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Does experiencing poverty and lower economic status make us less pro-ecological?

Abstract: The main aim of this study was to examine whether the economic status (current and in childhood) determined pro-ecological attitudes and behaviour. The survey involved 207 adults with different economic status. Both economic status in childhood and the present were taken into consideration. Analysis of the results indicated that people raised in families with low and medium material status have not only more eco-friendly attitudes but also have a greater tendency towards various 'green' behaviours. The differences among people with different current material status concerning their eco-friendly attitudes and behaviours are not so obvious. The most wealthy seem to have a less pro-ecological attitude, but on the other hand they are ready to put more money towards ecologically-friendly household expenses.

Key words: economic status, wealth, poverty, environmentally friendly attitude and behaviors

Introduction

In the era of climate change, the issue of environmentally friendly behaviours, eco-consumption otherwise sustainable or environmentally-responsible consumption (Zrałek, 2013) is a common subject in academic and popular research articles in many countries all over the world. Nevertheless, psychological studies concerning pro-ecological behaviours and attitudes of Poles are still relatively rare (Roozen, De Pelsmacker, 2000).

Based on the review of previous studies, a fairly long list of factors affecting the eco-friendly attitudes and behavior can be created. Empirical studies have shown that pro-environmental attitudes are influenced by the degree of collectivism, locus of control (McCarty & Shrum, 2001), political attitudes (Blake, 2001) and involvement, long-term orientation, deontology, and law obedience (Leonidou, Leonidou & Kvasova, 2010). Clark, Kotchen, and Moore (2003) demonstrated that biocentric, altruistic, and egoistic motives are important contributors to pro-environmental behavior. Urien and Kilbourne's (2011) study findings confirmed that both the French and Americans with

high levels of generativity¹ are more likely to have eco-friendly intentions and more environmentally-responsible consumption behaviours than those with low levels of generativity, but this difference appears only among individuals with a high level of self-enhancement values². The impact of socio-demographic variables has also been considered. For instance, Pirani and Secondi (2011) reported a higher level of eco-friendly behaviour among women, adults and elderly couples, and people with a high socio-economic status, however those variables only account for a small portion of the variability in eco-compatible behaviour.

Numerous scientific papers have focused on the correlation of attitudes and eco-friendly behaviours. Some of them revealed a strong connection between positive attitudes and opinions towards the environment and eco-friendly behaviour (Pirani & Secondi, 2011; Aytakin & Büyükahraz, 2013). Others indicated additional factors that determine the strength of the eco-friendly attitude-behaviour relationship. According to Zabkar and Hosta's (2013) study, prosocial status perceptions increase the positive association between willingness and environmentally-friendly behaviour. Cowan and Kinley (2014) proved that previous purchases,

¹ People with high level of generativity believe that their current behaviour has consequences that extend into future generations.

² Self-enhancement values refer to those values relating to power, wealth, and influence.

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attitudes towards purchasing environmentally-friendly apparel and social pressure are the strongest indicators of future environmentally-friendly purchase behaviours.

Of course, eco-friendly attitudes are formed in the course of socialisation by parents, teachers, peers and mass media (Krzyśko, 1995). Unfortunately, despite numerous channels promoting eco-friendly attitudes and behaviours, such as *National Geographic*, *Discovery Channel*³, *Animal Planet*, etc. environmental awareness in Poland is still at a low level (Nycz-Wróbel, 2012; Wydział Badań i Analiz Centrum Komunikacji Społecznej Urząd m.st. Warszawy, 2013). However, it should be noted that the percentage of Poles who claim to be 'green' both in terms of attitudes and specific behaviours, is gradually increasing (Skrzyńska (TNS Polska, 2012). For instance, 87% of respondents in TNS Poland's survey declared that climate-change is an important problem issue, and the majority believes that the state of the natural environment depends primarily on the activities on each and every person. Three quarters of Poles believe that environmental protection can contribute positively to the economic development of the country. Most people use reusable bags, and draw attention to the reduction of water consumption. But less than half of those surveyed bought products that have eco-packaging.

At least some of these 'green' behaviours may result from economic reasons rather than eco-friendly attitudes. For instance, in recent years there has been a significant increase in the number of people commuting to work by public transport or by bicycle, which can be related to petrol prices. Bank loans with subsidies for the purchase and installation of solar panels or renovation of heating systems in buildings have increased in popularity (<http://www.rp.pl/artukul/954428.html?print=tak&p=0>).

