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Conceptual Research Model of Metropolis Residents' Pro-Environmental Behavior

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Abstract

The study develops a conceptual research model of demonstration of pro-environmental behavior (PEB) patterns of individuals living in the metropolis. This study aims to determine the impact of several factors (education, age, income, labor status, and individual's social surroundings) on the PEB of metropolis residents and identify triggers that influence the activation of PEB. An online survey was conducted using the CAWI method on a quota sample of 1,502 respondents living in the metropolis of Moscow. The research hypotheses were tested using descriptive statistics, variance analysis and appropriate visualization tools. The study analyzed 28 patterns of PEB. It was found that people with higher education tend to exhibit a wide range of pro-environmental behavior types. Young people will be more active in a variety of PEB patterns, with the youngest (18–19-year-old group) showing the largest number of patterns 17 out of 28. People with above-average and average income are more actively engaged in PEB. Individual pro-environmental behavior depends most strongly on the pro-environmental behavior of individual's social surroundings. The novelty of this study lies in identifying differences in the manifestation of metropolis residents' pro-environmental behavior related to the purchase of goods, disposal of consumer waste, and their transport behavior.

Keywords:

Pro-Environmental Behavior;
PEB; PEB Patterns;
Online Survey;
Behavior of Individuals;
Metropolis Residents' Behavior.

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1- Introduction

In the context of established global priorities for sustainable development, scientific research is actively aimed at identifying various inventions that contribute to the sustainable development of economic systems. At the same time, scientific research has not yet sufficiently studied issues related to the pro-environmental behavior of individuals living in metropolises. Solutions in the field of sustainable development of economic systems are associated with the need to change individuals' behavioral patterns, while their motivation and perception of regulatory measures, conservatism, and internal resistance to change are often not considered. Despite the development of numerous theoretical provisions aimed at identifying the manifestation of pro-environmental behavior, a definitive explanation for its formation has not yet been found [1-3]. The issue of pro-environmental behavior among megacity residents is particularly relevant [4,5]. According to the global strategy for sustainable development until 2030, cities should be "resilient and sustainable" [6]. Metropolises have become centers of urbanization and "frequent and complex anthropogenic disturbances have had a widespread and profound impact on regional ecosystems [7], which has led to a sharp increase in global and local environmental risks [8].

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In turn, the inertia and internal resistance of metropolis residents, as consumers, to change their established behavior is quite understandable and requires certain efforts aimed at building environmental knowledge and attitudes toward ecology that will stimulate pro-environmental behavior [9]. Simultaneously, it should be agreed that existing approaches describe pro-environmental behavior within specific boundaries (social, cultural, economic, geographical, etc.) and circumstances. This indicates that the issue of developing pro-environmental behavior is so complex that it cannot be visualized using a single structure or diagram [1]. In this study, steps were taken to examine the factors influencing the pro-environmental behavior of metropolis residents.

It should be emphasized that we consider pro-environmental behavior (PEB) in terms of self-reported declaration of intentions for pro-environmental behavior, which may differ from the actual behavior of an individual. In doing so, we rely on the Theory of Planned Behavior (TPB) [10, 11]. According to the TPB, intention is a key factor in determining the likelihood of a person's behavior. This intention depends on three main components: personal attitudes toward behavior (attitudes), subjective norms, and perceived behavioral control (PBC) [10]. This study demonstrates the influence of changes in situational conditions on the activation of moral commitment, which also affects the relationship between personal norms and behavior.

This relationship was formulated as a Norm Activation Model (NAM) [12]. It is particularly important that extensive evidence indicates that factors contributing to activation through the process are directly related to altruistic behavior, such as the salience of needs and the uniqueness of responsibility [13].

According to NAM, personal norms are activated by Awareness of Consequences (AC) and Attribution of Responsibility (AR) for behavior. These components enhance moral commitment by motivating individuals to act in accordance with their beliefs. For example, awareness that failure to recycle harms the ecosystem and acceptance of responsibility may motivate an individual to engage in pro-environmental behavior. NAM and TPB complement each other in explaining individual behavior. Several social psychological studies have successfully combined TPB and NAM, making the models more complete [14-16]. Integrating these models allows us to consider both internal moral incentives and external factors, including social pressures that influence behavior. For example, personal norms (NAM) can strengthen intentions to act (TPB) if a person perceives the moral significance of an action and feels supported by society. Thus, in the case of pro-environmental behavior, personal norms activated through the NAM mechanism can further strengthen the intention predicted by the TPB. This highlights the need to consider both internal and external situational conditions when modeling complex patterns of behavior [17-20].

