

**BABEŞ - BOLYAI UNIVERSITY, CLUJ-NAPOCA  
FACULTY OF PSYCHOLOGY AND EDUCATIONAL SCIENCES**

**DOCTORAL THESIS**

**ECOLOGICAL SOCIAL REPRESENTATIONS,  
OPINIONS AND ATTITUDES AT PUPILS,  
STUDENTS AND EMPLOYEES FROM INDUSTRY**

**- abstract -**

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ECOLOGICAL SOCIAL REPRESENTATIONS, OPINIONS AND  
ATTITUDES AT PUPILS, STUDENTS AND EMPLOYEES FROM  
INDUSTRY  
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**Key words:** social representations, ecological social representations, opinions, attitudes, pro-environmental attitudes, ecological behaviour, new ecological paradigm, corporate social responsibility, sustainable development

This paper provides a theoretical, methodological and applicative approach of integrative nature, starting from a comprehensive synthesis of the relevant studies on ecological social representations, opinions and attitudes towards the natural environment.

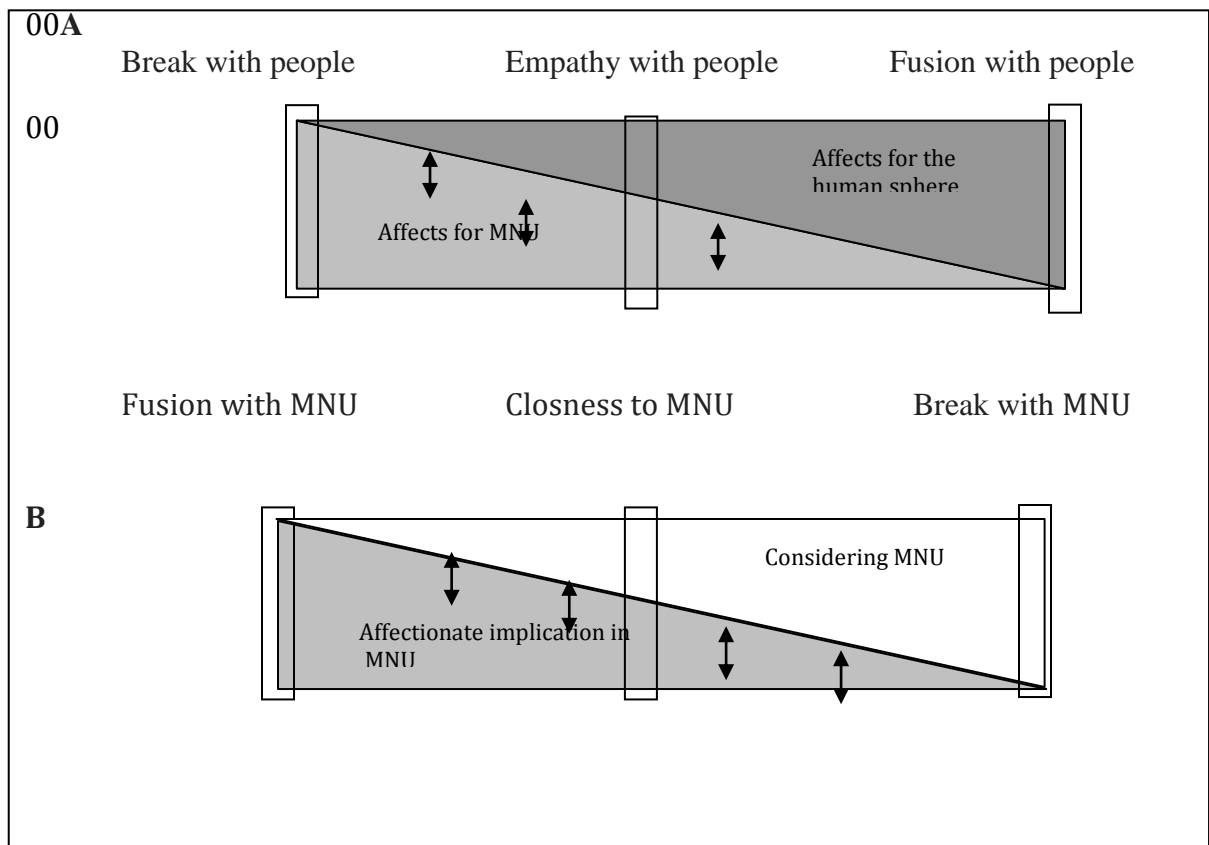
Thus we intend to emphasize the factors that influence the development of ecological behaviour as well as to suggest conditions that could favour their development, based on the idea that an ecological crisis is one based on unsuitable behaviours.

**The theoretical part** of the doctoral thesis deals with issues regarding the reflection of the ecological concerns in psychology, ecological attitudes, social representations theory and some aspects of legal and institutional framework on environmental issues.

**The first chapter** refers to the ecological issues reflected in psychology. At the level of common sense, one can see that in their everyday life people, in general, state their concern about environmental issues and are ready to do something in order to solve them. Unfortunately, however, the displayed behaviours rarely respect the environment. As such, we can notice a difference between the attitudes and the behaviour, i.e. the ecological attitudes rarely lead to ecological behaviours, reflecting the gap between ‘saying’ and ‘doing’.

This situation raises questions about the way from public awareness, via attitudes, to ecological behaviours and to the obstacles to be overcome for a green mentality to have practical consequences for the environment. There have been various explanations; one of the mentioned obstacles belonging to the awareness of environmental issues which may be based on incomplete knowledge.

There have been questions about how central the environmental concerns are, how accessible they are, what other concerns compete with them, what chances of success they have. In this context it should be noted that in order to act, a person must feel involved in the problem, involvement which depends on the perception of the importance or on its severity. It is about the feeling of identification with a natural area or a natural resource, about the feeling of closeness or identification with nature and the personal ecological standards.



Interest in MNU	<p>++</p> <p>- ←—————→ +</p>
Responsible behaviour	<p>-</p> <p>- —————→      ←————— +</p>

Fig. no. 1. Antagonism and complementariness of the two environments (human environment – MU and nonhuman environment – MNU) and related attitudes (empathy, fusion, break)<sup>1</sup>

Different authors from the field of social psychology and environmental psychology have focused on social actors' intent to act, which faces a multitude of social dilemmas, such as the group's social norms, peer judgments, cultural norms, all of them being genuine social obstacles, not to mention the importance of the others' influence, or social

<sup>1</sup> H. Hagege, F. X. Bogner, C. Caussidier, 2009, *ibidem*, p.113

desirability or the phenomenon of imitation. The diagram below exemplifies the context of the individual-environment relations<sup>2</sup>.

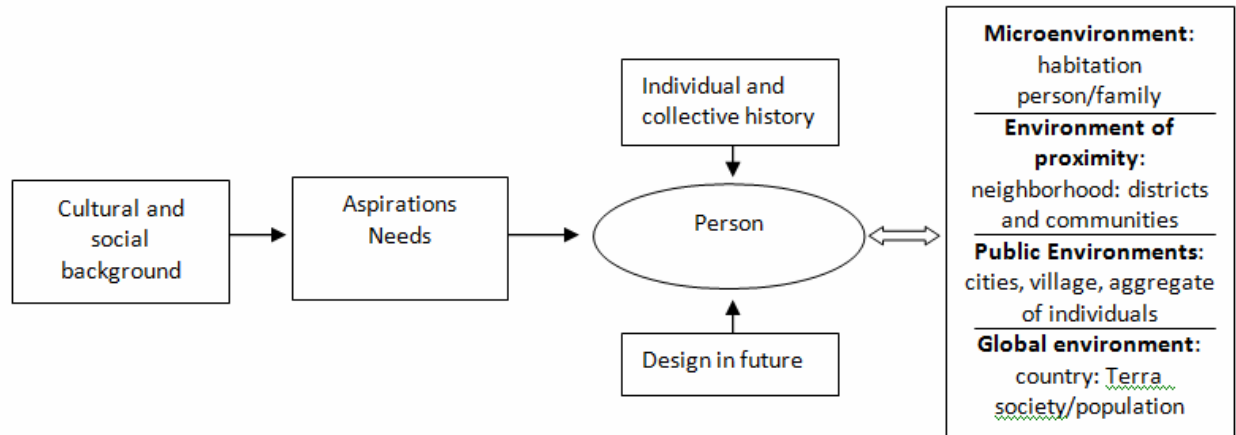


Fig. no. 2 The context of the individual-environment relations

Most researchers have concluded that psychological and social obstacles, as well as ecological costs may act as a hamper, raising the question of the opportunity of environmental actions. Weighing the alternatives ‘pro’ and ‘against’, given the moral and social costs and benefits will lead to the final decision: destructive behaviour or respectful one towards the environment. The ecological issue can be found mirrored in social psychology which initially tried to explain the formation of attitudes towards the protection of nature, and later tried to analyse how these attitudes can explain the ecological behaviour, while trying to explain the gap between discourse and practice. Thus some factors were underlined, factors which influence the ecological attitudes, such as spending time in nature<sup>3</sup>, joining various political doctrines<sup>4</sup> or the type of cultural model regarding the man-nature relation<sup>5</sup>.

