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State of environmental intelligence students from the Poland, Slovakia, the Czech Republic and Ukraine

KEYWORDS

environmental intelligence, environmental personality, environmental protection, sociological research, interdisciplinary

ABSTRACT

Article consists from two part – theoretical, which contain conceptualization of basic concepts and empirical, in which have been presented investigative hypotheses and analysis of the data obtained results conducted research in Poland, Slovakia, Czech Republic and Ukraine in 2015. The subject of the research was: "Environmental values in the awareness of the students of humanities and life sciences from the selected European countries".
Formulate conclusions are pessimistic enough. They indicate, that level of evolution of environmental intelligence is low among students, accompanies also deficit of feature of so called environmental personality ago. The highest level of environmental intelligence have presented non-believers and persons declaring other confession. In second variable they were inhabitants of cities. Results they should present impulse for taking of next research in this range.

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1. Foreword

As a result of continued human evolution, many human organs have undergone some changes; for example, the volume and mass of human brain has been gradually increasing for some time now. This fact should not be associated with consistent development of human mental abilities, but when it accelerated, *homo*

sapiens acquired the ability to develop culture, which enabled him to survive until this day.

Although the human brain has not been fully explored yet, there is multiple evidence, gathered by the world of science over many years, that, generally speaking, it is where intelligence is located. The human being has been fascinated by it since the ancient times, when people started comparing themselves both to other animals and to other persons. It quickly turned out that, in terms of the efficiency of thinking, drawing conclusions and other cognitive processes, human beings differed not only from animals but also from one another. The differences between people as well as their sources and proper descriptions have been the object of interest for numerous specialists exploring the issue of human intelligence. The moderate ambition of this paper is to analyse this issue, although to a limited extent, namely in association with the problem of environmental protection.

2. The concept of environmental intelligence

In order to understand the concept of environmental intelligence, it is necessary to first explain its second element. It should be noted that intelligence is very hard to define; however, in order to get a general understanding of what it is, it is worth quoting the pioneer of intelligence research, sir Francis Galton, who believed that intelligence consisted of two elements: the energy of action and sensitivity of the senses. The first is necessary to do mental work and the latter makes it possible to receive information from the environment, which, if properly used, enable adaptation to the conditions of the environment[1]. Although the traditional understanding of mental ability is still valid, there is more focus now on its other aspects. According to the American psychologists Linda Gottfredson, "Intelligence is a very general mental ability, which includes the ability to draw conclusions, plan, solve problems, think abstractly, understand complex ideas, learn fast and learn from the experience"[2]. This definition suggests that the core of intelligence is the ability to cope with new and complex situations that happen to a person. Thus, intelligence is a generalised trait, i.e. one that manifests itself in different situations and intellectual tasks. Brain abilities deserve to be

[1] Nęcka E., *Inteligencja. Geneza – Struktura – Funkcje*, Gdańsk: Gdańskie Wydawnictwo Psychologiczne, 2003, p. 15-16.

[2] Gottfredson L., "Mainstream Science Intelligence: an editorial with 52 signatories history and bibliography". *Intelligence* 1997, 24(1): p. 13.

called traits, as they are manifested in a certain category of tasks, which means that they are generalised to some extent. A trait then should be understood as a "relatively constant, characteristic of an individual, general tendency to behave in specific ways in specific situations"[3]. In this context, traits are not only the properties of human intellect (the efficiency level in terms of thinking, drawing conclusions and other cognitive processes), but also the personality and temperament of a person. The traits of temperament are, first of all, innate properties of the nervous system that determine formal characteristics of human behaviour, such as activity or reaction to stimuli. Personality traits, on the other hand, are typical behaviours of a person in emotional and social situations[4]. The latter type of traits is particularly interesting in association with the issue discussed here, as it relates to the concept of environmental personality that functions in the literature on the subject. The term personality means "a set of traits that condition the consistency of the behaviours and identity of an individual. In terms of the intensity and configuration of the traits that develop in the course of the interaction of genetic and environmental factors and form the structure of personality (...) there are individual differences. They jointly influence the specific adaptation of an individual to the requirements of the environment (...)"[5]. Psychologists and cultural sociologists include the following elements in the set of traits that characterise the abovementioned type of environmental personality: openness (extroversion) and kindness towards other creatures, honesty, tenderness, emotionality, helpfulness, modesty, agreeability, tolerance, conscientiousness, contemplation, empathy, resilience to stress, holistic worldview, sensitivity to the beauty of the nature, eagerness and ability to defend it, lifestyle in accordance with the accepted hierarchy of values – more spiritual than consumptive[6]. Some of those traits even constitute the basis of the structure of human personality; the American psychologist Lewis Goldberg identified them to be: extravagance, agreeability, conscientiousness, emotional constancy and intellect[7].

Coming back to the issue of intelligence, it is worth noting that it is perceived not only through the prism of one type of monolithic ability that is closely linked with thinking with the use of abstract symbols. The American psycholo-

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[3] McCrae R. R., Costa P. T., "Trait Explanations in Personality Psychology". *European Journal of Personality*, 1995, 9: p. 232.

