

Differences in environmental attitudes between Russia and Japan

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Introduction

Thoughts for natural environments should be decided by many factors. Therefore, knowing what residents in other countries think about the natural environment can be very useful for understanding each other's countries comprehensively. However, it seems to be rare that studies discussed and arranged about the causes from a quantitative point of view, which would bring the commonalities or differences, after having clarified commonalities and differences in way of thinking. Within this context, we conducted several experiments to investigate Japanese and Russian attitudes toward the natural environment. The purpose of this study was to clarify the commonalities and differences in environmental attitudes between residents of the two countries at specific research sites. We then discuss potential causes for these commonalities and differences through comparing data from both countries.

Method

Research sites and respondents

For a cross regional and cultural investigation between the two countries, we chose Moscow State University (in European Russia), Irkutsk University (in central Russia), and Kamchatka University (in eastern Russia) as the Russian research sites; we chose Hokkaido University (in northern Japan), Chiba University (in central east Japan), Kyoto Prefectural University (in central west Japan), and Minami-Kyushu University (in southern Japan) as the Japanese research sites. Members of the author group and the staff at each university conducted these experiments at each site.

Questionnaires

We prepared three questionnaires: 1) New Environmental Paradigm (NEP) (Dunlap, R.E. et al., 1978), 2) Thompson and Barton Scale Test (TBS) (Thompson, S.C.G. et al., 1994), and 3) Attribute questionnaire. NEP consists of 12 questions (based on a seven-point Likert scale) intended to measure an "ecocentric system of beliefs" as opposed to an anthropocentric system of beliefs, and is the most widely used measure of investigating environmental issues. TBS consists of 25 questions (also based on a seven-point Likert scale) intended to explore environmental attitude from two possible directions – principles (ecocentrism and anthropocentrism) and concern (environmental apathy). "Ecocentrism" refers to the degree to which one tends to regard the ecosystem and natural environment, while "anthropocentrism" refers to the degree to which one tends to think about human life. These two indicators are not mutually exclusive, but coexist. And to determine the degree of in-

terest, "environmental apathy" was used as an indicator of indifference to the natural environment. We asked all respondents to answer the attribute questionnaire first (table 1), and then complete the other two questionnaires.

Results

Comparison between the two countries

Table 1 lists the results from the data analysis (except those obtained by ANOVA and multiple comparisons), and key findings are summarized below.

NEP: No significant difference was found between the two countries through an analysis of variance (ANOVA). Respondents in both countries apparently have similar ecocentric systems of beliefs (as measured by NEP).

TBS: Ecocentric values were reasonably high in both countries. A statistical comparison (ANOVA) showed that Russia had significantly ($p < 0.01$) higher ecocentrism than Japan. As for anthropocentrism, Japan had anthropocentric values that approached the level of "indifference," while Russia had much lower anthropocentric values. A statistical test conducted as part of ANOVA showed that Russia had significantly lower anthropocentrism than Japan ($p < 0.01$). In terms of environmental apathy, the results showed that environmental apathy was absolutely lower than the level of "indifference" in both countries (meaning that the respondents in both countries had a strong interest in the environment). ANOVA also revealed that Russia had significantly lower ($p < 0.01$) environmental apathy than Japan.

Comparison between each research site

NEP: No significant difference could be found among the seven sites. TBS: We compared each research site in terms of ecocentric values obtained by ANOVA and multiple comparisons (Tukey-Kramer), and found the following significant differences: Moscow–Chiba ($p < 0.05$) and Minami-Kyushu ($p < 0.05$); Irkutsk–Kamchatka ($p < 0.05$) and all Japanese sites except Kyoto ($p < 0.01$ to $p < 0.05$). As for anthropocentric values, we found the following significant differences: Moscow–Chiba and Kyoto, Minami-Kyushu ($p < 0.01$ to $p < 0.05$); Chiba–Irkutsk ($p < 0.05$) and Kamchatka ($p < 0.05$). In terms of environmental apathy, the following differences were significant: Moscow–Chiba ($p < 0.01$) and Minami-Kyushu ($p < 0.05$); Irkutsk–Chiba ($p < 0.01$) and Minami-Kyushu ($p < 0.05$). We also confirmed that there were significant differences between both countries in terms of ecocentrism, anthropocentrism, and environmental apathy, and that the sites in Russia tended to be higher in ecocentrism but lower in anthropocentrism and environmental apathy than at the sites in Japan. revealing

the same results as in the comparison between both countries.