In addition to environmental knowledge it was thought that other factors with potential positive impact on environmentally responsible behaviour were important. Y. H. Hwang, S. L. Kim and J. M. Jeng<sup>6</sup> and K. C. Vaske and J. J. Kobrin<sup>7</sup> divided these factors

<sup>2</sup> Moser, G., 2009, *Introducere în psihologia mediului*, Editura Polirom, Iasi, pag. 29;

<sup>3</sup> Kals, E., Montada, L., Schumacher, D., 1999, *Emotional affinity toward nature as a motivational basis to protect nature* in *Environment and Behavior*, 31,2.

<sup>4</sup> Kilbourne, W, Beckmennm S., Lewis, A., Van Dam, Y, 2001, *A multinational examination of the role of the dominant social paradigm in environmental attitudes of university students*, in *Environment and Behavior*, 33,2.

<sup>5</sup> Steg, L., Sievers, I., 2000, *Cultural theory and individual perceptions of environmental risks* in *Environment and Behavior*, 32,2.

<sup>6</sup> Hwang, Y. H., Kim, S. L., Jeng, J. M., 2000, *Examining the causal relationships among selected antecedents of responsible environmental behavior* in *The Journal of Environmental Education*, 31(4).

into three categories: *affective, cognitive and situational factors*. The *cognitive factors* refer to the individuals' awareness, their environmental and ecological knowledge, including the knowledge regarding the action strategies. The *affective factors* relate to emotions and feelings associated with environmental issues and ecological phenomena and include attitudes, locus of control, sense of personal responsibility, and others. There are also evoked the affective factors related to personality, such as the intention to act, personality traits, rewards envisioned, individual priorities, habits.

Finally, the *situational factors* are related to the position of an individual or group and encompass economic and demographic constraints (age, income, occupation, education, place of origin and residence etc.), socio-cultural and political context, the pressure of social norms, opportunities to notice ecological problems live and act. No matter the situation, all these factors can have a stimulating or inhibitory effect on the cognitive and affective factors that encourage environmentally responsible behaviour.

*Locus of control* is another variable that may have an impact on environmentally responsible behaviour.

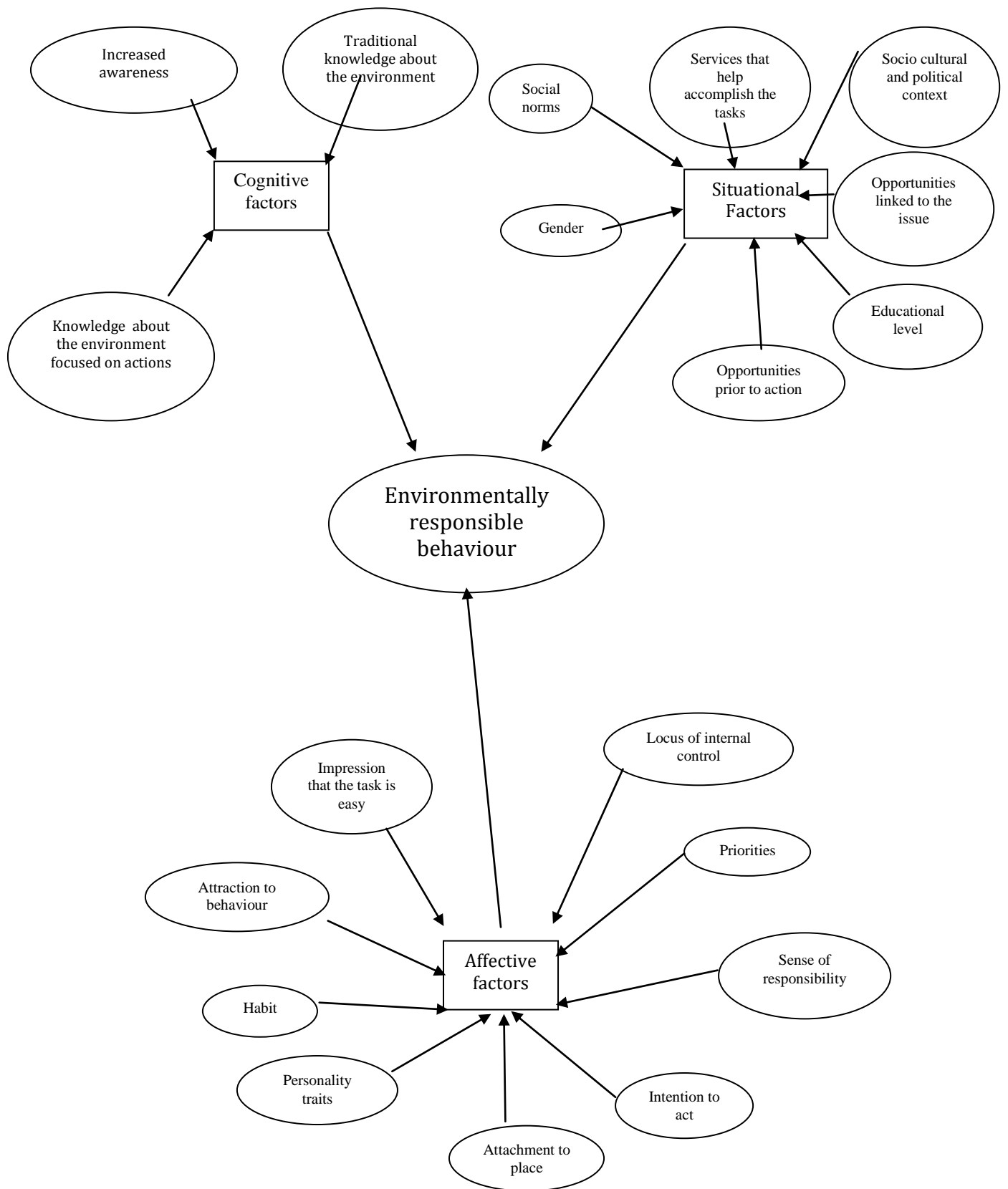
In case of the ecological issues, *locus of control* is defined as an individual's belief that his actions can / can not improve the environmental situation<sup>8</sup>. Thus, *locus of internal control* reflects a person's belief that his actions will be beneficial and will help to change a situation, while *locus of external control* refers to the belief that the changes of a situation occur randomly or because of the interference of other more potent, more competent, better educated agents, such as governments or large companies. The consequence of locus of control is that a person with *internal control* will engage in specific actions, while a person with *external control* will be less prone to participate in such actions. Many studies have focused on the development of *locus of internal control*, considered by many researchers as an important variable that strongly influences the intention to act, the latter being an indicator of environmentally responsible behaviour.

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<sup>7</sup> Vaske, J. J. Kobrin K. C., 2001, *Place attachment and environmentally responsible behaviour* in The Journal of Environmental Education, 33(4).

<sup>8</sup> Hines, J.M., Hungerford, H.R. & Tomera, A.N. (1986-1987). Analysis and synthesis of research on responsible pro-environmental behavior : a meta-analysis. *The Journal of Environmental Education*, 18(2).





*Fig. no. 3 Factors involved in environmentally responsible behaviour*

**In the second chapter** we focused on ecological attitudes, as many authors suggest that the sense of environmental responsibility is reflected in a positive attitude towards ecology.

Structurally, the environmental attitude, as any attitude, is presented as a unit of three components: cognitive, affective and behavioural.

One of the issues emphasized by many researchers is that the research on ecological attitudes faces a gap between ecological attitudes and the individuals' actual behaviour.

We found that today, there is a general consensus that there is not one, *but more attitudes toward ecology*<sup>9</sup>, because a person can have a negative attitude towards a particular environmental issue and a positive one towards others.

The analysis of Marguerite D. and G. Cestre, (2002) on research regarding ecological attitudes concludes that some studies have found weak correlations between ecological awareness and the action to support environmental reforms (F. H. Buttell and W.L. Flinn (1976 , cf. D. Marguerite and G. Cestre, 2002). On the other hand, J. W. Lounsbury and L.G. Tornatzky<sup>10</sup> analyzed 78 attitudes toward ecology, releasing three main dimensions: *environmental degradation, overpopulation and pro environmental actions*. The attitudes about various ecological problems, as measured by K. D. Van Lier and R. E. Dunlap (1981), such as population, pollution, natural resources, environmental protection regulations, have been shown not to correlate strongly with each other.

While some authors have supported the idea of a general attitude towards ecology, other authors have said that this can not be one-dimensional stating that 'belief in such a complex field as ecology is not simple, but complex and multidimensional' (J. Gray, 1985), thesis in vigour today.

In this research we also started from the idea that environmental attitudes can be formed by *ecological education*, which aims to achieve three major objectives, closely interrelated: cognitive, affective-attitudinal and action-practical objectives. These are done gradually through the educational process and school and extracurricular activities with a specific ecological content. Thus, the *cognitive objectives* are achieved by students' empirical and scientific initiation, namely: understanding different laws of nature, discovering causal relations between the natural and artificial agents, created and exploited

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<sup>9</sup> Gray, J.1985, *Ecological Beliefs and Behaviour*, Greenwood Press, London;

<sup>10</sup> Marguerat, D., Cestre, G., 2002, *Le consommateur „vert“: attitude et comportement* Working Paper 0211, IUMI, Lausanne;

by man, understanding or foreseeing their effects on the quality of human life as well as the quality of the environment.