[4] Nęcka E., *Inteligencja…,* op. cit., p. 14.

[5] Strelau J., Doliński D. (ed.), Psychologia akademicka, vol. 1, Gdańsk: Gdańskie Wydawnictwo Psychologiczne, 2010, p. 799.

[6] Kalinowska A., *Ekologia: wybór przyszłości*, Warszawa: Editions Spotkania, 1993, p. 298.

[7] Goldberg L. R, "The structure of phenotypic personality traits". *American Psychologist*, 1993, vol. 48, No. 1: p. 26-27.

gist Howard Gardner tried to prove this and he proposed the theory of multiple intelligences consisting of seven different abilities: linguistic, logical-mathematical , musical, kinesthetic, spatial, intrapersonal (emotional) and interpersonal (social) intelligences[8]. Later, he added the abovementioned environmental intelligence to the list. The development of the latter is stimulated by directly experiencing and discovering the nature by means of receiving, with all the senses, the stimuli sent by the environment. Recognising the sensitivity and emotionality addressed to the world of natural assets as well as strongly experiencing the deteriorating condition of the natural environment is defined by some as an expression of specific mental ability called environmental intelligence[9]. It should be noted that environmental intelligence does not mean the sensitivity towards the nature, as it is not intelligence in itself, but rather becoming aware of or understanding the sensitivity and emotionality addressed to the world of natural assets and environmental protection. The consequence of such awareness should be the application of this intellectual ability to solve complex problems concerning the protection of natural environment[10].

Another American psychologist, Daniel Goleman, identified ecological intelligence, which, however, should not be fully identified with environmental intelligence. Ecological intelligence means the ability to adapt to an ecological niche that one occupies. "Ecological", in this case, means understanding the way the nature functions and "intelligence" means the ability to learn from the experience and treat the environment rationally. Thus, ecological intelligence involves understanding, accepting and making practical use of a theory that enables a human being to find his place in nature[11].

To sum up this part of the article, developing environmental intelligence requires awareness of the fragility of the natural life and a deep experience of the damage done by people to the natural environment, especially if its immediate consequences are not evident yet. These sensations – unpleasant as they may be for righteous people – make one experience one's humanity more fully, ennoble and enable comprehensive development of a human being, in the physical, intellectual, sensual as well as emotional spheres. Arousing positive feelings in people

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[8] Gardner H., *Frames of mind: The theory of multiple intelligences*, New York: Basic Books, 1983, p. 38-49.

[9] Louv R., *Last child in the woods: Saving our children from nature-deficit disorder*: Algonquin Books of Chapl Hill, 2005, p. 98.

[10] Squalli J., "Intelligence and environmental emissions". *Intelligence* 2014, 44: p. 34.

[11] Goleman D., *Ecological intelligence: How knowing the hidden impacts of what we buy can change everything*: Broadway Business, 2009, p. 44.

about the nature and making them reflect and feel bad about its poor condition is a major challenge for those who are engaged in developing and activating mental capacities towards environmental protection[12].

3. Analysis of empirical research

The condition of environmental intelligence among the members of a given society may only be determined on the basis of scientific research. One of such sociological researches was conducted between 13 April and 16 October 2015. The theme of the research project was: "Ecological values in the awareness of the students of humanities and natural sciences in selected European States". The project collected data, among other things, on: students' knowledge of environmental protection, environmental hazards and their gravity; their perception of the condition of the natural environment; the level of environmental culture among the respondents, including the accepted ecological standards and values and their position among other social goods valued by students; their attitudes towards the natural environment and, if possible, the conscious sensitivity and emotional state of the respondents towards environmental problems, as well as the personality traits of the respondents who care about the condition of nature.

The most important research problems, focusing mainly on verifying the level of development of environmental intelligence in students, were formulated in the following way: Do the respondents have the ability to think holistically? What emotions do the respondents experience in association with issues concerning environmental protection? Does the topic of care for the natural environment arouse social optimism or pessimism in the respondents? What motivates students to care for the nature? What elements of the nature, according to the respondents, deserve moral status? To the respondents support species egalitarianism? What are the personality traits of the respondents who declare to care for the natural environment?

The above research problems correspond to the following preliminary and general research hypotheses: Students think to some extent holistically about the natural environment, because they are aware that the ecosystem is one whole consisting of interconnected and interacting elements. The issue of the condition of the natural environment usually triggers negative emotions in the respondents, such as: fear, anxiety, uncertainty, concern, because, in their opinion, the nature is in a bad shape. Discussing environmental protection triggers rather negative

[12] Czartoszewski J. (ed.), *Edukacja ekologiczna na progu XXI wieku. Stan – możliwości – prognozy, Warszawa*: Verbinum, 2001, p. 38.

feelings in individuals, which, in an overall balance, results in a general social pessimism of the respondents. What motivates students the most to care for the environment are immediate benefits that one can gain, which are manifested, among other things, in improved quality of life. According to the respondents, the moral status that a human being undoubtedly deserves should also be given to animals, because they are particularly sensitive to pain. Even though students are generally willing to give them the autotelic value, they rather do not support entire species egalitarianism. The results of the research do not fully answer the question of the set of personality traits in the respondents that support environmental protection projects, although, with a certain degree of probability, it can be concluded that those respondents are characterised by, among other things: emotionality, openness, tolerance, contemplation and kindness towards other creatures.