As shown by other studies on pro-environmental behavior, within the framework of TPB and NAM theories, considerations of personal costs and benefits, especially in the form of attitudes and perceived behavioral control, can explain why people participate in specific sustainability initiatives [21]. In this regard, it is crucial to understand whether perceived pro-environmental behavior and the individual aspects of its manifestation differ depending on various consumer characteristics. This issue is especially relevant in the context of the results of some studies, revealing the attitude-behavior gap, demonstrating a discrepancy in the expressed positive attitude toward the environment, intention to implement pro-environmental behavior, and actual adoption behavior [20, 22]. In addition, based on the results of the literature review, it should be noted that some aspects of pro-environmental behavior have not been confirmed by sufficient empirical research and require further detailed studies [23]. Therefore, this study analyzed and assessed metropolis residents' perceptions of various formats of pro-environmental behavior manifestation (patterns).

This study aimed to assess the impact of several factors (education, age, income, labor status, and individuals' social surroundings) on the pro-environmental behavior of metropolitan residents and to identify triggers that influence the activation of pro-environmental behavior.

The novelty of this study lies in its design-based research attempt to identify differences in the manifestation of pro-environmental behavior by individuals depending on certain factors in a wide list of pro-environmental behavior patterns related to the purchase of goods, waste disposal, and transport behavior.

The structure of this paper consists of a literature review that examines current approaches to the study of pro-environmental behavior issues, from which six research hypotheses were derived. The methodology section describes the research approach for studying pro-environmental behavior, which is based on a survey method. The Results section presents the conclusions of each research hypothesis. The discussion section then addresses the main points related to the study and its findings. The conclusions and recommendations section presents the study's findings and contributions to theoretical and practical approaches.

2- Literature Review

Steg & Vlek defined pro-environmental behavior as an action that causes minimal damage or even benefits to the environment [24], thereby reducing environmental damage and improving the state of the environment. Pro-environmental behavior can be implemented both individually and collectively [25]. Pro-environmental behavior is affected by internal and external factors [4, 26-28]. Environmental education, which is primarily aimed at transmitting

environmental knowledge, plays an important role here [29]. It is unlikely that anyone will consciously act to protect the environment if they know nothing about environmental problems [30]. Some researchers [31, 32] came to the conclusion that it is necessary to pay great attention to environmental education and increase the level of citizens' knowledge about the environment to stimulate a careful attitude toward the environment. However, a direct relationship between environmental education and pro-environmental behavior has not been revealed [33, 34]. Thus, knowledge about the environment and environmental problems is a contributing factor to the development of pro-environmental behavior in the population [35-38].

Casaló et al. [39, 40] concluded that knowledge can contribute to the formation of a positive attitude and become the basis for the manifestation of pro-environmental behavior. Some studies have noted that the connection between environmental knowledge and attitudes is weak. Specifically, attitude toward the environment directly stimulates the responsible behavior of individuals rather than their knowledge in this area [41, 42].

It can be stated that the level of environmental education affects the consumers' willingness to bear an additional burden for environmentally friendly products or environmental protection, which has been identified by some researchers. At the same time, the influence of educational level on pro-environmental behavior has not always been the focus of researchers. In rare studies, the level of education was used, for example, as an indicator for assessing the invariance of two educational segments: people with a university education and people without a university education [43, 44]. This may be associated with the fact that education influences the depth of understanding of environmental processes and, as a result, increases the motivation for dynamic actions to protect the environment. However, existing studies have not considered the influence of education on specific multifactorial behavioral actions.

This allowed us to propose the following hypotheses about the positive impact of education on eco-activity:

Hypothesis 1 (H1): People with a high level of education are more prone to pro-environmental behavior.

- (H1.1): Individuals with a higher level of education tend to exhibit a wide range of pro-environmental behaviors.
- (H1.2): Individuals with higher levels of education tend to exhibit similar pro-environmental behaviors.
- (H1.3): The lower the level of education, the more inclined an individual will be to exhibit pro-environmental behavior in a group than in an individual.