The *affective-attitudinal objectives* of ecological education lies mainly in raising the awareness of teenagers, and of all citizens, towards the major problems of maintaining and improving the quality of the environment, towards the design and development of new attitudes at the individual and society's levels regarding the human-nature-society relations.

The action- *practical objectives* can be achieved by some practical-operational initiating objectives used in training young people to master techniques and technologies of intervention for the prevention or reduction of pollution and environmental degradation; the extension of the learned in school ecological conduct to the environment in which they will act; training young people to promptly solve the dysfunctions occurred in the ecological equilibrium of the ecological factors, as well as a new attitude on the exploitation and use of natural resources under appropriate conditions.

Taking into account the contribution of research on the relationship between attitudes and behaviours, this research will focus on the relationship between discourses and practices from the perspective of social representations theory.

*The paradigm of social representations and social cognition* have close elements, of theoretical and methodological convergence, since the existence of the individual in society cannot be approached either from the perspective of the individual or the social one.

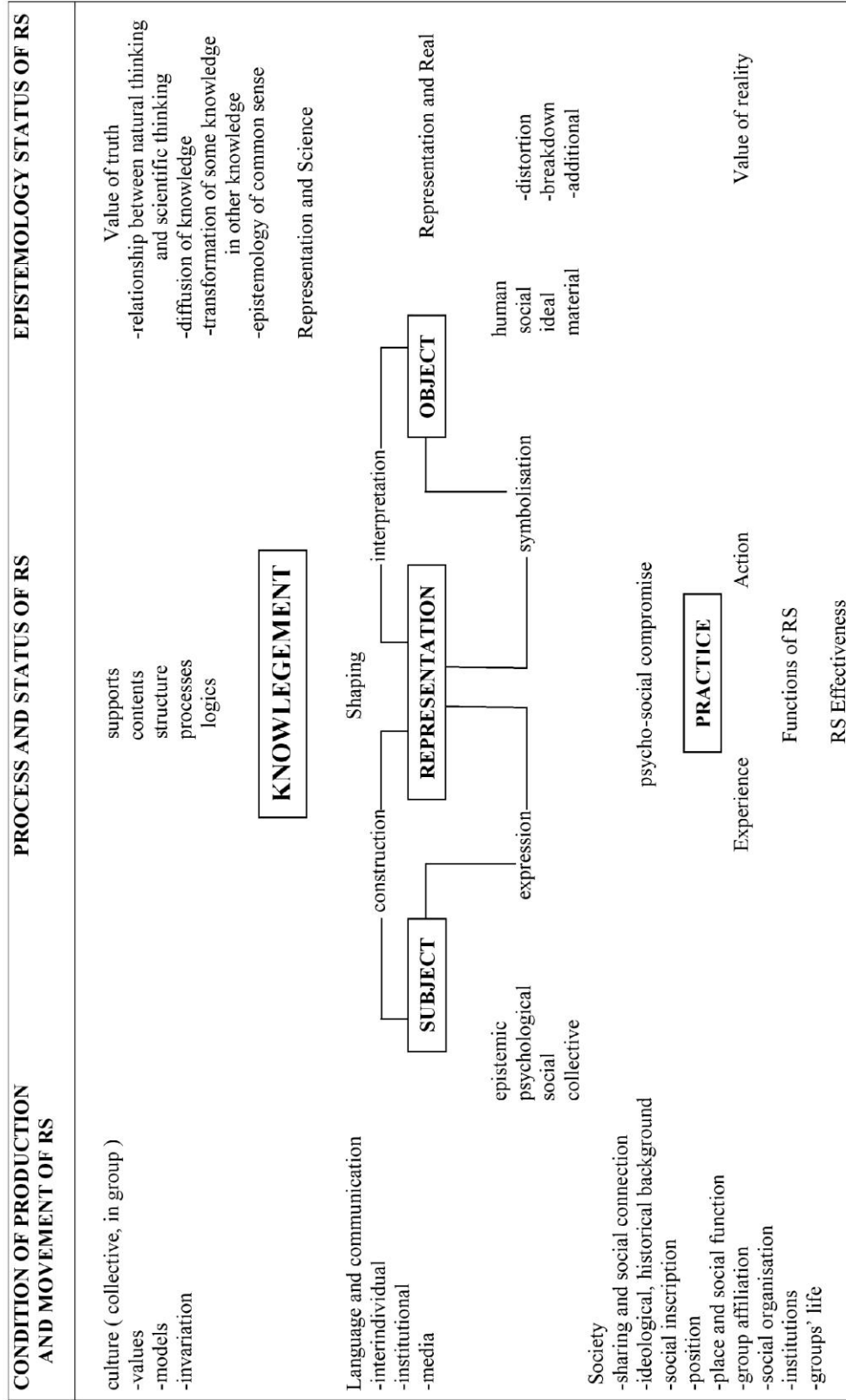
Both the theory of social representations and the social cognition theory focus on how knowledge structures are used to familiarize and contextualise the social stimuli. *Social representations* are negotiated constructs within social groups, while the *cognitive schema* is a representation of reality developed within the social actors' minds.

*It is noted that research from the social cognition domain* do not take into account social interactions and the socio-cultural and socio-economic context in which the cognitive schemes are run.

As a result, **the third chapter** of the paper focuses on social representations theory.

Three concepts, '*social reality*', '*communication*' and '*group*', discussed below, appear behind the social representations theory and facilitate its understanding.

Study Area of social representations ( cf. D. Jodelet, 1989, p. 200 )



**Who knows and from where? What and how does one know? About what and with what effect?**

Fig. no.4. The study area of social representations

In this chapter we do not want to deny the contribution of research on the relationship between attitudes and behaviours, but to present the issue of the relationship between discourses and practices from a different theoretical perspective, that of social representations, as one aspect of social representations theory is to be concerned with common sense, with profane knowledge, believing that the 'naive subject' has his own logic. Also, everyday practices are considered to be driven by common sense logic. The social actor, according to the social representations theory does not work consistently, according to scientific rationality, but it is endowed with different ways of thinking and rationality which operate simultaneously.

The dual nature of social representations raises from the fact that they are considered as specific forms of knowledge, which mixes the sensorial and the logical parts, being forms of 'common sense knowledge' as well as 'forms of social thought'. 'Social representations are ways of practical thinking orientated towards communication, understanding and mastery of the social, material and ideal environment.'<sup>11</sup>

Thus, social representations can be defined as forms of current knowledge, of common sense, characterized by the fact that they are socially produced and shared, they relate to organizational practices, to control (material, social, ideal) environmental practices, orientating behaviours and communications, and by the fact that they concur to establish a vision of reality, common to the social assembly (group, class, etc.) or to a culture.

As a form of knowledge, the representation establishes a relationship between an object belonging to a social, material and ideal environment and to a subject (an individual or a collective) being in relation to other subjects by group membership, participation or social communication.

Social representations are constructed and transformed within social groups, being shared by their members and thus building their social reality. In a dialectic way one can affirm a link between social representations and social practices, i.e. representations determine practices and practices, in turn, determine representations. Thus, we can state that social representations cause practice, and that the new practice, due to changes from outside, will produce changes in social representations. The study of social representations can be done starting from both the individuals' practices and from their speech, which implies that through speech one can access, at least in part, the significance of practices.

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<sup>11</sup> Jodelet, D. 1989, *Les représentations sociale*, Paris, P.U.F., p. 361;

Social representations are not born in a social vacuum, but they are anchored in something that already exists, in a socio-cultural and historical context. Thus the social representations paradigm considers history, namely the reconstruction of the past, i.e. the collective memory, as ‘a background of shared knowledge (...) that allows (group) members to interpret and familiarise with the new data encountered in everyday life.’<sup>12</sup> The link between culture and social representations is more than a linear causal one, culture being used as a framework for interpretation, as a symbolic and material framework that generates behaviour, as elements of structuring the relationship with the world.<sup>13</sup> As such, the relationship with nature is a historical and cultural one.

For S. Moscovici, social representations are theories rather than concepts, being conceived as ‘dynamic harmonies’ (...) ‘theories’ or sui generis ‘collective sciences’, designed to interpret and shape reality. They send to a body of topics, of uniform principles and apply in special areas of existence and activity (...). They determine the field of possible communication, of values and of ideas present in the views accepted by the groups, and adjust accordingly desirable and admitted behaviours.’<sup>14</sup>

Directly related to this theoretical framework, the research on ecological social representations, opinions and attitudes regarding the natural environment made by Western researchers have focused on different levels of assessment while using a variety of methods. The development of a uniform methodology of research of social representations is particularly difficult because, by their very nature, social representations are both individual and social phenomena, which are formed within the relations among the members of a society or social actors who have a cognitive ‘foundation’ (knowledge, processes, etc) and a set of expectations about appropriate social functioning.

The influences in order to change social representations can be organized into three categories, which can act either separately or combined, being analysed below.

Firstly, from *the central nucleus theory*, one can structure some ways of influencing the alteration of central and peripheral elements because social representations are transformed in order to adapt themselves to the new social experiences, although they tend to have certain stability. In this respect it is known that the transformation of the central nucleus leads to a radical change in the other components of the representation.