A study commissioned by the Office of the City of Warsaw (2013) showed that 85% of households save water for economic reasons but only 50% for ecological reasons. 94% of respondents conserve electricity to reduce energy bills, on the other hand doing so for 'eco' reasons is declared by only 29%. Also, the research of TNS Poland (Skrzyńska, 2012) reported a decrease in the percentage of those choosing green solutions regardless of their price (down from 47% to 35%).

According to the TNS Poland Report from December 2011, environmentally-friendly products, despite being more expensive, were chosen: often by only 27% of people, with the majority declaring that they made such decisions rarely (48%) or never (19%). Those with the highest earnings, were more likely to decide on such expenses. Most people behave in an environmentally-friendly way only if it does not require a large commitment and at the same time saves money.

Analysing this data we decided to test if it was really true that economic status determines eco-friendly attitudes and behaviour. Taking into account the fact that environmentally-friendly attitudes and behaviours are formed in the course of socialisation, we decided to also

examine whether economic status in childhood affects eco-friendly attitudes and behaviours in adult life. In other words we were eager to examine whether people who experienced poverty or a difficult economic situation were less likely to be 'green' due to financial constraints there face, or faced in the past.

Taking the aforementioned information into consideration, two hypotheses have been put forward:

H1: People of various economic statuses (present or in childhood) will exhibit different pro-ecological attitudes.

H2: People of various (present or in childhood) economic statuses will differ in terms of propensity towards exhibiting environmentally-friendly behaviours.

In the subsequent sections of the article, we discuss the methods and results of the study, verifying the hypotheses put forward.

Method

Participants

A total of 207 adult Poles took part in the study, including 142 women and 65 men. Most of the respondents were young, in particular: $N = 86$ below 26 years old, $N = 60$ 26-35 years old, $N = 45$ 36-50 years old and $N = 16$ above 50 years of age. Over half of the respondents grew up in families with an average economic status. Also, the majority of respondents assess their present material status as being average. Nearly 30% of respondents rated their economic status in childhood or at present as below average. Less than 15% of respondents rated their present economic status as above average. Only 9% of people believed that the economic status of their family in their childhood was below average (see Table 1).

Table 1. Frequency of economic status in childhood and present

Economic status	Present			Total	
	In childhood	Below average	Average		Above average
Below average		23	31	2	56
Average		35	79	19	133
Above average		2	7	9	18
Total		60	117	30	207

Taking into account the significant differences

³ It should be noted that TV channels promoting eco-friendly attitudes are typically packaged together with the channels, which could be rather classify as anti-environmental, for example, Discovery Channel and TLC (formerly Discovery Travel and Living).

($F(2,204) = 34.946, p < 0.001, \eta^2 = .258$) in terms of income per family member between groups with different current economic statuses (see Table 2) can be considered as subjects were able to realistically evaluate their economic status.

Table 2. Descriptive statistics for monthly income per family member depending on present economic status

Present economic status	<i>M</i>	<i>SD</i>	<i>N</i>
Below average	950.74	671.702	58
Average	1510.21	990.351	116
Above average	4223.33	4214.154	30
Total	1750.13	2082.965	204

Time and place

The study was conducted via an online survey on the google + platform in March and April 2014. The subjects were recruited via email and announcements on social networking sites, online forums and discussion groups.

Online survey

The online survey created specifically for this study in Polish, consisted of:

- 10 points concerning ecological attitudes – subjects rated to what extent they agreed with 10 statements (eg. “*I am concerned about the state of the natural environment*”) on the scale: 1-strongly disagree, 2 - mildly disagree, 3 - mildly agree, 4 - strongly agree
- 10 items concerning ecological behaviour – 5 items on the above described 1-4 scale (eg. “*I would be willing to apply ecological solutions in my household (taking into account any costs), in order to stop climate change*”) and 5 items on ratio scale (eg. “*How many hours a month would you be able to devote for activities in pro-ecological organisations?*”)
- 3 items concerning economic status – subjects determine their economic status (current and in childhood) on a 3-point scale: below average, average, above average, and assess their average monthly income per family member

Results

Economic status and environmental attitudes

Pro-ecological attitude was measured using a list of 10 items graded on a 4-point scale. An Exploratory Factor Analysis (EFA) with the Principal Component Analysis (PCA) method of parameter estimation without rotation was conducted to explore the dimensional structure. A

single-factor solution emerged with good matrices indicator (Kaiser-Meyer-Olkin-K-M-O = .901; Bartlett sphericity $\chi^2(df = 45) = 805.510, p < .001$) and all items revealed communality values higher than .36 and factor loadings between .60 and .80. Both the Kaiser criterion and scree plot (Fig.1) confirm a one-factor solution. Therefore, results of the PCA yielded a one-factor solution accounting for 49 % of the total variance.