It is worth noting that the project was implemented based on a methodology according to which the research was conducted on a purposive sample of 520 students. The sample included students from: the University of Rzeszów (Poland), the University of Presov (Slovakia), the Rivne State University of Humanities (Ukraine) and the Ostrava University (the Czech Republic). The universities were selected on the basis of the snowball sampling method. In each of those universities, 130 students were included in the research, half of them students of humanities or social sciences and the other half – natural sciences students. The respondents were bachelor or engineer degree students (apart from 1st year students) and master's degree students. All the respondents were full-time students. The fields of studies included in the research were – in the case of humanities and social sciences: social work (in Poland III year I degree, in Slovakia I year II degree, II year I and II degree), cultural studies (in Poland I and II year II degree), political science (in Poland II year II degree), andragogy (in Slovakia II and III year I degree and II year II degree), philology (in the Czech Republic I and II year II degree) and history (in Ukraine III and IV year I degree, in the Czech Republic II year I degree), and in the case of natural sciences: food technology and human nutrition (in Poland III year I degree), biology (in Slovakia I year II degree and II year I and II degree, in Ukraine II and III year I degree, in the Czech Republic I year II degree), ecology (in Slovakia I year II degree and II year I and II degree, in Ukraine III year I degree), environmental protection (in Poland I and II year, II degree, in the Czech Republic II year I degree, I and II year II degree), agriculture (in Poland I year II degree), geography (in the Czech Republic II and III year I degree, I and II year II degree) and cartography (in the Czech Republic II year I degree). 19.8 % of respondents were students of biology, 15.4% – students of history, 14,6% – social work, 7.9% – philology 7.5% – ecology, 6.7% – geography,

6.2% – food technology and human nutrition, 5.8% – environmental protection, 5,4% – andragogy, 4.6% – cultural studies, 2.7% – agriculture, 1.7% – cartography, 1.7% – political science. The studies were randomly selected, which means that the research covered students who had scheduled classes at the time when the research was conducted. Also, bachelor degree students were 62.9% of respondents, and 37.1% were master's degree students; 29.2% of the respondents were third-year bachelor degree students, 28.0% – adepts of the first year of master's degree students, 24.3% – second-year bachelor degree students, 9.4% – fourth-year bachelor degree students (in Ukraine) and 9.0% – second-year master's degree students. It should also be noted that 74.6% of the respondents were female and 25.4% – male. 56.0% of the respondents were aged between 20 and 22 years, 32.7% were aged between 23 and 25 years, 7.3% – between 17 and 19 years and 4.0% were older than 25 years. 55.1% of the respondents declared to live in the countryside and 44.9% – in towns or cities. Respondents who considered themselves to be believers were 82.1% of the group (52.2% Catholics, 22.2% Orthodox students and 7.7% – other denominations) and non-believers were 17.9% of the respondents. 65.9% of the respondents declared to be middle class, 19.4% – to be wealthy and 14.7% – to live modestly. As many as 64.5% respondents could not define their political views, 15.0% respondents expressed right-wing views, 10.0% – left-wing views, 5.8% – centrist views and 4.7% – other views. It is also worth noting that the nationality of the respondents corresponded to their respective countries of studies.

In order to solve the research problems and verify the above hypotheses, the auditorium survey method was used. The research tool was a survey questionnaire with 18 closed and semi-open questions. In order to verify the accuracy of the tool, in March 2015, a pilot study was conducted in a group of 18 students from the University of Rzeszów. The respondents were full-time second-year master's degree students of philosophy. Following the pilot study, some minor modifications were made, mainly in some cafeteria questions. The pilot study showed that students had problems understanding the concept of "moral status", and accordingly, in the research, the term was each time explained to the respondents. The data obtained in the research were used in relevant calculations made using the IBM SPSS Statistics software, the margin of error being 0.05.

Selected questions and the data obtained, taking into account the variables: declared denomination and place of permanent residence, are presented on the subsequent pages. It should be noted that, because of a quite uniform group of respondents and homogenous answers, some categories were connected in the cafeteria. In the case of the variable: declared denomination, the two least numerous categories, namely Protestants and other denominations – usually believers but

not associated with any specific Church, were connected. Also, in the case of the variable: place of permanent residence, the categories of towns and cities, initially divided into: below 49,999, below 99,999, below 199,999 and above 200,000 residents were connected into one general category.