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<sup>12</sup> V. Haas și D. Jodelet, 1999, cf. Caillaud, S. (2010), *Représentations sociales et significations des pratiques écologiques: Perspectives de recherche* VertigO – La revue électronique en sciences de l’environnement, Vol.10, nr.2, <http://vertigo.revues.org/9881>, accessed at 25 Oct. 2010;

<sup>13</sup> Jodelet, D, 2006, *Culture et pratiques de santé* în Nouvelle Revue de Psychologie;

<sup>14</sup> Moscovici, S., 1976, *Social influence and social change*, London, Academic Press, p. 48;

The second strategy is *to influence the group that person belongs to*, drawing on the theory and practice of a group's social influence, including the minority group. The process by which the *attitudes* are influenced systematically and which a lot of research has been dedicated to is *persuasion*. Thus, attitudes may change as *a result of exposure to the information provided by other people*.

Finally, from the societal perspective, *social practices* can play an important role in changing social representations.

One of the questions we have asked is: *May ecology be object of social representation?* D. Jodelet (1989) says 'there is no representation without an object'. The converse, however, is not valid because there are objects without social representations. To answer this question we sought the conditions needed by the emergence of social representations. Studying the issue of the effect of communication in his theory of social representations, Moscovici S. looks at the social conditions of the emergence of representations. He covers thus *the information dissipation and deviation* related to the represented object, which are unequally accessible to groups because, due to the complexity of the social objects, the social and cultural barriers, individuals can not directly access the really useful information to know the object. This favours the indirect transmission of knowledge; hence the appearance of numerous distortions. Another aspect is related to the *focus* on certain aspects of the object according to the subjects' interests and involvement. It is related to the particular position of the group to the object of representation. This position determines the special interest in certain aspects. Focus prevents individuals to have a holistic view of the object. Finally, S. Moscovici reminds of the *inference pressure* because of the need to take a position, to obtain the others' recognition and adherence. In fact, social actors feel the need to have consistent behaviour and speeches about something they do not know pretty well. To communicate about and act for this item poorly mastered is not possible unless the inference covers the areas of uncertainty, the inference pressure favouring the individual's adherence to the prevailing views of his group.

In addition to the conditions of the emergence of some social representations emphasised by S. Moscovici, such as the dispersion of information, focus and inference pressure, P. Moliner adds other conditions. He refers to the fact that all the representation objects are polymorphic objects, meaning that they can occur in various forms in society: work, illness, culture, and addiction, all being able to take different forms. The object of representation corresponds to a class of objects, not to a unique item. In addition, he refers

to objects whose notional or practical possession has a specific importance for a particular social group. Therefore, the polymorphic aspect of a social object and its value of interest are two main features of an object of representation. In addition, if one states the existence of a social representation, one also states the existence of a given group, meaning, at the same time, one raises the question of the group's position towards the object of representation.<sup>15</sup>

Hence, there are two possible configurations, a *structural configuration* and a *conjectural configuration*. Thus, when the object is involved in the genesis of a group it is a structural configuration and when the object comes up in the history of an already existing group, when the groups have to deal with a new and troublesome object and it is a conjectural configuration.

Both situations allow the emergence of a social representation because these situations provide the object of social representation with a value of social stake.

The types of stakes that motivate the representational process can be of identity or of social cohesion.

The *identity stake* occurs in a structural configuration when each social actor defines his identity according to their group's representations, or reinforces a little the existence of this group. As a result, identity contributes to the existence of social groups.

Social cohesion occurs in a conjectural configuration. The *stake of maintaining social cohesion* can be found only where the cohesion already exists, so at an already established group, faced with a new object.

The notion of stake can not be understood unless the relationships that the group has with other social groups are taken into consideration. If the possession of the object corresponds to a stake, it is because the object is invested with a certain value, i.e. the object, namely its representation, is useful to the group (either a necessity of identity, or one of social cohesion). When S. Moscovici says that social representations have as a function the 'orientation of communication and of social behaviour', he indicates clearly that these behaviours are directed to another social one, always present. A representation is always made in relation with someone / something. Therefore, when speaking about social representations one must take into account the social group, the object of representation and the social aspect / object.

In conclusion, there is a representation when from structural or conjectural reasons

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<sup>15</sup> P. Moliner, *ibidem*, 1993;



a group of individuals is faced with a polymorphic object whose possession is at stake in terms of identity and social cohesion, when the possession of this object is a challenge for other social actors who interact with the group and when the group is not subject to strict or rigid control. Analyzing these issues we think we can conclude that, in a conjectural configuration, there are *social representations about ecology* for a new object that may appear in social life, based on social cohesion. Through their propagation they will lead to the formation of *ecological attitudes*.

At the end of the theoretical part, **in the fourth chapter**, we analysed the legal and the institutional framework on environmental issues, starting with a brief history of the emergence and development of the ecological thinking and trend.

We analysed issues related to the fundamental right to a healthy and ecologically balanced environment reflected in the international and national regulations, in the international legal framework on environmental protection. We followed the evolution of the ecological issues having been stated in the plan of international cooperation since the 1960s, reaching, after passing a long evolutionary process, the recognition of the environmental rights as a fundamental human right<sup>16</sup>. Moreover, we looked at some issues related to the Union's legislation about environmental protection, guaranteeing the right to a healthy environment in EU legislation.

The conclusion is that beyond the support given to any conception, the rational exploitation and use of the natural heritage values, the complete and appropriate solving of the vital environmental issues requires the formulation of new ethics of human relationships with the environment. The relationships should be consistent, active, based on a real and acute interest to preserve its own constellation of values, in other words, the alternative of new morals for the rational use of nature.

Ecology and the ecological solution to defy future is a new humanism for the sustainable resolutions to these problems will be found only by man and for man, 'for tomorrow is what we decide to do, not what time will decide for us', as N. Hulot said in the motto of his book *Pour un pact écologique* (2006). Ecohumanism involves a change in the way of being and the way of thinking of each and every person. That is, among other things, the formulation and accreditation of an *ecosophy*, understood as a philosophy of post-modernity, of human survival as a species among other species, in an environment with poor ecological balance, and as the wisdom of living in an age of accommodation and

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<sup>16</sup> Kiss, Al., 2003, *Environnement, droit international, droits fondamentaux*, Cahiers du Conseil Constitutionnel no. 15.

response to redefine the essential data of existence, as another world, fairer and greener, is not only necessary but also possible, with the human being's behaviour as a motor.

The ecology becoming the new humanism of the post-modern period<sup>17</sup>, following the 'ecological revolution', consciously assumed by a species on behalf of all, is the major opportunity and development of human civilization, under increasingly difficult conditions of environmental adaptation. It is, at the same time, a new victory for Europe who, taking the role of the world's ecologist leader, connects to its Renaissance and humanist tradition, which bears the scientific and artistic creativity and innovation, combining naturally the rational with the emotional, and turns its promethean culture (in Goethe's terms), under the pressure of the need for change and adaptation in an ecosophy with universal opening and vocation.<sup>18</sup>

**The experimental part** of the doctoral thesis encompasses four studies, aimed at specific aspects of the investigated issues. Their objectives cover the issues addressed in the theoretical analyses.

We used a methodological approach based largely on *psychosocial surveys and interviews*, applying two research tools (*the NEP scale – New Ecological Paradigm Scale – and the Levenson Scale*). The *NEP scale* allows a quantitative and qualitative analysis of the results on the attitudes based on the new ecological paradigm, connected to the basic principles of sustainable development through pro-environmental individual and group behaviours and through the factories' social responsibility and, in general, through the business entities' social responsibility. The NEP scale aims at the following ecological aspects: *Antiexceptionalism* (assuming that people reject the idea of human exceptionalism, according to which human beings are above the laws of nature), *Antianthropocentrism* (rejecting the idea that nature exists only to serve people's interests and needs, so it does not have any inherent value), *Limits to Growth* (concerns about the ethics of the exploitation and development of natural resources, about limiting human interference with nature and limiting population growth in order not to overcome the Earth's sustainability), *Balance of Nature* (stating a natural balance which human intervention is threatening), *Ecological Crisis* or *Eco-Crisis* (increased human dependence on natural resources and the disastrous consequences of human interference with nature).

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<sup>17</sup> C. Barbier, director of L'Express, in the 22 December 2006 issue, gave a significantly *per se* title to that editorial: *Un nouvel humanisme*

<sup>18</sup> Duțu, Mircea, 2007, *Tratat de dreptul mediului*, Ediția 3, Editura C.H. Beck, București;

*The Levenson scale (IPC)* is a self-assessment questionnaire developed by Levenson in 1972. IPC evaluates a person's causal relationship established between obtaining a certain appreciation / reinforcement and their conduct, what Rotter (1966) conceptualised in terms of *internal control* versus *external control*. *Scale I (internal control)* indicates whether people establish links between their behaviour and future events. *P and C Scales* assess a person's sense of determination from the outside, by other people, (P), or by chance (C).

**Study no. 1** highlights the spectrum of students' ecological representations, opinions and attitudes. It had, as a first objective, the assessment of the fidelity of the NEP Scale by calculating the *Alpha ( $\alpha$ ) Cronbach coefficient*. We found that the Alpha Cronbach global index of the NEP Scale, at all its 15 items, *is acceptable*, being *over 0.75* and the statistical analysis showed a satisfactory internal consistency of subscales / items of the NEP.