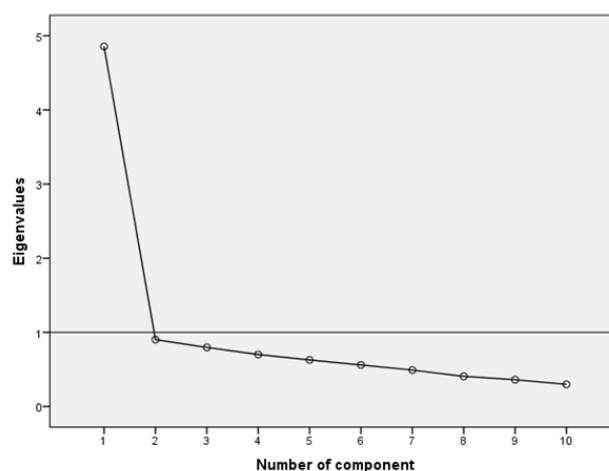


Figure 1. Scree plot (EFA for pro-ecological attitude items).

The internal reliability was analysed through Cronbach’s alpha coefficient. The scale presented a very good internal consistency ($\alpha = .88$). Additionally, all items positively contributed to the internal consistency, since the overall reliability did not improve if any item was deleted.

Pro-ecological attitude was measured as the mean of the subjects’ answers to 10 items. Table 3 presents the descriptive statistics for the pro-ecological attitude by economic status in childhood and at present. The mean answers among groups range from less than 3 points to close 3.5 points. This means that subjects had an attitude of rather pro-ecological to decidedly environmentally-friendly.

The first hypothesis concerning differences in terms of pro-ecological attitudes among people with different economic status (present or in childhood) was tested with single ANOVA. The main effects for economic status in childhood were observed ($F(2,206) = 9.709; p < 0.001, \eta^2 = .087$). Subjects from families with an economic status below average in their childhood have significantly higher pro-ecological attitudes than those from families more well-off than average ($p < .001$). Moreover, people from families with an above average economic status in their childhood have significantly lower pro-ecological attitude than those from families with an average economic status ($p < .001$). There were no significant differences between participants with average and lower economic status in their childhood ($p = .594$). In conclusion, we found that those raised in families with a low or medium economic status

Table 3. Descriptive statistics for the pro-ecological attitude by economic status in childhood and present

Economic status	In childhood			Present		
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>
Below average	56	3.49	0.42	60	3.51	0.52
Average	133	3.45	0.5	117	3.41	0.51
Above average	18	2.91	0.81	30	3.22	0.64
Total	207	3.41	0.54	207	3.41	0.54

have greater pro-environmental attitudes than people from wealthy families.

The main effect for the present economic status were not significant ($F(2,206) = 2.99; p = .052, \eta^2 = .028$). However, the analysis of contrasts revealed significant differences between participants with economic statuses below and above average ($p = .015$). The difference between people with medium status and those with low ($p = .271$) and high economic status were not found to be significant ($p = .071$). As Table 2 shows, the lowest pro-ecological attitude was found to be among people of above average economic status, and the highest pro-ecological attitudes were observed among participants with an economic status below average. Additionally, correlation analysis revealed a negative relationship between monthly income and pro-ecological attitude ($r = -.167, p = .017$; see Table 5). In summary, it was found that differences in pro-ecological attitudes between people with the various present (current) economic status were smaller and did not occur in each analysis. This was also found to be the case among people economic status in childhood. However, the direction of the differences is the same in the case of both economic status in childhood and the current economic status.