In addition to the level of education, a number of studies have revealed a significant correlation between people's willingness to pay extra for environmentally friendly products or environmental protection and their socio-demographic characteristics [45-47]. This suggests that willingness to pay for the environment varies depending on the segment of the population.

Some studies have shown a relationship between indicators such as age and pro-environmental behavior [48, 49]. However, these studies do not always link pro-environmental behavior with multifactorial behavioral actions, and do not compare pro-environmental behavior in different age groups of respondents in one sample. We believe that young people have a greater commitment to pro-environmental behavior than older age groups, which may be related to the specifics of the value system of the younger generation, greater awareness of potential damage to the environment, and less inertia in mastering environmentally sustainable practices among youth. This assumption enables us to propose the following hypothesis regarding the dependence of environmental behavior on age category:

Hypothesis 2 (H2): There are statistically significant differences in individuals' pro-environmental behaviors depending on their age.

- H2.1: a larger proportion of the younger generation will exhibit pro-environmental behavior compared to other age groups;
- H2.2: representatives of the younger generation will exhibit a wider range of types of pro-environmental behavior compared to other age groups.

Socioeconomic factors form differences in individuals' lifestyles, values, ways of thinking, and ways of acting, which in turn are demonstrated by different perceptions of environmental problems, attitudes toward environmental issues, and pro-environmental behaviors [4].

In particular, some researchers have analyzed the relationship between individuals' social surroundings and their pro-environmental behavior [49]. According to the research results, 75% of the respondents exhibited pro-environmental behavior, 71.2% considered their household to be environmentally friendly, and 59.2% had friends who exhibited pro-environmental behavior. However, a small group of respondents were found to exhibit pro-environmental behavior and have friends with a similar behavioral model, but they live in a non-ecological household, and a group of respondents who have friends implementing pro-environmental behavior but do not support this behavioral model. The study was conducted with a small sample (260 respondents) and only among representatives of one generation, which seriously limits the possibility of using the research results.

In this regard, we believe that the manifestation of pro-environmental behavior of one person can be stimulated by similar behavior among his/her friends, family members or colleagues, creating a "snowball" effect in compliance with the TPB theory, through the "normative expectation" factor, when the actors check to what extent the action dictated by the attitude (pro-environmental behavior) corresponds to the social norms of their environment. If a discrepancy is found, it can affect the actual implementation of pro-environmental behavior patterns. This assumption allows us to propose the following hypothesis regarding the relationship between individuals' social surroundings and pro-environmental behavior:

Hypothesis 3 (H3): Individual pro-environmental behavior depends on the pro-environmental behavior of an individual's social surroundings.

In our opinion, another important factor influencing pro-environmental behavior is income level. Several studies show that higher incomes can stimulate behavioral patterns that run contrary to pro-environmental behavior and are accompanied by a low level of concern and interest in environmental protection issues. This behavior was more often demonstrated by young male respondents with higher education living in small households with motor vehicles. An individual's high economic activity is another predictor of the manifestation of behavior patterns with a higher burden on the environment [50]. In addition to the negative impact of income on PEB discussed above, empirical studies show that individuals with higher incomes are more active in displaying pro-environmental behavior patterns [51, 52].

At the same time, several studies indicate that it is impossible to find a clear pattern of positive or negative relationships between income and PEB. Some studies have demonstrated that people with higher incomes have a higher carbon footprint, while others have shown that people with greater financial resources are more actively involved in PEB [53].

We will supplement studies of this relationship with an analysis of behavioral actions, which allows us to propose the following hypotheses about the influence of economic status on eco-behavior:

Hypothesis 4 (H4): People with high incomes may have more opportunities to purchase environmentally friendly goods and services (e.g., organic food and electric cars); however, this is associated with an understanding of personal benefits.

- H4.1: high income will be associated with active pro-environmental behavior;
- H4.2: high income will be associated with pro-environmental behavior that is primarily of personal benefit.

In numerous studies, the issue of employment status and its impact on pro-environmental behavior are usually not singled out from the total number of analyzed socio-demographic consumer characteristics. Employment is considered by researchers in conjunction with other factors, without singling it out as a separate PEB predictor [54, 55].

At the same time, some studies note that part-time employment status is associated with a more active manifestation of PEB patterns [56]. To clarify the impact of employment status on pro-environmental behavior, we propose the following hypothesis:

Hypothesis 5 (H5): Differences in employment status influence the manifestation of pro-environmental behavior.