The second objective of the first study aims at highlighting the relationship between the level of representations, opinions and attitudes about the natural environment and the locus of control. The hypothesis of the research makes the prediction that the level of consciousness and ecological values, identified by social representations, pro-ecological opinions and attitudes of students is high.

The specific hypotheses were as follows: a) social representations related to the natural environment influence ecological opinions and attitudes; b) internal people have ecological opinions and attitudes with a higher frequency index than the external people; c) the score obtained at the NEP items highlighting the pro-ecological opinions and attitudes positively correlates with internality (I) highlighted by the Levenson scale; d) the score obtained at the NEP items highlighting non-ecological opinions and attitudes positively correlates with externality (the feeling of control through other people – (P) or by chance (C) – highlighted by the Levenson scale.

To investigate the spectrum of social representations, ecological opinions and attitudes, and of some factors that determine them, we applied the NEP Scale and the Levenson control scale (*'The Internal, Powerful Other and Chance Scales' - IPC*) on a batch of 210 students between the ages of 18 and 30, of which 75.5% female subjects and 24.5% male subjects.

The analysis and interpretation of the data regarding the students' spectrum of representations, ecological opinions and attitudes show that the average overall scores of the NEP scale obtained by students is 3.93, the maximum score being of 5 points.

Therefore, *the spectrum of representations, pro-ecological opinions and attitudes of the participants in this study is of an average level.*

The analysis of the subscales highlights some interesting aspects.

At the *Antiexceptionalism* subscale the idea of human exceptionalism is rejected, idea according to which human beings are above the laws of nature, yielding an average score of 4.19. This idea of ‘human exceptionalism’, which supports the people’s dominant position over the natural world, on the one hand, and of the economy over nature, on the other hand, is rejected by the students investigated.

At the *Antianthropocentrism* subscale the students reject the idea of human beings dominance over nature, getting an average score of 3.88, proving that they have internalised ecological social representations and opinions that are in line with the new ecological paradigm. They also reject, in general, the idea that nature exists only to serve people’s interests and needs as well as the concept according to which people are entitled to alter the natural environment as their own interests and needs dictate.

At the *Limits to Growth* subscale the students got an average score of 3.64, which means that the surveyed young people tend to adhere to the new ecologic paradigm, being concerned with the ethical issues of the exploitation and development of natural resources, of limiting human interference with nature and limiting population growth in order not to overcome the Earth’s sustainability.

At the *Balance of Nature* subscale the students obtained an average score of 4.08, being aware of the fragile ecological balance under the conditions of irrational exploitation of natural resources and pollution. Being aware of the negative consequences of human intrusion and of the vulnerability of the natural world, the students expressed their views that reject the dominant socio-economic vision of the Western industrialized countries, according to which the natural balance would be powerful enough to face the challenges of the modern industry.

An average score of 4.18 was obtained at the *Ecological Crisis* subscale, showing that the surveyed students are aware of a possible ecological crisis due to the disastrous consequences of human interference with nature. The new ecologic paradigm emphasises human dependence on natural resources and insists on their rational exploitation, so that man should live in harmony with the natural environment.

The hypothesis from which we started this investigation was confirmed, i.e. the level of ecological awareness and of ecological values is high, as evidenced by the relatively high percentages (over 80%) of the subjects’ expression of *total agreement* or

*partial agreement* regarding the ecological opinions and attitudes revealed by the new ecological paradigm (NEP), aimed at the pro-ecological social representations.

The analysis of the data obtained by applying the *Levenson control scale* (*The Internal, Powerful Other and Chance Scales - IPC*) and the *NEP scale*, indicate that the participants with frequent pro-ecological opinions, attitudes and behaviours revealed by the NEP scale, are characterized largely by a sense of *internal control* of events and situations of ecological nature.

On the other hand, the people who show less frequently and / or fewer pro-ecological opinions, attitudes and behaviours are more characterized by the sense of *external control* of events and situations of ecological nature. These participants obtained higher scores on the P scale (control through other people) and on the C scale of the lack of control (the feeling of chance intervention).

	Locus of intern control	Locus of extern control 'P' (control through other people)	Locus of external control 'C' (belief in chance)
Pro-ecological opinions/attitudes with a high index of expression (5.4)	.75 **	-.51**	- .47 *
Pro-ecological opinions/attitudes with a low index of expression (1.2)	-.51**	.69 **	.65 **

\* p<.002; \*\* p<.001

*Fig. no. 5. Correlations (r) between pro-ecological opinions and attitudes and 'locus of control'*

As one can see in the above table, there are positive correlations, highly significant (at  $p < 0.001$ ) between the pro-ecological opinions / attitudes with a high index of expression and internal control. On the other hand, between the pro-ecological opinions / attitudes with a low index of expression and internal control, the correlations are negative. In conclusion, there are highly significant differences (at threshold  $< 0.001$ ) between the students participating in the study who have frequent pro-ecological opinions, attitudes and behaviours in relation to those who express less often and / or fewer pro-ecological opinions, attitudes and behaviours regarding the locus of control, i.e. the ways of control of different events or situations of ecological nature.

Next, we analysed the relationship between the level of pro-ecological opinions and attitudes and the female subjects' feeling of control compared with the male subjects' one.

Based on Pearson Chi-Square ( $\chi^2$ ), Kendall and Gamma statistical tests, one can say that there are significant differences ( $p < 0.005$ ) regarding the effect on the feeling of control over ecological opinions and attitudes for female students with a greater percentage of frequency than the average, compared with the female students who have a lower percentage of frequency than the average. In conclusion, there is a strong association between the percentage of ecological opinions and attitudes expressed by the female students and the feeling of internal or external control.

In case of a level of pro-ecological attitudes and opinions with values higher than the average, the students have the sense of internal control in a percentage of 65.7% and the feeling of external control of 50%. With a below average level of pro-ecological opinions and attitudes, the students have a sense of internal control at a rate of 34.3% and the feeling of external control of 50.0%.

In conclusion, both female and male students often have a sense of internal control, but they are characterized by external control, too, so that they believe in other people's intervention or in chance in order to solve ecological problems.

It may be noted that in the male students' case there are no statistically significant differences regarding the association level and pro-ecological opinions (above the average or below the average) with the sense of control ('locus of control').

#### Ecological – Control (Students)

		Symmetric Measures			
		Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Ordinal by Ordinal	Kendall's tau-b	.157	.109	1.441	.150
	Kendall's tau-c	.154	.107	1.441	.150
	Gamma	.314	.208	1.441	.150
N of Valid Cases		81			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

*Fig. no. 6. The degree of association of the students' pro-ecological opinions and attitudes with the feeling of control*

**Symmetric Measures: Ecologic– Control (Female students)**

		Value	Asymp. Std. Error(a)	Approx. T(b)	Approx. Sig.
Ordinal by Ordinal	Kendall's tau-b	.224	.079	2.837	.005
	Kendall's tau-c	.218	.077	2.837	.005
	Gamma	.435	.137	2.837	.005
N of Valid Cases		155			

a Not assuming the null hypothesis.

b Using the asymptotic standard error assuming the null hypothesis.

*Fig. no.7. The degree of association of the female students' pro-ecological opinions and attitudes with the feeling of control*

As it follows from the above data, if the female and male students have an 'locus of internal control' (feeling of internal control), their ecological opinions and attitudes with above average values are expressed by a relatively high percentage. Thus, the male students' internal control is of 65.7% and the female students' internal control of 51.4%.

The hypothesis according to which, *under the conditions of an increased level of pro-ecological opinions and attitudes, the male students have a sense of internal control more frequent than the female students* was confirmed.

**Study no. 2** is a comparative analysis of the interest of the Romanian and the Hungarian nationalities young people for environmental issues.

The objective of the investigation was to carry out a comparative study on the environmental opinions, attitudes and concerns expressed by the Romanian and Hungarian young people.

We started from the hypothesis that there are no significant differences in the environmental opinions, attitudes and concerns expressed by the young people of Romanian and Hungarian nationalities.

To verify this hypothesis we used a *psychosocial survey* on the issue of ecological representations, opinions and attitudes, designed by us, based on 11 questions, with multiple-choice answers.

The survey – *through personal interview* – was carried out from February 2009 to May 2010. Some operators were used in order to apply the 'face to face' procedure, the respondents being asked questions in their residences.

*The sampling method* was rational choice (*judgment samples*) and chain selection (*the snowball method*). The sampling was based on the interviewer's reasoning or controlled assumption that the respondent represents the population of interest. The sampling was

based on the fact that the respondents provide the names of other respondents who are part of the population of interest. The sampling error was 3.86% for a 95% confidence interval.

The population included in the survey consisted of young people from some counties from Transylvania (Brasov, Cluj, Mures, Covasna, Satu Mare), the sample comprising 625 young people, of which 76.80% of *Romanian nationality* and 23.20% of *Hungarian nationality*. From the point of view of the subjects' *gender*, there were 308 young male people and 317 female people. Considering the characteristic of *nationality*, the sample is made up of 233 male young people of *Romanian nationality* and 247 female young people. The young people of Hungarian nationality are: 75 male and 70 female. In this regard, we would like to note that when they have a strong opinion on environmental protection, 25.90% of the young respondents *often* try to convince the others of the importance of their opinion, a large segment of the sample (49.80%) do so *occasionally*, while only 5.30% of the respondents have *never* done that. The young people believe *that the main priority in addressing environmental protection*, to a great extent, lies in better education and public awareness in the spirit of environmental protection (37.60%) and pollution prevention (32.60%), respectively.