Table 1. Data concerning the anxiety about the state of the natural environment expressed by the respondents (in %)

Are you anxious about climate changes?				
	Catholics	Orthodox Christians	Non-believers	Other denominations
Definitely yes	30.4	17.9	27.5	31.6
Yes, quite	49.0	62.5	49.5	44.7
Not really	14.8	9.8	18.7	18.4
Definitely not	3.4	4.5	2.2	2.6
Hard to say	2.3	5.4	2.2	2.6
Are you anxious about the future existence of the humankind?				
Definitely yes	29.5	4.6	25.3	23.7
Yes, quite	31.8	50.0	23.1	23.7
Not really	23.1	13.0	33.0	21.1
Definitely not	4.9	0.9	16.5	15.8
Hard to say	10.6	31.5	2.2	15.8

Source: Own elaboration[13]

The distribution of answers presented in table 1 to some extent illustrates the holistic thinking of the respondents as well as their feelings and emotions experienced in association with issues concerning environmental protection. It should be noted that holistic thinking means the ability to mentally grasp a number of interacting elements that, in this case, combine into one whole (the ecosystem). When analysing the first issue, it appears that the majority of students, regardless of their religious denomination, were afraid of climate changes. Since this is a prolonged process, it seems that the students' anxiety concerned mainly the future consequences of the changes. Being aware of and able to imagine the consequences of climate changes, not only in the temporal but also in the spatial dimension, is, to some extent, an indicator of holistic thinking of the respondents. This ability is proven even more explicitly by the answers to the second question, concerning

[13] The research was financed from a special-purpose grant of the Ministry of Science and Higher Education, project no.: IS-01/2015/508.

anxiety associated with the future existence of the humankind. In this case, most of Catholic and Orthodox students were anxious about this vision, and nearly 1/3 of respondents claiming to be Orthodox Christians had not opinion on this issue. On the other hand, most non-believers and representatives of other denominations were not really worried about this issue. It is also worth noting that more students – regardless of their religious denomination – were worried about climate changes than about the future of the humankind on the Earth. Also, the data suggests that the issue of climate changes triggered in a vast majority of respondents negative emotions, such as fear, anxiety and uncertainty. Thus, it seems that discussing issues concerning environmental protection and hazards was usually associated with psychological discomfort in most respondents, which, in the overall balance, was manifested as social pessimism. A certain exception were non-believers and persons of other denominations, most of whom were not pessimistic, especially about the future existence of the humankind. In the case of the second question, statistical calculations made it possible to analyse the data in more detail and conduct the chi-square test, which resulted in the value $\chi^2=101.109$, the degree of freedom being df=12 and asymptotic significance $p<0.05$. The result leads to the hypothesis, in which the variable: declared religious denomination correlates with the respondents' anxieties about the future existence of the humankind on the Earth. The relationship between these variables may be considered strong, as the value of Pearson's contingency coefficient C was 0.410.

Table 2. Data concerning the anxiety about the state of the natural environment expressed by the respondents (in %)

Are you anxious about climate changes?		
	countryside	town or city
Definitely yes	30.8	22.9
Yes, quite	48.4	55.5
Not really	14.7	15.0
Definitely not	3.2	3.5
Hard to say	2.9	3.1
Are you anxious about the future existence of the humankind?		
Definitely yes	25.1	20.2
Yes, quite	33.8	32.9
Not really	20.0	26.3
Definitely not	5.5	8.8
Hard to say	15.6	11.8

Source: Own elaboration

Analysis of the data presented in table 2 shows that more respondents, both town and city dwellers and villagers, were anxious about climate changes than the future existence of the humankind. Nonetheless, in both cases, the respondents were thinking in holistic categories. Negative emotions experienced by the respondents in association with the above issues suggest an overall social pessimism among them. Following a deeper analysis of the feelings expressed by students towards climate changes, the chi-square test was conducted, the value being χ^2=4.166, the degree of freedom df=4 and the asymptotic significance p=0.384. The result refutes the hypothesis that the anxiety of respondents as to climate changes depends on the place of their permanent residence. In the case of the second issue, the value of the chi-square test was χ^2=6.785, the degree of freedom being df=4 and the asymptotic significance p=0.148 The result is not statistically significant, which means that the hypothesis assuming a correlation between the variable: place of permanent residence and anxiety about the future existence of the humankind needs to be rejected.

Table 3. Data concerning the motivations that drove the respondents to protect the natural environment (in %)

Why do you think it is important to care about the natural environment?				
	Catholics	Orthodox Christians	Non-believers	Other denominations
To improve the quality of human life	19.7	20.2	12.8	11.0
To reduce the risk of civilisation diseases	12.4	14.0	6.4	9.8
To reduce the number of natural disasters	9.7	15.7	10.4	9.8
For the sake of animals	9.1	1.5	8.1	6.1
For the beauty of nature	7.0	1.8	4.6	5.0
For the sake of the nature itself	3.4	2.9	11.5	11.0
To save the nature in the best possible condition for future generations	20.5	18.9	19.6	22.4
To not annihilate life on the Earth	18.1	25.0	26.6	24.9

