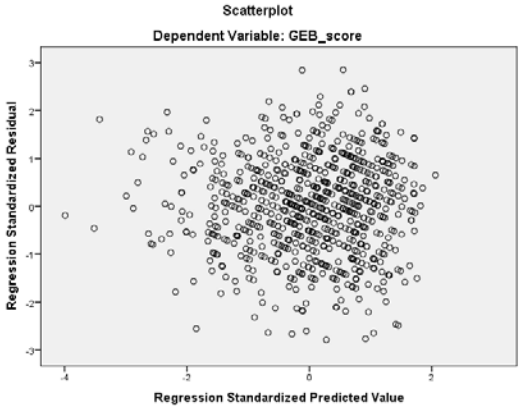

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: EID_score
Expected Cum Prob
Observed Cum Prob

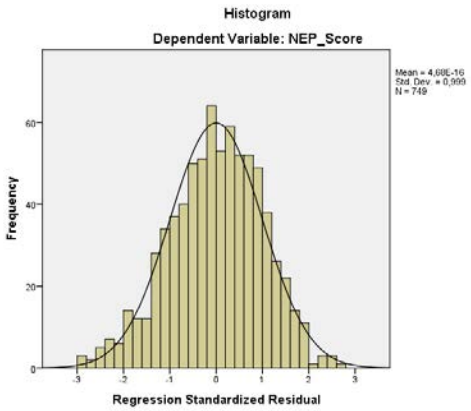

Scatterplot
Dependent Variable: EID_score
Regression Standardized Residual
Regression Standardized Predicted Value

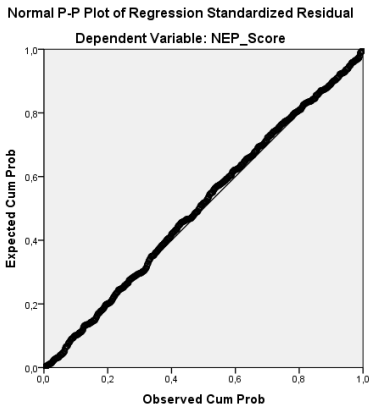
11. ANNEX: OUTPUT TABLES OF PATH ANALYSIS