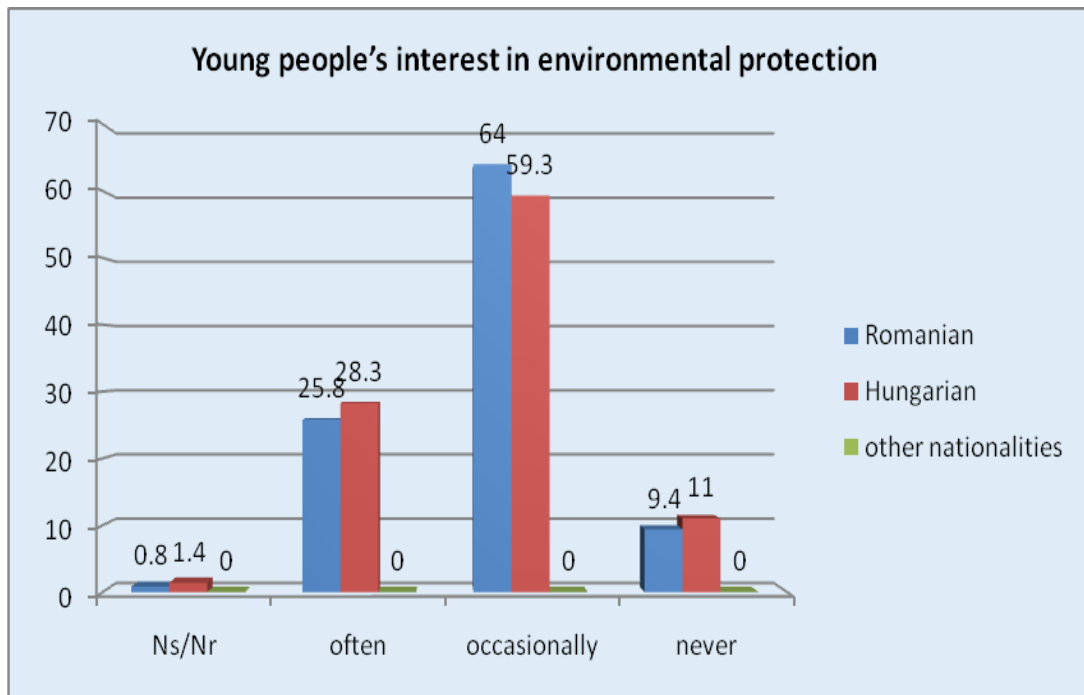


Fig. no. 8. Young people's interest in environmental protection

The main directions followed by the young respondents, regarding the problem of waste, are in *great and very great degree*: recycling (67.10%), then *using ecological products* (64.90%). *Using reusable and rechargeable systems and purchasing products*



with a long life are less followed directions, being used in a small and very small degree of 67.10% and 64.90%.

A percentage of 62.80% of the subjects of Hungarian nationality would like to have more information about sustainable development and 25.90% of Romanian nationality subjects said that they really need more information about sustainable development. A percentage of 18.60% of the Hungarians and 19.20% of the Romanians are happy with what they already know about sustainable development.

### Protecting the environment by nationality

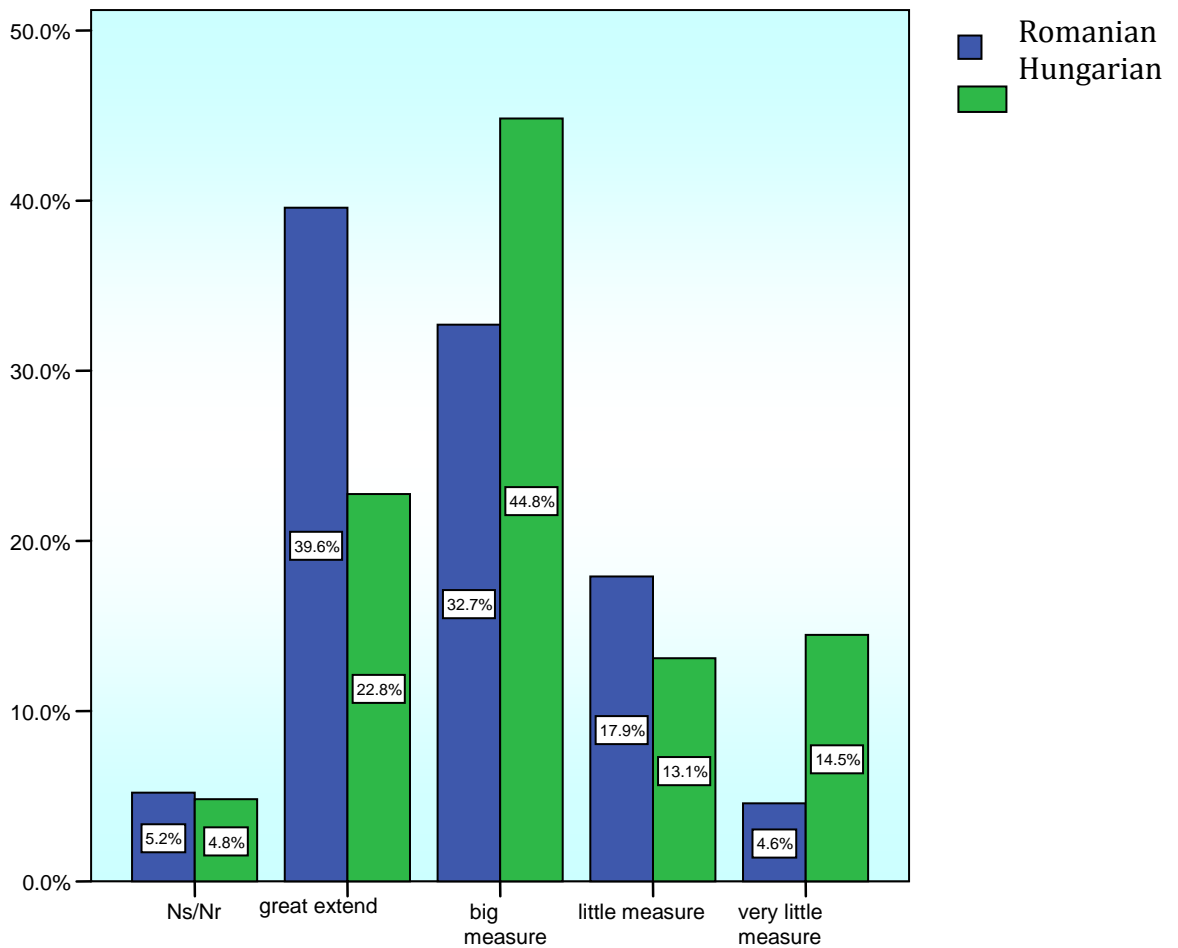
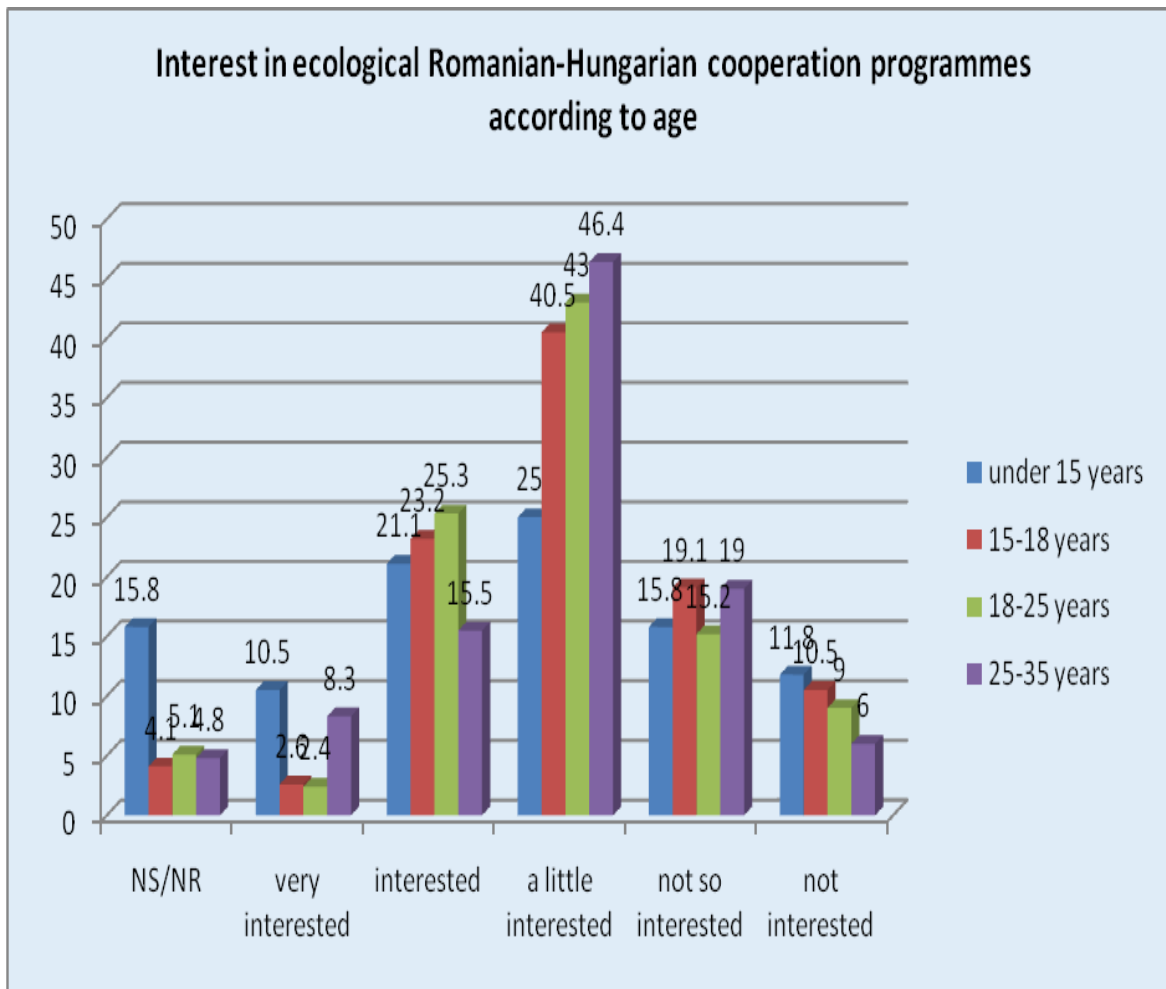