- H5.1: individuals with the part-time employment status will be more inclined to manifest pro-environmental behavior;
- H5.2: individuals with the part-time employment status will demonstrate a wider range of pro-environmental behavior types.

The spread of the sustainable development concept in society and the growth of its influence on the development of socio-economic systems in countries and individual regions leads to the "adaptation" of companies and individuals to this concept, without real acceptance of the value attitudes of the concept and, in particular, environmental values underlying pro-environmental behavior [57]. Sustainable development is defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" [58], an important issue when analyzing pro-environmental behavior is the ability to identify "demonstrative" pro-environmental behavior that does not correspond to the real beliefs of metropolis residents. In the field of corporate activity, the term "greenwashing" has been used to characterize this principle of behavior [59]. Similar to greenwashing for companies, people's behavior is usually called "eco-hypocrisy" or "environmental hypocrisy".

The literature notes the negative aspect of such hypocritical behavior, which can be conceptualized as a form of inauthentic being – the inability to be true to one's own standards [60].

Metropolis residents, as consumers of goods and services, declare their commitment to environmental principles but do not implement them in their behavior. However, as noted in some scientific publications, "researchers often exacerbate the intention-behavior gap because of their methodological myopia (e.g., not focusing on behavioral outcomes or working in unrealistic research conditions) [61].

Such behavior is often generated by the desire to look environmentally conscious in the eyes of others, without significantly changing their habits and lifestyle. Thus, if patterns of pro-environmental behavior that require significant time, monetary and other costs from an individual cannot be "eco-hypocrisy," and this is a manifestation of an individual's conscious and truly pro-environmental behavior. In this regard, one of the important determinants of pro-environmental behavior is the collection and recycling of waste [62].

Individuals often consider waste recycling as a labor-intensive and annoying activity that should be avoided whenever possible [63, 64]. At the same time, it is noted that waste sorting at the source of its generation is the most important solution for sustainable waste management [65].

The literature on this issue focuses on studying the factors influencing segregated waste collection, noting that the essence of the problem is that although households are generally aware of the social significance of recycling, such awareness is not necessarily reflected in actual behavioral practices [63, 66, 67].

Although we did not find any studies showing the influence of the relationship between actual waste collection and sorting behavior on pro-environmental attitudes, this pattern could be an indicator of an individual's conscious and truly pro-environmental behavior. However, in the meantime, if an individual avoids the pattern of waste collection and sorting, the other patterns of his/her pro-environmental behavior could be associated with performing the action by force of "public censure, fashion in a person's environment, emphasizing the status, imitation of others "everyone does it" everyone does it, enabling us to propose the following hypothesis:

Hypothesis 6 (H6): The impact of the pro-environmental behavior pattern, which is associated with participation in segregated collection and sorting of waste, is predominant.

- H6.1: if individuals exhibit a pro-environmental behavior pattern for segregated waste collection, they will also be inclined to exhibit other patterns of pro-environmental behavior;
- H6.2: if individuals do not exhibit a pro-environmental behavior pattern for segregated waste collection, other patterns of pro-environmental behavior will be associated with performing the action by force of "public censure, fashion in a person's environment, emphasizing the status, imitation of others "everyone does it".

When concluding the literature review, it should be noted that despite the fact that cities, especially metropolises, are centers of waste generation and other factors affecting sustainability, there is no consensus in the literature that residents' PEB is precisely the key aspect of sustainable development. The authors concentrated their research on issues of planning and management [68, 69], although they noted the importance of the influence of the metropolis residents' life activities [70].

The literature review shows that, despite the various aspects of pro-environmental behavior, metropolis residents' perceptions are a significant direction for analysis and assessment. At the same time, previous studies [5, 71-73] did not evaluate the influence of certain patterns on the pro-environmental behavior of metropolitan residents. Therefore, there is a gap in existing studies that allows us to define the conceptual model of this study (Figure 1).