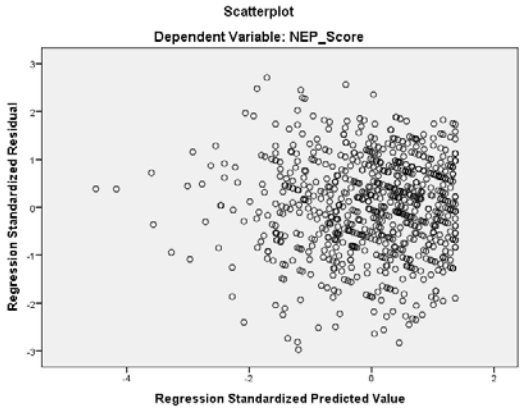


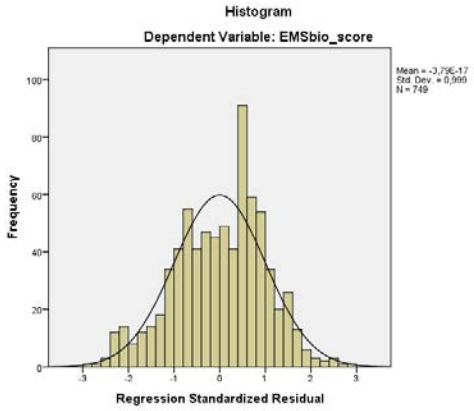


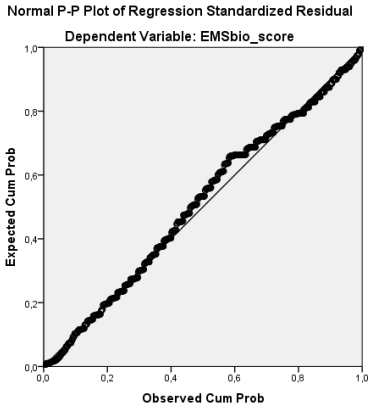


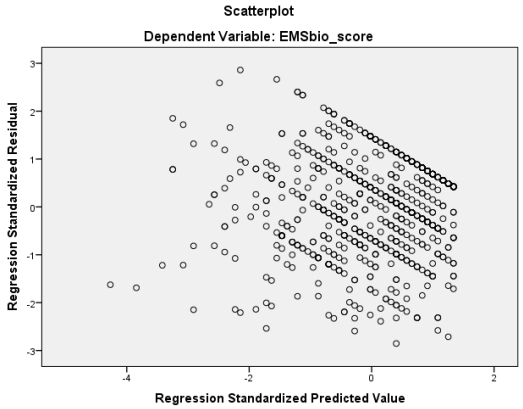


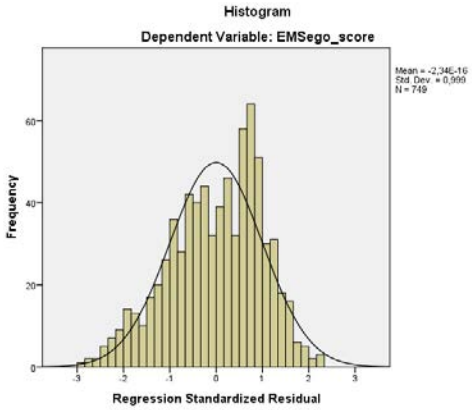



Scatterplot
Dependent Variable: NEP_Score
Regression Standardized Residual
Regression Standardized Predicted Value


Histogram
Dependent Variable: EMSbio_score
Mean = -3,79E-17
Std. Dev. = 0,999
N = 749
Frequency
Regression Standardized Residual


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: EMSbio_score
Expected Cum Prob
Observed Cum Prob


Scatterplot
Dependent Variable: EMSbio_score
Regression Standardized Residual
Regression Standardized Predicted Value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Dependent Variable: EMSego_score
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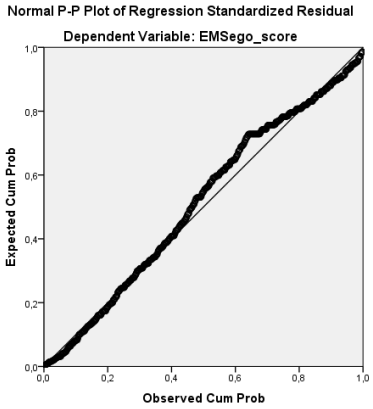
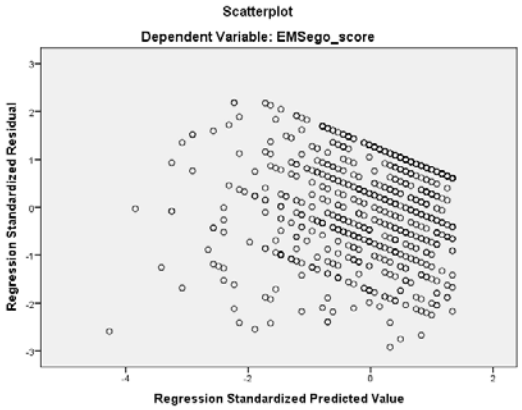
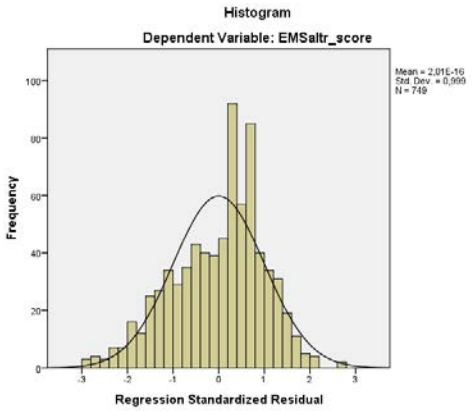
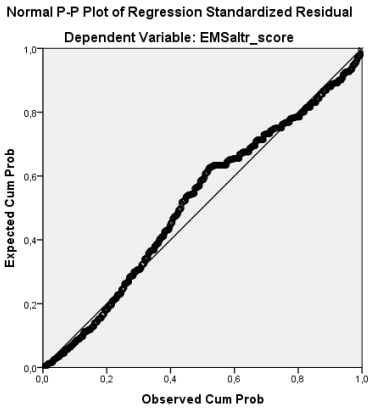
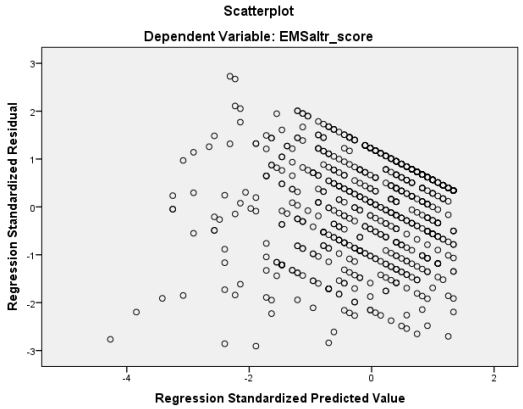
N = 749
Frequency
Regression Standardized Residual