Fig. no. 9 Protecting the environment by nationality

Based on *the exchange of views on environmental protection*, young people think that it is often necessary to change some of their habits, but first of all it is required to review the way they look at and especially the way they understand the human-nature relations. The socio-economic future has become not only worrying but also urgent. Therefore pro-environmental approaches are necessary, approaches based on exchanges of information and actionable environmental strategies.



*Fig. no. 10. Interest in ecological Romanian-Hungarian cooperation programmes according to age*

When referring to the responders' answers regarding the exchange of information and actions related to the protection of the natural environment between the young people from Romania and Hungary, or between the Romanian and Hungarian young people from our country, we can conclude that in the current European context nationalism gives way to regionalism.

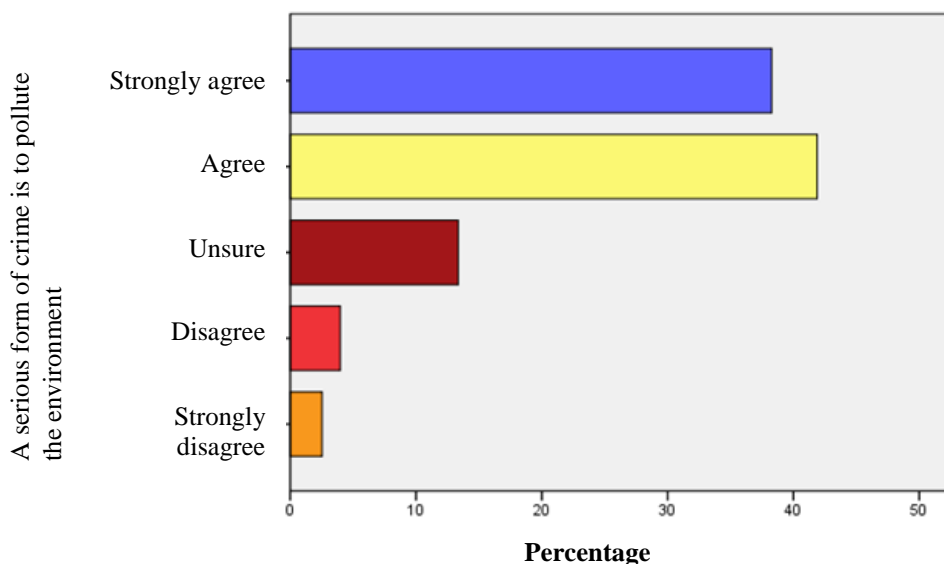
No matter their nationality, young people are usually characterized by ecological social representations, as well as pro-environmental opinions and attitudes which are a prerequisite for a behaviour that protects the natural environment.

**Study no. 3** aimed to investigate the ecological social representations, opinions, attitudes and behaviour regarding a healthy life in natural environment.

We had the following hypothesis: ecological social representations structured gradually, since early childhood, determine the formation and expression of pro-environmental opinions, attitudes and behaviours. Of 277 participants in the research, 44.6% were high school students, 44.6% were students and 10.8% were managers from different industries.

The analysis of the data obtained from *the questionnaire* on ecological social representations, opinions and attitudes regarding a healthy life in natural environment (developed by us) show mainly that most of the responders are concerned with this aspect, being ecologically aware fact *that can be converted in behaviours that protect natural environment*.

### **A serious form of crime is to pollute the environment**



*Fig. no. 11 The percentage of subjects who believe that environmental pollution is a serious crime*

A non-ecological behaviour can sometimes occur at some young people, if, for example, ‘in protected areas they were not made aware of the rules regarding environmental respect’. Thus, a small percentage of 6.5% among those interviewed indicate a category of people who are not considered sufficiently informed in terms of environmental protection.

### **From a professional point of view I believe that I can protect the environment**

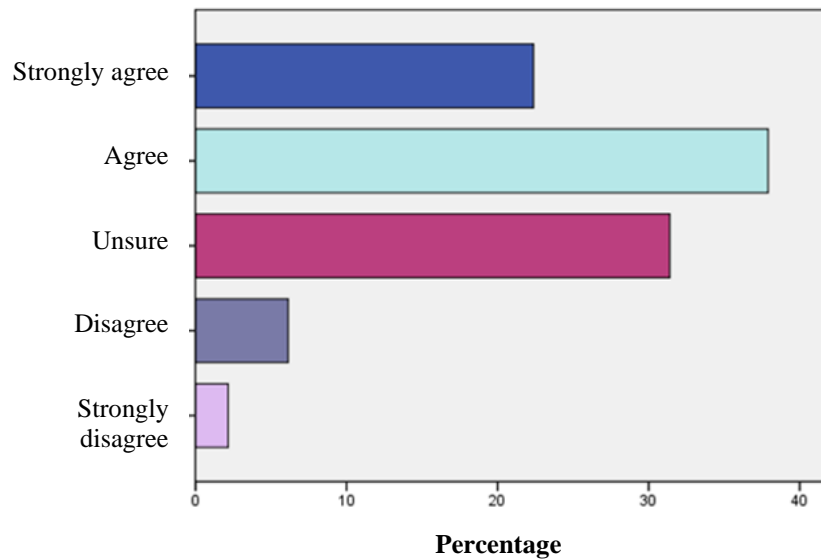


Fig. no. 12. The percentage of subjects who consider that they can protect the environment from a professional point of view

The problem of environmental degradation concerns, naturally, every individual and every nation. Therefore, all citizens must be well informed on this issue, generating thus appropriate pro-environmental positions, opinions and attitudes.

**Study no. 4** clearly demonstrates the need and usefulness of research in the field of environmental psychology, which we conceive as a boundary discipline between social psychology and organizational psychology. There are concerns for the study of psychosocial and psychological variables which, in different socio-economic contexts, influence pro-ecological attitudes and behaviours. In recent decades the issue of environmental strategies and behaviour of employees from industrial enterprises for environmental protection, based on proper understanding of the concept of sustainable development was addressed by many international organizations (UN, European Commission, UNESCO, etc.) and many researchers.

The objective of the fourth study was to highlight the economic and ecological

opinions, attitudes, policies and strategies of the managers and the employees from industrial enterprises on environmental protection.

The hypothesis from which we started this investigation is: it is assumed that there is an average level of awareness of the need of implementation of the economic and ecological opinions, attitudes, policies and strategies of the industrial companies on environmental protection.

This study involved a total of 30 people professionally active in various branches of economy, aged between 20 and 67 years old, the highest percentage being recorded at the ages of 35, 37 and 51.

The tools used in this investigation were: *the ECO-BALANCE questionnaire of ecological opinions and attitudes of the staff from enterprises*, developed by us, and the *NEP (New Ecological Paradigm) scale*.

The Eco-Balance questionnaire looks at the following aspects: ecological awareness and education, opinions about the impact of the environmental measures on the enterprise's development in the current competitive environment, the opinion about the impact of an enterprise's 'ecological book', the attitude towards the financing of the environmental measures and politics in the enterprise, the opinion regarding the objectives of and actions for environmental protection compatible with the enterprise's development, the appropriate behaviour towards the environmental protection of the management and the employees.

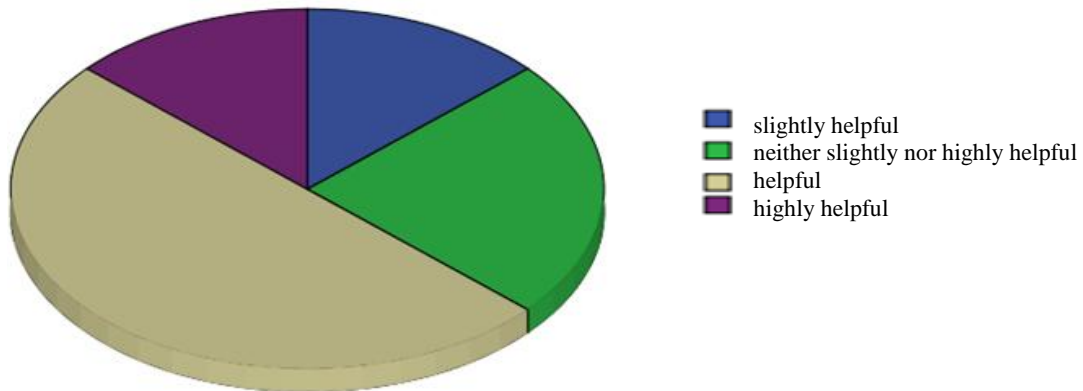
The study is part of a series of research that attempts to demonstrate the need for implementing the ecological attitudes and behaviours to optimise corporate social responsibility.