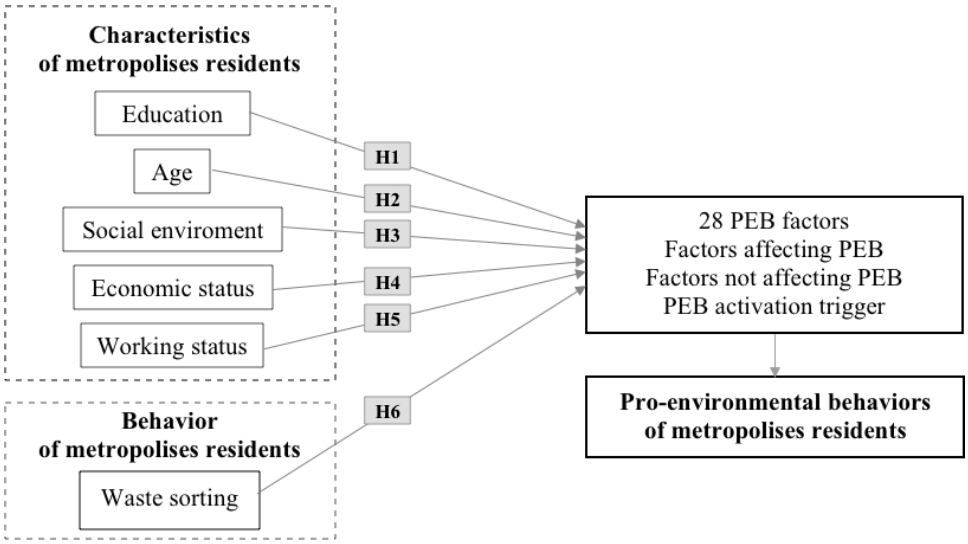

Figure 1. Conceptual model

3- Research Methodology

An online survey was conducted using the CAWI (Computer-Assisted Web Interviewing) method. This means that the survey was conducted via a special platform [74], which ensured communication between the researcher and

survey participants. The OMI online panel-based quota-sampling method was used in this study. The use of quotas ensures the maximum representativeness of the sample according to the specified parameters.

Online panels are communities of people who agree to regularly participate in online marketing research. Each participant consciously registers in the panel on a special internet portal, providing various sociodemographic and consumer data about themselves with possible verification of identity. An online panel participant received compensation in the form of a cash reward or prize. An online panel is a complex technical IT infrastructure in which invitations to online panel participants to participate in a specific study are sent only to addresses corresponding to the quota and sample of the study being conducted. This study was conducted in accordance with the ICC/ESOMAR code used by the Association for Market and Public Opinion Researchers (AMPOR), a Russian professional association of research companies created in 2003. As of 2023, AMPOR includes key players in marketing research and the public opinion market [75]. The OMI online panel was selected for this study because it ensured 100% representativeness of the online audience. It should be noted that the total size of the online panel in Moscow was 80,063 people [76].

The limitations of the online panel method are related to the fact that no online panel can be called representative according to the definition of the ICC/ESOMAR code, since because of direct or indirect incentives for participation in the online panel and in the survey the motivation of the online panel respondent differs from the motivation of the classical study respondent. The desire to participate in the survey was the most significant factor. Data quality control under such conditions is possible by setting quotas and screening the samples according to the parameters required for the study.

The Anketolog online questionnaire design and programming platform were selected for the survey [74]. The choice was determined by compliance with the following requirements: the possibility of using quotas and screening of respondents, mandatory storage of data on respondents and their responses to the questionnaire within the territory of the Russian Federation, and the possibility of programming the questionnaire using page-by-page logic.

Sample quotas were set according to the following four parameters: age, income level, type of employment, and place of residence. Age quotas were developed based on data from the Federal State Statistics Service for Moscow and the Moscow Region and regarded segments aged 18 years and older [77]. All respondents under the age of 18 were disqualified from the study, that is, their responses were not considered. This study was conducted using a stratified sample of respondents, which, in combination with the objectives of the study based on the approaches adopted in the literature, can be considered representative of this case [78]. The quotas were determined based on data from the Federal State Statistics Service for 2022 [77]. According to the data, the total population of the Moscow metropolis is 12,635 thousand people, of which 10,350 thousand are adults. The sample size was 1,502 respondents, which provided a 2.5% confidence interval for estimating the proportion of individuals who adhered to pro-environmental behavior. The sample size was calculated based on the fact that 52 proportion of muscovites adhere to pro-environmental behavior (according to the results of a study of 30 thousand respondents by AliExpress-Russia in 2021 [79]).