Economic status and environmentally-friendly behaviours

The tendency towards environmentally-friendly behaviours was measured in two ways: using a 5 items on a 4-point scale and via 5 items on a ratio scale. An Exploratory Factor Analysis (EFA) with the Principal Component Analysis (PCA) method of parameter estimation without rotation was conducted to explore the dimensional structure of 5 items on a 4-point scale. A single-factor solution emerged with good matrices indicator (Kaiser-Meyer-Olkin-K-M-O = .738; Bartlett sphericity $\chi^2 (df = 10) = 1395.692, p < .001$) and factor loadings between .51 and .76. Both Kaiser criterion and scree plot (Fig.2) confirm a one-factor solution. Therefore, results of the PCA yielded a one-factor solution accounting for 43 % of the total variance.

The internal reliability was analysed through Cronbach's alpha. The scale presented a satisfactory internal consistency ($\alpha = .67$). Additionally, all items positively contributed to the internal consistency, since the overall reliability did not improve if any item was deleted.

The tendency towards exhibiting environmentally-friendly behaviours was measured in two ways: as a mean answer to 5 above mentioned items on a 4-point scale and via 5 items on ratio scale. Subjects specified: (a) how many hours a month would they be able to devote towards activities in pro-ecological organisations, (b) how much

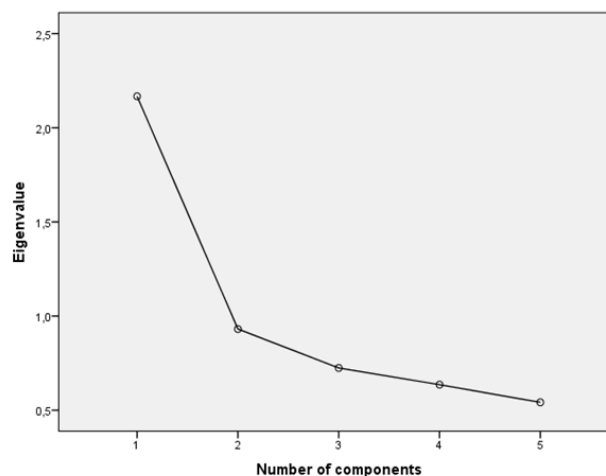


Figure 2. Scree plot (EFA for environmentally friendly behaviours).

money per month would they be able to spend more on household expenses that would contribute to stop climate change, (c) how much money per year would they be willing to donate to pro-environmental organisation, (d) how much more (percentage) would they be willing to pay for a product knowing that it was produced in an environmentally friendly way and (e) how much more (percentage) would they be able to pay for energy, knowing that it was produced in an environmentally-friendly way. Table 4 presents descriptive statistics for above described variables concerning the propensity for environmentally-friendly behaviours by economic status in childhood and present.

The second hypothesis concerning differences in terms of the propensity to environmentally friendly behaviours among people of various economic status (present or in childhood) was tested with the Kruskal–Wallis one-way analysis of variance due to not normal distribution of the response variables' residuals.

Economic status in childhood was found to differ only in response to the 5-items tendency towards environmentally friendly behaviour scale ($Chi^2 (df = 2) = 7.074, p = .029, n = 207$). Subjects from families with below average and average economic status were found to be more likely to exhibit environmentally-friendly behaviours than participants from wealthy families (respectively: $Z = -2.234, p = .025$ and $Z = -2.636, p = .008$). The differences between people with medium and low present economic status were not significant ($Z = .464, p = .643$). In terms of almost all the other questions, people from the richest families were also found to be the least pro-ecological among the compared groups. However, the differences were not statistically significant due to the large within group variation in the responses. Only in the case regarding the willingness to pay more for products manufactured in an environmentally-friendly way, did the subjects from the families with above average economic status in their childhood declare a slightly higher tendency to do so than participants from the

Table 4. Descriptive statistics for the variables concerning the tendency towards environmentally-friendly behaviours by economic status in childhood and present