Source: Own elaboration

The distribution of answers presented in table 3 suggests that more instrumental about the nature – i.e. concerned about the man, both as an individual and the humankind, profiting from the natural environment – were Orthodox Christians and

Catholics: quite a lot of them chose the first two and the last but one motivations listed in the table. Non-believers were the group with the highest (although relatively low) percentage of persons who were likely to protect the nature for its beauty, for the sake of nature itself or for the sake of animals, and to preserve life on the Earth. It may be assumed that the opinions of those persons were associated with the personality traits of an environmental personality, such as: modesty, emotionality or kindness towards other creatures. It should be noted that the latter motivation, quite often chosen by the respondents, combines a number of elements, namely holistic thinking, uncertainty about the future of the creatures inhabiting the Earth and care for the nature. In a way, the large percentage of the persons who chose this particular answer – regardless of their religious denomination – is optimistic. The sensitivity and imagination of students concerning environmental hazards played some role in the formation of their environmental intelligence, but, on the other hand, some other, equally important values of not only aesthetic but also symbolic and cognitive type, especially among Orthodox Christians, were chosen by a very low percentage of respondents. It may also be concluded that a large part of students, especially Orthodox Christians, did not have most of the characteristic traits of environmental personality. Overall, the level of development of environmental intelligence among the respondents, which, generally speaking, requires understanding of the emotionality oriented at the natural world, is quite unsatisfactory, being the highest among non-believers and the lowest among Orthodox Christians.

Table 4. Data concerning the motivations that drove the respondents to protect the natural environment (in %)

Why do you think it is important to care about the natural environment?		
	countryside	town or city
To improve the quality of human life	16.8	18.3
To reduce the risk of civilisation diseases	11.6	12.0
To reduce the number of natural disasters	12.5	10.8
For the sake of animals	6.3	8.0
For the beauty of nature	7.5	3.7
For the sake of the nature itself	4.8	7.5
To save the nature in the best possible condition for future generations	19.8	18.6
To not annihilate life on the Earth	20.6	21.1

Source: Own elaboration

Analysis of the data presented in table 4 – the same as was the case with the criterion of religious denomination – proves that the main motivation driving students to care for the environment were particular considerations, namely the benefits that the human being can gain on protecting the environment. Differences between the answers given by villagers and town and city dwellers concerning motivations based on benefits for either the human being or the nature were minor. Concerning the "altruistic motivations", a relatively high difference in the percentage of answers was noted between the options: "for the beauty of the nature" and "for the sake of the nature itself". In order to determine the level of environmental intelligence of the respondents, the answer: "for the sake of animals" should also be considered; on this basis, it may be concluded that the status is similar for villagers and for town and city dwellers, with an accent on the latter group. Also, the percentage of answers reflecting holistic thinking was similar among respondents, which is proven by students' awareness of long-term consequences of the condition in which we leave the natural environment for future generations and other forms of life. Thus, it can be concluded that the variable: place of permanent residence did not correlate with the level of development of environmental intelligence in respondents.

Table 5. Data concerning the inclination of students to attach moral status to selected elements of the nature (in %)

Do you think animals deserve moral status?				
	Catholics	Orthodox Christians	Non-believers	Other denominations
Definitely yes	47.1	22.3	47.3	57.9
Yes, quite	35.7	55.4	33.0	34.2
Not really	12.2	14.3	11.0	5.3
Definitely not	3.0	4.5	5.5	0
Hard to say	1.9	3.6	3.3	2.6
Do you think plants deserve moral status?				
Definitely yes	28.0	18.7	38.5	44.7
Yes, quite	42.8	53.3	35.2	34.2
Not really	19.7	18.7	16.5	15.8
Definitely not	4.9	4.7	6.6	0
Hard to say	4.5	4.7	3.3	5.3
Do you think microorganisms deserve moral status?				
Definitely yes	16.2	1.9	20.0	21.6
Yes, quite	35.4	26.4	35.6	29.7

Not really	32.7	42.5	31.1	29.7
Definitely not	8.5	14.2	8.9	5.4
Hard to say	7.3	15.1	4.4	13.5
Do you think inanimate nature deserves moral status?				
Definitely yes	20.1	7.6	20.9	28.9
Yes, quite	38.6	30.5	37.4	34.2
Not really	29.0	35.2	26.4	23.7
Definitely not	5.8	11.4	12.1	5.3
Hard to say	6.6	15.2	3.3	7.9