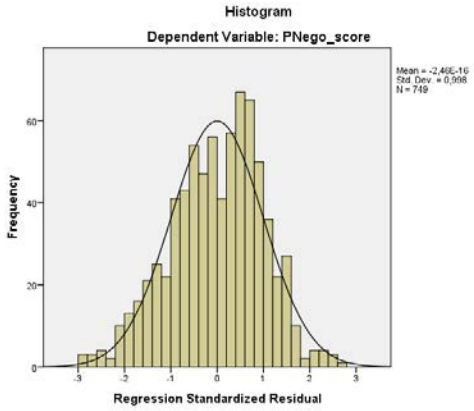

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: EMSego_score
Expected Cum Prob
Observed Cum Prob


Scatterplot
Dependent Variable: EMSego_score
Regression Standardized Residual
Regression Standardized Predicted Value


Histogram
Dependent Variable: EMSaltr_score
Mean = 2,01E-16
Std. Dev. = 0,999
N = 749
Frequency
Regression Standardized Residual


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: EMSaltr_score
Expected Cum Prob
Observed Cum Prob


Scatterplot
Dependent Variable: EMSaltr_score
Regression Standardized Residual
Regression Standardized Predicted Value


Histogram
Dependent Variable: PNego_score
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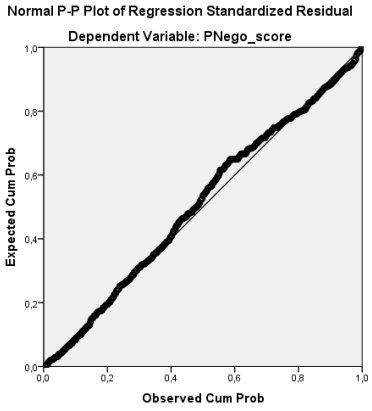
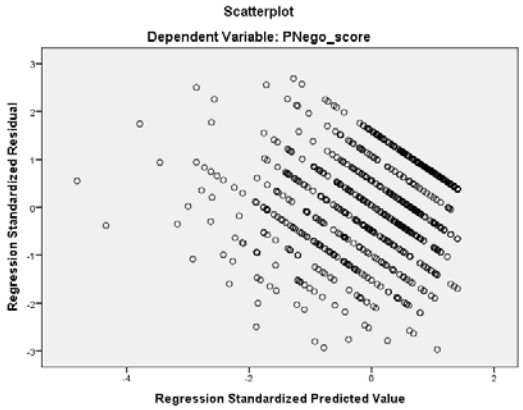
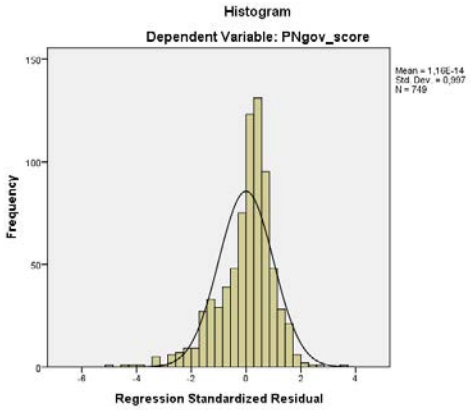
Std. Dev. = 0,998
N = 749
Frequency
Regression Standardized Residual