Factors making a difference between the two countries

In considering the factors that could influence the four indexes (i.e. ecocentric system of beliefs, ecocentrism, anthropocentrism, environmental apathy), we conducted multiple regression analysis (using a step-wise method where we selected attribute data as independent variables and the four indexes as dependent variables). As a result, the ecocentric system of beliefs in Russia was influenced by sex; ecocentrism was influenced by age and sex; anthropocentrism was influenced by the number of overseas travels, and environmental apathy was significantly influenced by sex ($p < 0.01$ to $p < 0.05$). In Japan, the ecocentric system of beliefs was influenced by the level of urbanization of a respondents' current residence along with the type of landscape at previous and current residences; anthropocentrism was influenced by the level of urbanization in previous residences; environmental apathy was influenced by the type of landscape at current residences along with the experienced type and number of overseas travels ($p < 0.01$ to $p < 0.05$).

Discussion

These findings suggest the following: 1) Russian respondents were more ecocentric than Japanese respondents, 2) Russian respondents were less anthropocentric than Japanese respondents, 3) Russian respondents had lower levels of environmental apathy than Japanese respondents, and 4) different factors influence the four indexes in each country. These results suggest that Russian respondents (especially women and the elderly) are highly interested in the natu-

Table 1. Respondents' attributes and the results of analysis

Attribute	Chosen independent variables (standardized partial correlation)	Category	Russia		Japan		Russia		Japan		Russia		Japan		
			Moscow (M1)	Hokkaido (H1)	Irkutsk (I1)	Chiba (C1)	Moscow (M2)	Hokkaido (H2)	Irkutsk (I2)	Chiba (C2)	Moscow (M3)	Hokkaido (H3)	Irkutsk (I3)	Chiba (C3)	
Sex	SEX (0.156)	Male	54	111	17	12	25	27	28	17	44	27	28	17	44
	SEX (0.248)	Female	57	94	22	20	15	13	24	13	27	24	13	27	
Age	AGE (0.206)	Average	21.4	21.6	21.5	21.7	21.0	22.3	22.5	21.3	20.7	21.3	21.3	20.7	
		20-24	52	85	14	15	23	3	8	8	34	3	8	8	
		25-24.520	80	112	23	13	14	35	43	18	18	35	43	18	
		25-24.530	9	3	2	4	3	2	1	0	0	2	1	0	
		25-24.540	0	1	0	1	0	0	0	0	0	0	0	0	
Type of education		High school	79	127	35	13	35	29	33	11	50	29	33	11	50
		University	15	43	3	12	0	11	20	12	5	11	20	12	5
		Graduate university	18	9	6	7	5	9	9	0	0	9	9	0	0
		Others	9	1	0	0	0	0	0	0	0	0	0	0	0
Academy		Technical	8	5	2	3	1	0	0	1	1	0	0	1	1
		Natural science	88	148	28	21	28	40	48	18	44	40	48	18	44
		Humanities	54	8	7	7	0	0	5	1	2	0	5	1	2
		Others	3	10	2	1	0	0	0	0	0	0	0	0	0
Occupation		Student	89	170	33	22	25	40	53	27	67	40	53	27	67
		Full-time worker	1	0	1	0	0	0	0	0	0	0	0	0	0
		Part-time worker	30	0	8	10	4	0	0	0	0	0	0	0	0
		Teacher	1	0	0	0	1	0	0	0	0	0	0	0	0
		Others	0	0	0	0	0	0	0	0	0	0	0	0	0
Level of Urbanization of Residences (in the past)	URB (0.189)	City center	23	18	14	8	11	8	4	1	8	8	4	1	8
		Residential area	44	86	18	13	13	20	30	14	22	20	30	14	22
		Suburb	11	30	5	2	4	8	6	4	12	8	6	4	12
		Rural area	27	30	7	0	12	8	13	8	11	8	13	8	11
Level of Urbanization of Residences (at present)	URB (0.181)	City center	30	26	11	4	15	24	8	8	1	8	8	1	8
		Residential area	88	86	34	24	18	15	30	21	21	15	30	21	21
		Suburb	9	22	3	2	4	1	5	0	10	1	5	0	10