The hypothesis from which we started this investigation was confirmed. *The ecological awareness and values of the investigated employees from industrial enterprises is medium*, which is expressed in the percentages of medium level (50-57%) of the expression of some ecological opinions and attitudes of the employees. The same percentages of average or relatively low level (40-47%) were found in the environmental protection strategies and policies of the management, the directory board, and the trade unions, policies of allocation of financial resources for environmental, anti-pollution measures.

It is significant that environmental legal measures are considered to be highly helpful on a competitive and economic future plan by 26.7% of the investigated

employees, and a percentage of 43, 3% think that it is helpful in terms of competitive and economic future.

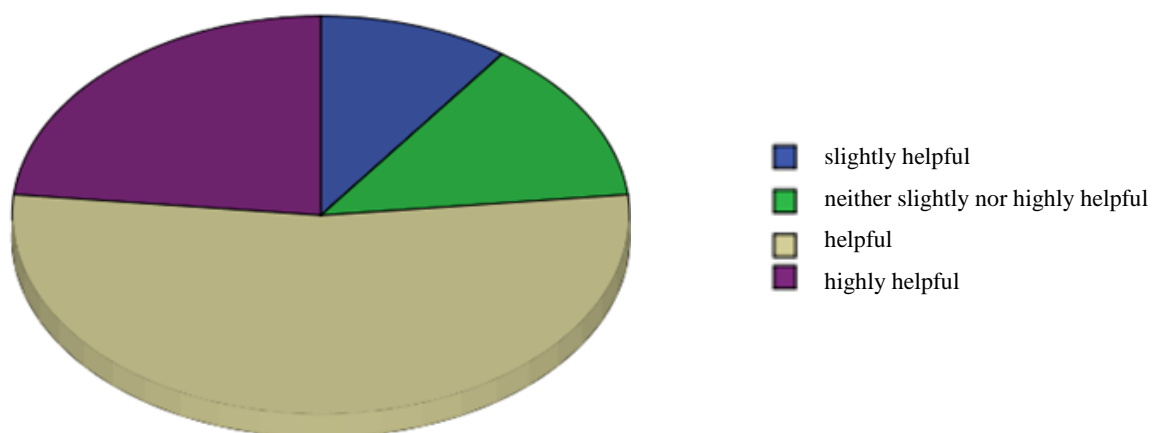
**The application of environmental protection measures in companies is a competitive advantage in the future competitive and economic environment**



*Fig. no. 13. The percentage of subjects who believe that the application of environmental protection measures in enterprises is a competitive advantage in the future competitive and economic environment*

It is important that 53.3% of the respondents believe that *signing in an ecological book in the company where they work as the ideal method by which all staff is obliged to respect and protect the natural environment.*

**Signing in an 'internal ecological book' of a company would be helpful for environmental protection**



*Fig. no. 14. The percentage of subjects who believe that signing in an 'internal ecological book' in the enterprise would be helpful for environmental protection*

The respondents' answers suggest that at each of the 15 items of NEP *most respondents support the positive beliefs and attitudes towards nature and environment.*

	Strongly Agree	Agree	Unsure	Disagree	Strongly disagree
1. We are approaching the limit of the number of people the Earth can support.	45,5 %	30,5 %	10 %	5 %	
2. Humans have the right to modify the natural environment to suit their needs.		10,5 %	9,5%	48,5 %	31,5%
3. When humans interfere with nature it often produces disastrous consequences.	68,5%	24,5 %	7 %		
4. Human ingenuity will insure that we do not make the Earth unliveable.	55,5 %	20,5 %	24 %		
5. Humans are seriously abusing the environment.	71,5 %	28,5 %			
6. The Earth has plenty of natural resources if we just learn how to develop them.	24 %	25,5 %	15,5 %	20 %	15 %
7. Plants and animals have as much right as humans to exist.	39,5%	35,5 %	10 %	15 %	
8. The balance of nature is strong enough to cope with the impacts of modern industrial nations.		10 %	10,5 %	65 %	14,5
9. Despite our special abilities, humans are still subject to the laws of nature.	80,5 %	15 %	4,5 %		
10. The so-called 'ecological crisis' facing humankind has been greatly exaggerated.		10 %	5 %	50 %	35 %
11. The Earth is like a spaceship with very limited room and resources.	45 %	34,5 %	5,5 %	15 %	
12. Humans were meant to rule over the rest of nature.	4,5 %	5,5 %	10%	49,5%	30,5 %
13. The balance of nature is very delicate and easily upset.	55 %	35,5 %	9,5 %		

14. Humans will eventually learn enough about how nature works to be able to control it.		8,5	11 %	45,5 %	35 %
15. If things continue on their present course, we will soon experience a major ecological catastrophe.	25,5 %	34,5 %	5,5 %	24,5	10 %

*Fig. No. 15 The percentages of responses at the NEP (New Environmental Paradigm) items*

The results of this study are broadly in line with various Western studies that looked at pro-ecological attitudes and behaviours of the employees from industrial enterprises and other economic organizations. Thus, it was found that the employees' opinions, attitudes and behaviours on environmental protection are determined largely by the interrelations of three factors: *psychosocial, economic and ecological*.

According to industrial employees, the future competitive development of enterprises, linked to sustainable economic development really means pro-ecological measures. But they depend heavily on the financial investments allocated, which unfortunately are not currently sufficient, as well as on the management based on the use of anti-polluting technologies and the involvement of all employees, managers and trade unions.

The analysis of the results of the *NEP scale* and *the Eco-balance questionnaire* show that the employees from industry reject the '*anthropocentric*' *vision of the world*, which holds that the man is the master of nature, and the natural environment is considered only for satisfying humans' needs by any means.

Conversely, the participants in the study show predominantly an 'eco-centric' vision, being aware of the limits of the natural resources and of the possibility of an ecological crisis, agreeing that people should promote attitudes and behaviours of environmental protection. It may be inferred that the participants in this study show close links between beliefs, values and personal norms on ecological behaviour from industrial processes, on the one hand, and the vision they have about the environment and about its protection, on the other hand. The 'eco-centric' vision revealed by the NEP scale represents the world as based on considering the environment as a complex system of interactions between fauna



and flora, between natural resources and humans' actions. So, we believe that the 'eco-centric' opinions and beliefs can be a predictor of the attitudes and behaviours aimed at protecting the natural environment and the participation in the sustainable development paradigm.

*An original contribution of the doctoral thesis* is the investigation of the ecological social representations, and the pro-environmental opinions, attitudes and behaviours of the young people and of the industrial employees from the Transylvanian area of our country, based on the *new ecological paradigm* (NEP). The usefulness of this approach has been confirmed in recent decades by the investigations carried out by other researchers from the U.S. and Western European countries.

Our investigations have shown the usefulness of the exploratory correlative research in order to highlight the factors involved in forming and expressing ecological opinions and attitudes and their implementation the protection of the environment. Based on these factors, we also made proposals to optimise the environmental legislation, underlining, among other things, the importance of *corporate social responsibility*.

So far our country has not put enough emphasis on *social, societal and natural environment protection components*, characteristic to *corporate social responsibility*. Therefore, we propose to apply at the enterprises' managerial level principles of Environmental Psychology and Organizational Psychology by this increasing the employees' opportunities to participate in pro-environmental activities and to influence the decision-making processes in the field of nature protection, all these influencing positively the competitive pro-environmental economic-industrial environment.

Our research data argue for increasing *ecological awareness* and concern for fostering *ecological behaviour* in young people and adults, by joining *the ecological values* on a cognitive and affective-motivational plan, to prevent the irrational exploitation of natural environment and its pollution by using preventive measures focused on the climate and management of professional activity, measures focused on anti-pollution technologies and especially combined measures.

Our data allow us to state that to *change attitudes towards the environment* we can use strategies similar to those that want, in general, to influence social representations, namely *providing information during some courses, movie trailers or bibliographic sources, establishing positive and constructive interpersonal contacts, using ecological – 'pro-environment' – language, active learning through role playing and group discussions, involving the mass-media by promoting positive images of ecological actions, etc.*

We believe that investigating social representations, opinions and attitudes toward the natural environment is a starting point and a valuable source of information to assist decision makers, and also to promote and evaluate the effectiveness of initial and continuing training programmes provided to different categories of professionals dealing with citizens' ecological education. Starting from the investigated socio-professional categories we believe that it is possible a future community-wide expansion of the influence, especially drawing on the educational roles performed by the specialists and the models they provide to children, young people and, in general, to community members.

The results of our studies bring arguments *in terms of the importance of the application of the European legislation on environment and the optimisation of law in this complex area under the conditions of our country* for ensuring sustainable development.

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