Source: Own elaboration

The distribution of answers presented in table 5 suggests that most respondents were likely to award moral status to animals, plants and even microorganisms and inanimate nature. The only exception were Orthodox Christian students, most of whom would not give such status to either microbes or inanimate nature. To avoid doubts, moral status means here the preciousness or importance of a specific element that constitutes an autotelic rather than instrumental value and as such deserves respect from the human being[14]. Coming back to the analysis of the data presented in table 5, it is worth noting that the most positive answers were given by persons of "other denominations", especially Protestants and other believers not associated with any specific Church. Statistical calculations make it possible to analyse the issue of awarding moral status to microorganisms in more detail, and accordingly, the chi-square test resulted in the value χ^2=32.028, the degree of freedom being df=12 and asymptotic significance p<0,001. The result is statistically significant and it justifies the hypothesis that the variable: religious denomination correlates with the inclination of students to award moral status to microorganisms. The value of Pearson's contingency coefficient C was 0.247, which means a medium-strength relationship between the variables. Concerning the latter issue, namely associating autotelic value with inanimate nature, the value of chi-square test was χ^2=28.540 the degree of freedom being df=12 and the asymptotic significance p=0.005. This result is statistically significant and substantiates the hypothesis that the inclination of the respondents to award moral status to inanimate nature depends on their religious denomination. The value of Pearson's contingency coefficient C was 0.234, which means a medium-strength relationship between the variables. It is also worth noting that the respondents who agreed to raise various elements of the nature to the rank of autotelic value also partly sup-

[14] DeGrazia D., *Animal rights: A very short introduction*, Oxford, 2002, p. 27.

ported the assumptions of species egalitarianism. A certain were Orthodox Christian respondents, most of whom would probably not consent to equal treatment of various elements of the nature.

Table 6. Data concerning the inclination of students to attach moral status to selected elements of the nature (in %)

Do you think animals deserve moral status?		
	countryside	town or city
Definitely yes	37.7	48.4
Yes, quite	42.3	35.6
Not really	14.2	9.3
Definitely not	3.2	4.0
Hard to say	2.5	2.7
Do you think plants deserve moral status?		
Definitely yes	28.0	31.4
Yes, quite	41.6	43.9
Not really	22.2	14.3
Definitely not	4.3	5.4
Hard to say	3.9	4.9
Do you think microorganisms deserve moral status?		
Definitely yes	12.0	17.4
Yes, quite	34.8	31.1
Not really	34.4	33.8
Definitely not	10.1	8.7
Hard to say	8.7	9.1
Do you think inanimate nature deserves moral status?		
Definitely yes	15.8	21.7
Yes, quite	37.4	34.6
Not really	30.6	28.1
Definitely not	7.9	8.3
Hard to say	8.3	7.4

Source: Own elaboration

The data presented in table 6 are distributed in an interesting way. In the case of all the variables, town and city dwellers represented a higher percentage of persons in favour of awarding moral status to the respective elements of the nature than villagers, although the differences in the opinions expressed by respective students were minor. The value of the chi-square test for the first variable was χ^2=7,575, the

degree of freedom being df=4 and the asymptotic significance p=0,108. The result denies the hypothesis that the variable: place of permanent residence correlates with opinions on awarding moral status to animals. In the case of the second variable, the value of the chi-square test was $\chi^2$5.340, the degree of freedom being df=4 and the asymptotic significance p=0.254. The result is not statistically significant, which means that the hypothesis according to which the variable: opinions on awarding autotelic value to plants depend on the respondents' place of residence needs to be dismissed. A more detailed analysis of the third trait, namely the possibility of awarding moral status to microbes, through the chi-square test, resulted in the value χ^2=3.309, the degree of freedom being df=4 and the asymptotic significance p=0.507. The result, the same as in the previous cases, denies the hypothesis that the variable: place of permanent residence correlates with the respondents' inclination to award moral status to microorganisms. In the next question, concerning the possible autotelic value of inanimate nature, the value of the chi-square test was χ^2=2.926, the degree of freedom being df=4 and the asymptotic significance p=0.570, which again denies the hypothesis that the opinions of respondents concerning awarding moral status to inanimate nature depend on the variable: place of permanent residence. Based on the data presented in the table, it may be concluded that students who live in a town or city are somewhat more likely to support species egalitarianism than villagers and had more developed environmental personality traits.

Table 7. Data concerning the respondents' perception of the relationship between the human being and the nature (in %)

Which of the statements below is the most true for you?				
	Catholics	Orthodox Christians	Non-believers	Other denominations
God told the man to subdue the Earth, so it can be transformed and exploited without any limits.	1.5	2.9	0	0
The human being cannot thoughtlessly consume the gifts of nature, as the Creator is its only Lord.	1.9	4.8	0	0
The nature is a gift from God and it is associated with responsibility on the part of the human being, which means that the human being should use it in a rational way.	42.6	26.0	2.2	32.5

The human being, as the most advanced creature in the process of evolution, using his intellect and labour, is entitled to make unlimited use of natural resources.	2.3	1.9	2.2	2.5
A human being, as a moral creature, should care for the nature and must not intervene in it to extremes, but should moderately use its resources.	40.4	54.8	62.6	50.0
The human being is an element of the nature and his life is not worth any more than the life of an animal or plant, which means that people should not consider their needs to be more important than those of other creatures, and should limit them.	11.3	9.6	33.0	15.0