The questionnaire developed for the online survey was used as a tool to conduct the study. The questionnaire included three blocks. The first block consisted of screening and supporting questions regarding age, income level, type of employment, and place of residence. The second block formed the main part, and questions enabling the verification of the hypotheses were put forward. The respondents had to indicate whether the pro-environmental behavior pattern from the list corresponded to their behavior. The respondents had to indicate whether the pro-environmental behavior pattern from the list corresponded to the behavior of people around them (friends, acquaintances, and relatives).

The list of pro-environmental behavior patterns obtained by experts based on the analysis of previous studies includes the following [49, 80, 81]:

1. Waste sorting.
2. Using food waste grinder.
3. Donating used clothes to other people (including friends and relatives), taking them to collection points for further donation to other people, or recycling.
4. Selling used unwanted or unused items.
5. Collecting and recycling glassware at appropriate collection points.
6. Collecting and recycling waste paper at appropriate collection points.
7. Collecting and recycling used batteries and lamp bulbs at appropriate collection points.
8. Refusing to use plastic bags.
9. Trying to use double-sided writing paper, reducing the use of paper.
10. Participating in litter clean-up campaigns.

11. Buying second-hand goods.
12. Buying goods made of recycled materials.
13. Buying locally produced goods and food products.
14. Buying organic goods (food products, cosmetics, household chemicals, etc.).
15. Buying goods with eco-labels.
16. Choosing goods with regard to their carbon footprint.
17. Renting things (shared consumption).
18. Sharing unused food (food-sharing).
19. Refashioning, remodeling old things, and creating new functionalities. For example, they could remake clothes and use tires for a flower bed.
20. Using my own shopping bag.
21. Buying products without packaging (refusing to buy packaged goods).
22. Repair a product instead of buying a new product and use it until it finally breaks down.
23. Using public transport more.
24. Participating in "Car-Free Day" campaigns.
25. Keeping my car in good working order.
26. Using carsharing to get around.
27. Using intercepted parking lots.
28. Refusing my car in favor of walking, cycling, scootering, and public transport.

The third block included the socio-demographic characteristics of the respondents, making it possible to detail the respondents' socio-demographic portraits in terms of gender, level of education, employment status, marital status, and availability of children.

4- Results

The authors conducted an online survey of Moscow metropolis residents. The questionnaire completion rate was 46% because of setting quotas and screening: among 3,284 respondents who began to answer the questionnaire, only 1502 met the quotas. The reliability of the survey results was verified using Cronbach's alpha coefficient for the 12 variables to assess the significance of the incentives for respondents to switch to environmentally friendly purchases/consumption. The Cronbach's alpha value was 0.84, indicating high reliability of the survey results. The variables of the patterns of pro-environmental behavior are binary; therefore, structural equation modeling (SEM) and factor analysis were not used to assess the relationship between them. A research flowchart is shown in Figure 2.

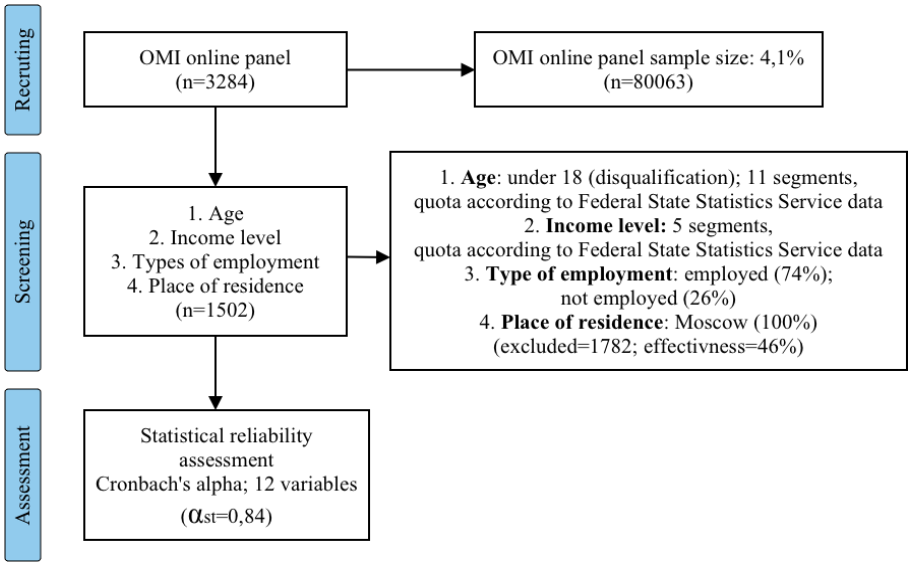

Figure 2. Flowchart of the research

Hypothesis H1.1 was confirmed. Individuals with higher education tended to exhibit a wide range of pro-environmental behavior patterns, and the differences were statistically significant according to the t-test for independent samples at a significance level of 5% (t = -3.08, df = 1500, sig. = 0.002). The average number of pro-environmental behavioral patterns for people with higher education was 16, whereas for those without higher education, it was 15.