Variable	Economic status	In childhood			Present		
		<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>
Mean of 5-item behaviour scale	Below average	56	2.99	.53	60	3.02	.61
	Average	133	3.02	.55	117	2.95	.56
	Above average	18	2.57	.73	30	2.95	.58
	Total	207	2.97	.58	207	2.97	.58
How many hours a month would you be able to devote for activities in the pro-ecological organizations?	Below average	56	10.50	21.31	60	9.15	9.69
	Average	133	10.30	13.81	117	10.74	19.33
	Above average	18	5.47	7.92	30	8.35	9.22
	Total	206	9.93	15.83	206	9.93	15.84
How much money per month would you be able to spend more on household expenses that would contribute to stop climate change?	Below average	56	96.00	134.33	60	75.10	104.79
	Average	132	124.17	177.82	117	102.69	137.82
	Above average	18	66.67	59.11	30	217.33	262.72
	Total	206	111.49	160.26	206	111.49	160.26
How much money per year would you be willing to donate to pro-environmental organization?	Below average	56	180.04	361.49	60	131.39	216.02
	Average	133	255.45	550.47	116	224.31	395.29
	Above average	17	161.18	484.12	30	425.67	936.08
	Total	205	227.03	484.11	205	227.03	484.11
How much more (percentage) are you willing to pay for a product knowing that it was produced in an environmentally-friendly way?	Below average	55	13.61	17.95	59	14.66	19.86
	Average	131	16.28	19.12	116	15.01	17.62
	Above average	18	16.50	20.41	29	19.74	21.66
	Total	204	15.58	18.87	204	15.58	18.87
How much more (percentage) are you able to pay for energy, knowing that it was produced in an environmentally-friendly way?	Below average	56	16.52	28.58	59	15.90	28.36
	Average	133	19.37	32.85	117	19.57	34.36
	Above average	18	12.06	13.20	30	15.69	14.35
	Total	206	17.96	30.47	206	17.96	30.47

other groups. However, this difference was not found to be statistically significant.

The responses in terms of present economic status were different with regard to only one question concerning ecologically-friendly household expenses ($Chi^2 (df = 2) = 12.475, p = .002, n = 204$). Subjects with the above average present economic status declared larger expenditure than participants with medium and below average economic status (respectively: $Z = 3.462, p = .001$ and $Z = 2.626, p = .009$). The differences between people with medium and low present economic status were not significant ($Z = 1.655, p = .098$). Subjects with the above average present economic status also declared higher donations towards pro-ecological foundations and a willingness to pay more for products manufactured in an environmentally-friendly manner than participants with medium and below average present economic statuses. However, the differences were not statistically significant due to the large variation in the responses within the group. In the case of other variables concerning the tendency towards environmentally-friendly behaviours the mean answers among the group with various economic statuses, were similar. Participants declared a willingness to devote about 10 hours per month towards activities in pro-ecological organisations and to pay about 18% more for environmentally-friendly energy.

The relationship between the present economic status (measured by means of average monthly income per family member) and propensity towards environmentally-friendly behaviors were also examined using correlation analysis, the results of which are shown in Table 5. Incomes were significantly, but not strongly, positively correlated with pro-ecological household expenditure and negatively correlated to environmentally-friendly behaviours scale and as was mentioned earlier, with the pro-ecological attitude scale. It is worth mentioning that most of the variables concerning the propensity to environmentally friendly behaviours were significantly correlated with each other

and the pro-ecological attitude scale and all of them were significantly positively correlated with the 5-item propensity towards environmentally-friendly behaviours scale.

In conclusion, the relationship between the propensity towards environmentally friendly behaviours and economic status present or in childhood is not as clear as it was in case of pro-ecological attitude. Above average economic status in childhood seems to negatively affect the propensity towards environmentally friendly behaviours at least in some respects, but on the other hand the above average present economic status may have positive impact on at least some kinds of pro-ecological behaviours.

Discussion

The research study was conducted with the purpose of establishing the possible relationship between economic status and environmentally-friendly attitudes and behaviours. What was specifically examined was the hypotheses, according to which people with different economic status (present or in childhood) would differ in terms of their pro-ecological attitudes and propensity towards environmentally friendly behaviours.

The analysis concerning the level of pro-ecological attitudes among people with different material status unveils significant differences between people raised in families with different economic statuses. In particular, those from the families with low and medium economic status have more pro-environmental attitudes than people from wealthy families. The differences among people with different present economic status were smaller, but again the richest declared on average the least eco-friendly attitudes and the poorest appear to be the most 'green'. The same pattern was revealed in the correlation analysis - monthly income and pro-ecological attitude occurred to be negatively correlated. Our results correspond with research papers indicating lower sensitivity to environmental problems of people with higher wealth, power and achievement (Crompton, Kasser,

Table 5. Correlation between monthly income, pro-ecological behaviours and attitude

Variable	2	3	4	5	6	7	8
1	-.029	.101	.141*	-.016	.025	-.145*	-.167*
2	1	.245**	.359**	.171*	.313**	.242**	.239**
3		1	.490**	.133	.371**	.304**	.192**
4			1	.120	.415**	.227**	.198**
5				1	.565**	.224**	.133
6					1	.314**	.220**
7						1	.760**
8							1