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: PNego_score
Expected Cum Prob
Observed Cum Prob


Scatterplot
Dependent Variable: PNego_score
Regression Standardized Residual
Regression Standardized Predicted Value


Histogram
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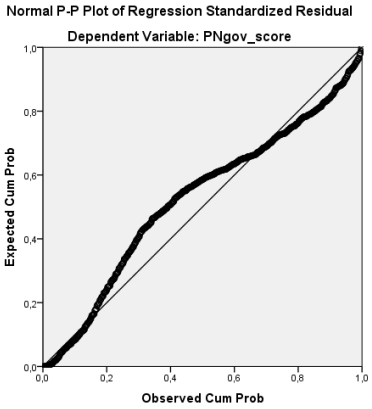
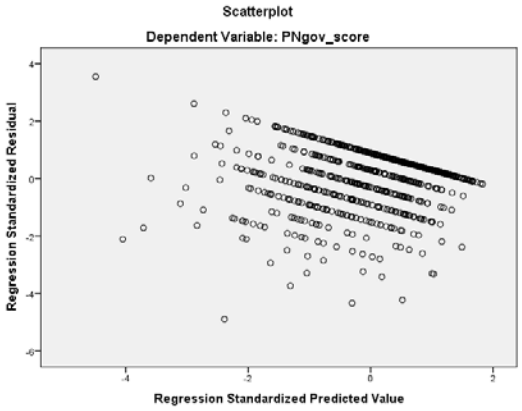
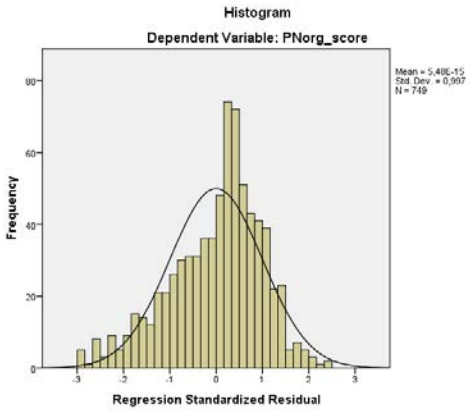
N = 749
Frequency
Regression Standardized Residual


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: PNgov_score
Expected Cum Prob
Observed Cum Prob


Scatterplot
Dependent Variable: PNgov_score
Regression Standardized Residual
Regression Standardized Predicted Value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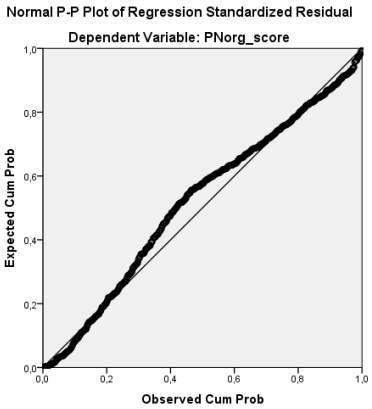
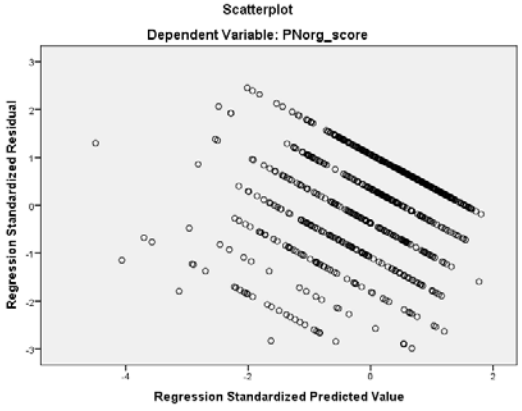
Frequency
Regression Standardized Residual


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: PNorg_score
Expected Cum Prob
Observed Cum Prob


Scatterplot
Dependent Variable: PNorg_score
Regression Standardized Residual
Regression Standardized Predicted Value