Source: Own elaboration

Table 7 also presents an interesting distribution of answers. An analysis of the data included in it suggests that the fact that some respondents declare to be Catholics does not mean that human relationship with the nature is, according to them, best described by a religious and at the same time moral statement. A similar percentage of Catholic students chose the moral but areligious answer. Moreover, almost every tenth Catholic chose the answer that includes the assumptions of species egalitarianism. In the case of Orthodox Christian students and respondents of other denominations, the differences are even more pronounced. On the other hand, the respondents who consider themselves to be non-believers most often chose the moral and areligious statement and less often the statement concerning species egalitarianism. Non-believers represented the highest percentage of persons who supported equal treatment of all species inhabiting the Earth. Probably those respondents also had more developed than others the characteristic traits of the environmental personality, such as: modesty, emotionality, tolerance or kindness to other creatures. It is worth noting that non-believers did not choose the religious and moral statement, whereas Catholics equally often chose the areligious and moral answer. Generally speaking, the answer most often chosen by the respondents – except Catholics – was the statement that the human being is entitled to use natural resources, but only in a moderate way.

Table 8. Data concerning the respondents' perception of the relationship between the human being and the nature (in %)

Which of the statements below is the most true for you?		
	countryside	town or city
God told the man to subdue the Earth, so it can be transformed and exploited without any limits.	0.4	2.7
The human being cannot thoughtlessly consume the gifts of nature, as the Creator is its only Lord.	2.9	1.3
The nature is a gift from God and it is associated with responsibility on the part of the human being, use it in a rational way.	36.0	24.6
The human being, as the most advanced creature in the process of evolution, using his intellect and labour, is entitled to make unlimited use of natural resources.	1.8	2.7
A human being, as a moral creature, should care for the nature and must not intervene in it to extremes, but should moderately use its resources.	46.0	50.9
The human being is an element of the nature and his life is not worth any more than the life of an animal or plant, which means that people should not consider their needs to be more important than those of other creatures, and should limit them.	12.9	17.9

Source: Own elaboration

The data presented in table 8 show that the most frequently chosen answer by most respondents was, the same as in the case of the variable: religious denomination, the areligious and moral statement. A higher percentage of respondents living in the countryside chose the religious and moral statement. Town and city dwellers more often chose the areligious and moral answer as well as the statement concerning species egalitarianism. Probably, those students also had more developed environmental personality traits than respondents living in the countryside. Compared to the data presented in table 7, it can be concluded that the religious denomination declared by the respondents – except non-believers – did not correlate with the choice of the religious statement, whereas this choice to some extent depended on the fact of living in the countryside. On the other hand, the variable of being a non-believer correlated with choosing the areligious statement. Respondents residing in a town or city chose this answer more frequently.

4. Conclusions

To sum up, the sociological research and data analysis lead to the conclusion that the level of development of environmental intelligence among students from se-

lected countries of Central and Eastern Europe is relatively low. Following a deeper analysis, it seems that students, in the course of their studies, are not subjected to processes that are supposed to stimulate this type of intelligence and, moreover, they do not try to change this state of affairs – probably, they do not feel such need at all. On the other hand, the respondents seemed interested in environmental protection and were aware of the need to care for the nature. However, these general observations do not translate into a deeper dimension that could be reflected, for example, in the development of their environmental intelligence. The fact that there exists some potential to stimulate this mental ability is to some extent proven by a relatively high percentage of answers motivated by care for the environment, such as the willingness to preserve life of the Earth. However, this single positive aspect is not enough for environmental intelligence to have solid foundations to develop; nonetheless, if this potential of young people is noticed, there is a chance that, as a result of an effort undertaken by the social environment and internal mobilisation of every individual, the condition of this intelligence will improve in a longer perspective.

In order to do this, it is important to pre-define the existing condition of environmental intelligence and the development of environmental personality traits in students. This, in turn, requires review of data, such as those analysed in this article. It should be noted, however, that the level of environmental intelligence cannot be analysed in a straightforward way, not only because it is a very complex issue, but also because the percentage of students with a high level of environmental intelligence and environmental personality traits was very low. It should also be noted that their development may also depend on other factors that are not discussed in this article.

Beginning with the first criterion discussed in the text, namely: the religious denomination of students, the results concerning holistic perception of the nature by the respondents are not unambiguous. In association with anxiety caused by environmental hazards, the most holistic approach was represented by Catholic and Orthodox Christian students, while in terms of the motivations to care for the natural environment, the most holistic thinking was represented by non-believers and respondents of other denominations. The possible moral status of respective elements of the nature was most often declared by respondents of other religious denominations, while Orthodox Christian students were the least likely to approve of awarding this status to the nature. Accordingly, the first group represented a higher percentage of the supporters of species egalitarianism than the latter group. Both Catholic and Orthodox Christian students were the most worried about the existing and future condition of the nature, which was proba-