1. Average monthly income per family member
2. How many hours a month would you be able to devote towards activities in pro-ecological organisations?
3. How much money per month would you be able to spend more on household expenses that would contribute to stop climate change?
4. How much money per year would you be willing to donate to pro-environmental organisations?
5. How much more (percentage) are you willing to pay for a product knowing that it was produced in an environmentally-friendly way?
6. How much more (percentage) are you able to pay for energy, knowing that it was produced in an environmentally-friendly way?
7. Mean of the 5-item the propensity towards environmentally-friendly behaviours scale
8. Mean pro-ecological attitude

2009; 2010). According to Saunders and Munro (2000), materialistic values correlate with a less-positive attitude towards the natural environment. Also, a recent Polish study (Górnik-Durose, Wajs & Wasik, 2014) indicates significantly stronger anti-environmental attitudes among mercantile persons compared with the others.

The relationship between the propensity towards environmentally-friendly behaviours and economic status at present or in childhood is not so clear as it was in the case of pro-ecological attitudes. The above average economic status in childhood seems to negatively affect the propensity towards environmentally-friendly behaviours at least in some respects. This result is consistent with previous studies indicating a negative correlation between materialism and eco-friendly behaviours (Brown & Kasser, 2005; Richins & Dawson, 1992), which at a macro level appears as increased CO₂ emissions of the society of materialistic orientation (Kasser, 2011).

On the other hand, according to the results of our study, above average present economic status may have a positive impact on at least some kinds of pro-ecological behaviours. These seemingly contradictory results might be explained by referring to the Pirani and Secondi (2011) study, which indicates the existence of different kinds of environmental actions in people's minds. Various eco-friendly behaviours are different in terms both of individual socio-demographic characteristics and of attitudes and motivations which can enhance these actions. Similarly, Stern (2000: After: Urien, Kilbourne, 2011) suggests different types of eco-friendly behaviours, which may have different causal factors. Stern calls for a division of public and private (eg. trading off economic good for environmental good, reducing consumption) spheres of behavior. Moreover, in his opinion public-sphere behaviours could be split into passive (eg. petition signing, contributions, and joining environmental groups) and active-environmental behaviours (boycotting products and companies or protesting).

Other possible explanations of the inconsistency between results concerning more eco-friendly attitudes of the poorest group and some green behaviours of the richest, is that this environmentally-friendly consumption may be an example of green conspicuous consumption (Dziewanowska, Kacprzak, 2013). In other words, people from the group with the above average economic status may wish to emphasise their high social status and their uniqueness (Cahill, 2001; Morrison & Dunlap, 1986). Following the work of Brisman (2009) we could even venture to say that green behaviours of the richest group may be only a symptom of the trend for green behaviour among these groups, which does not have to necessarily involve sincere eco-friendly attitudes.

The limitations of this study shall also be indicated. Due to the declarative nature of collected data our results should be treated with some caution. For example, the lack of no significant differences between the groups with low and middle economic status may result from the actual similarity between those two groups in terms of economic status, which was only classified differently by respondents

themselves. In particular, the difference in average income between those two groups is much lower than between individuals with high and medium economic status. Also, responses regarding their willingness to employ eco-friendly behaviour may be the result of the desire of positive self-presentation. Although this motivation can be found among people with varying economic status, however, in future studies it would be worthwhile to consider collecting not only declarative, but also behavioural data.

In summary, our findings indicate a significant relationship between economic status and environmentally friendly attitudes and behaviours. It is worth emphasising that low economic status does not mean less sensitivity to environmental issues. On the contrary, people who grew up in the richest families are less eco-friendly. However, in terms of specific behaviours, people from the high economic status group may be more eco-friendly due to the trend for 'green' behaviour, desire to emphasise their high social status, or simply because they can afford it.

The results of this study may contribute to the development of social campaigns promoting eco-friendly behaviour, which take into account the differences in approach to the ecology of people with varying economic status. For example, events to promote 'being green' with the participation of celebrities, provide a sense of belonging to a unique group of eco-friends for the richest people. However, for people with a lower economic status, eco-friendly behaviour shall be presented as both ecological and economical, and more expensive technologies shall be financially supported.

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