		Rural area	8	18	1	2	3	8	5	1	15	8	5	1	15
Landscape type of Residences (in the past)	LAND (0.177)	Field	81	114	27	25	18	23	42	18	23	23	42	18	23
		Mountainous	22	50	1	3	15	15	12	1	8	15	12	1	8
		Sea coast	6	6	1	1	4	2	1	0	3	2	1	0	3
		Other	3	11	0	3	0	0	0	0	0	0	0	0	0
Landscape type of Residences (at present)	LAND (0.181)	Field	77	181	28	28	15	36	52	28	38	36	52	28	38
		Mountainous	25	11	0	2	23	4	1	1	5	4	1	1	5
		Sea coast	8	8	0	2	8	0	0	0	8	0	0	0	8
		Other (rivers)	1	1	0	0	1	0	0	1	0	0	1	0	0
The average of one's years of experience as traveling		The experience of visiting the other country (Yes)	0	8	0	0	0	2	2	0	0	2	2	0	0
		The experience of visiting the other country (No)	111	181	20	22	40	38	51	27	45	38	51	27	45
		Nobody has been to Japan													
		The experience of visiting Siberia (Yes)	30	0	12	11	7	0	0	0	0	0	0	0	0
		The experience of visiting Siberia (No)	81	171	27	21	23	40	53	27	41	40	53	27	41
		Nobody has been to Siberia													
		The experience of visiting abroad countries and areas	62	84	28	17	18	23	28	15	18	23	28	15	18
		The experience of visiting abroad countries and areas	49	87	13	15	21	17	25	12	33	17	25	12	33
		The number of visiting abroad countries and areas (average)	1.06	0.84	1.39	0.75	0.80	1.15	0.91	0.89	0.49	1.15	0.91	0.89	0.49
		0	49	87	12	15	21	17	25	12	33	17	25	12	33
		1-2	48	70	16	12	17	18	22	14	15	18	22	14	15
		3-4	12	12	8	2	3	4	5	1	7	4	5	1	7
		5-2	2	2	2	0	0	1	1	0	0	1	1	0	0
Ecocentric system of beliefs (NEP)		Ave	5.50	5.51	5.58	5.75	5.27	5.42	5.55	5.42	5.62	5.42	5.55	5.42	5.62
		S.D.	0.72	0.61	0.64	0.65	0.78	0.63	0.54	0.64	0.68	0.63	0.54	0.64	0.68
Ecocentrism (TBS)		Ave	5.71	5.21	5.70	5.97	5.44	5.24	5.32	5.40	5.28	5.32	5.40	5.28	5.28
		S.D.	0.79	0.75	0.71	0.82	0.94	0.75	0.62	0.60	0.70	0.62	0.60	0.70	0.70
Anthropocentrism (TBS)		Ave	3.59	4.07	3.42	3.64	3.70	3.98	4.21	4.06	4.11	3.98	4.21	4.06	4.11
		S.D.	0.89	0.85	0.87	0.89	1.13	0.77	0.81	0.84	0.81	0.81	0.84	0.81	0.81
Environmental Apathy (TBS)		Ave	2.61	3.08	2.45	2.44	2.89	2.89	3.23	2.86	3.11	2.89	3.23	2.86	3.11
		S.D.	1.00	0.89	1.00	0.79	1.04	0.89	0.88	0.84	0.89	0.89	0.88	0.84	0.89

The result of multiple regression analysis in Russia: $R^2 = 0.01$, $p = 0.01$. In Japan: $R^2 = 0.01$, $p = 0.01$. ECO: ecocentric, ANT: anthropocentrism, EA: environmental apathy, EOB: ecocentric system of beliefs. Statistical analysis method: χ^2 test. ** $p < 0.01$, * $p < 0.05$.

ral environment and attempt to adjust their own lives to the natural environment more than Japanese respondents. Thus, Russian respondents were more highly orientated toward human and environmental symbiosis than Japanese respondents. It was also interesting that there was no statistically significant difference in any indicator of environmental attitude in the domestic comparison, such as Moscow – Irkutsk and Hokkaido – Chiba. In other words, these study findings suggest that there may be specific cultural factors that are stronger between respondents from different nationalities compared to the strength of such factors among respondents from the same nationality.

Dunlap, R.E., Van Liere, K.D. (1978). The New Environmental Paradigm, *Journal of Environmental Education*, 9(4):10–19

Thompson, S.C.G., Barton, M.A. (1994). Ecocentric and anthropocentric attitudes toward the environment, *Journal of Environmental Psychology*, 14: 149–157