bly accompanied by anxiety, fear, uncertainty and stress. The higher level of fear caused by existing hazards in the world of nature resulted in quite common social pessimism among those students. These negative emotions were less strong among other respondents, which resulted in a lower level of social pessimism. It is also worth noting that the pessimism, expressed by a major part of the respondents, did not evidently correlate with environmental personality traits, such as: openness, emotionality, modesty, agreeability, empathy or kindness to others – not only human beings. This is proven by the fact that, compared to Catholic and Orthodox Christian students, a slightly higher percentage of non-believer respondents manifested environmental personality traits. Also, a higher percentage of students supporting species egalitarianism was represented by non-believers, and the lowest – by Catholic and Orthodox Christian respondents. The latter were also the most numerous supporters of instrumental treatment of the nature. More altruistic were non-believers and persons of other denominations. On the other hand, there certainly exists a relationship between environmental personality traits and mental ability oriented at environmental protection, however it is quite weak. Such thesis may result from the fact that environmental sensitivity is not in itself a component of environmental intelligence, which – importantly – requires becoming aware of and understanding that sensitivity. This opinion is to some extent confirmed by the observation that, insofar as a certain part of the respondents recognised the internal value of the nature being the main motive to care for it, a minor percentage of persons – except Catholics – considered the beauty of nature to be of value. This, however, is not a decisive indicator of the awareness of the respondents at the moment they started answering the questions. It is possible that reading the survey questions made students think and triggered their awareness. They could have also not given honest answers in order to give a certain impression of themselves.

Concerning the second criterion, of the place of permanent residence, it should be noted that a similar percentage of villagers and city dwellers tended to think in holistic categories. The later only slightly more frequently supported instrumental treatment of the environment. Also, a slightly higher percentage of students residing in the countryside than town or city dwellers expressed anxiety, concerns and fear about environmental hazards and the consequences thereof. On the other hand, most respondents, regardless of the place of their residence – manifested social pessimism about climate changes and future existence of the humankind. Of particular interest is the issue of awarding moral status to respective elements of the nature. Although there were no major differences in the proportions of answers, more town and city dwellers than villagers supported the autotelic value of respective elements of the nature. In terms of the relationship human being-nature,

the respondents most often chose two statements: both moral and one of them religious and the other – areligious. A higher percentage of villagers chose the second answer and the later one was more frequently chosen by town and city dwellers. Students residing in towns or cities also more frequently supported species egalitarianism; which is in part confirmed by the results concerning willingness to award moral status to the nature. Most likely, those respondents also represented a higher percentage of persons having certain environmental personality traits, such as: openness, emotionality, modesty, tolerance or positive attitude to other creatures. Thus, it can be concluded that students from rural areas had a higher deficit of those traits. The abovementioned environmental personality traits, the same as in the case of the previous variable, were not evidently linked with the social pessimism of students. This is proven by the fact that town and city dwellers had only a slightly higher level of those traits, whereas villagers represented only a slightly higher level of pessimism. The same as in the case of the variable: religious denomination, here also exists a certain relationship between environmental personality traits in the respondents and environmental intelligence, but it is quite loose. This is proven by the distribution of answers concerning motivations: town and city dwellers more often declared willingness to protect the environment for the sake of animals and the nature itself, while villagers – for the sake of its beauty.

The balance leads to the conclusion that a somewhat higher level of environmental intelligence was represented by students residing in towns or cities than villagers, while in the case of the criterion: religious denomination, the case is a little bit more complex, but it seems that a slightly more developed environmental intelligence was represented by non-believers and persons of other denominations than Catholic or Orthodox Christian respondents. To get a better picture of the issue, it is also worth noting that 57.2% of Catholic respondents were villagers, whereas 42.8% of them lived in towns or cities. In the case of Orthodox Christian students, the proportions were the following: 67.8% were villagers and 32.2% – town or city dwellers, whereas 66.3% of non-believers lived in towns or cities and 33.7% of non-believer students lived in the countryside. As to persons of other denominations, the distribution was equal.

Given the current level of environmental intelligence among young people, it is necessary, in order to improve that level, to form in oneself new sensitivity to various environmental hazards and learn what to do with them. Experience of the nature and theoretical knowledge are not necessary conditions to create and develop environmental intelligence. However, it should be noted that scientific knowledge enables conscious contact with and taking proper care of the nature. The experience shows that people respect more the things that they understand.

Also, experiencing the nature by receiving with all the senses the stimuli it sends makes a person more attentive. In order to understand and feel for the nature, it is necessary to live in harmony with it and understand human impact on the condition of the natural environment, which may be stimulated by: apart from the abovementioned knowledge and experience of the nature, also ecological values and environmental personality traits.

The conclusions lead to the final reflection that young people in general do not feel a connection with the nature and dissociate themselves from it not only on the cognitive level but also on the emotional level, which could be to some extent understandable, if it meant simultaneous separation from the source of suffering that can be caused by the existing environmental hazards. Nonetheless, this situation is not entirely their fault, and the social environment is partly responsible here, but it may be amended by joint effort. If, however, the human being continues refusing to take responsibility for the condition of the nature, it will deteriorate further, the same as the condition of contemporary people.

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