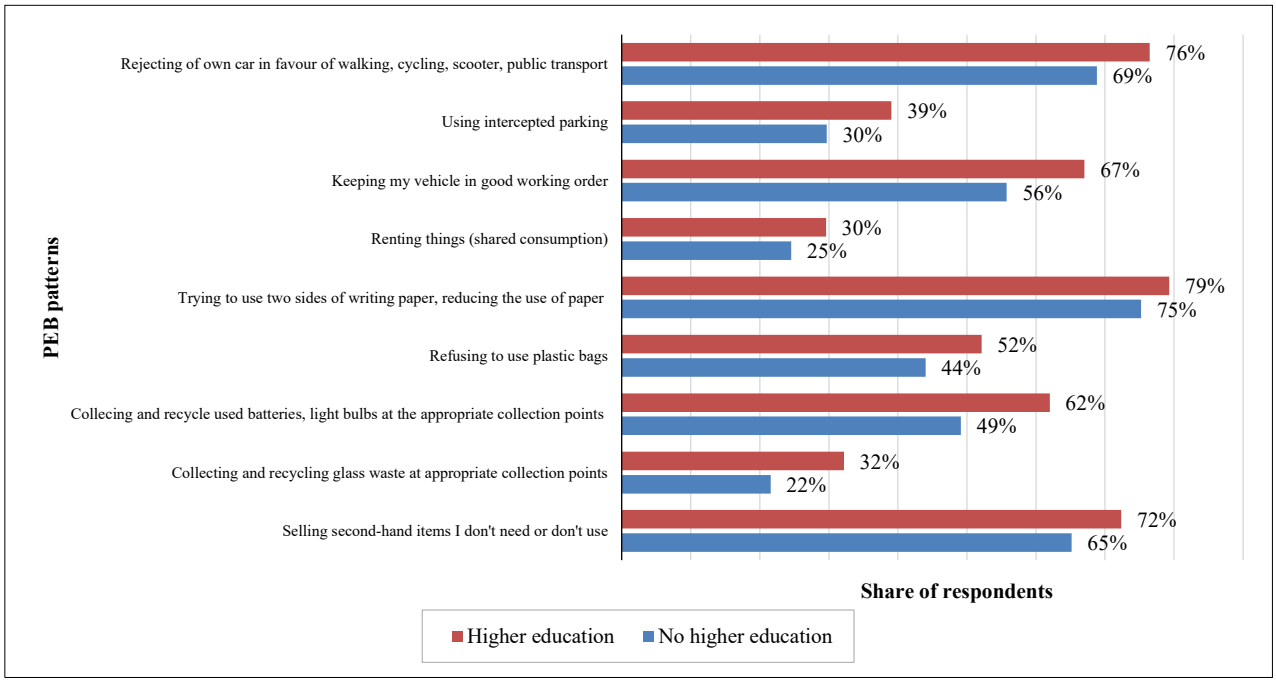

Figure 3. The proportion of respondents with and without higher education who adhere to the corresponding patterns of their own pro-environmental behavior

Hypothesis H1.2 was partially confirmed. Individuals with higher education tend to exhibit a similar type of pro-environmental behavior. Among the 28 patterns of pro-environmental behavior, 9 were identified, for which statistically significant differences were determined in the proportions of respondents with and without higher education adhering to the corresponding patterns. The results were verified at a significance level of 5% using analysis of variance (ANOVA) (F min = 4.03 (sig. = 0.045), F max = 22.12 (sig. = 0.000). The results are shown in Figure 3.

For all nine patterns presented in Figure 3, the proportion of respondents with higher education prevailed, but the most significant differences were observed for the seven patterns of pro-environmental behavior (Figure 4).

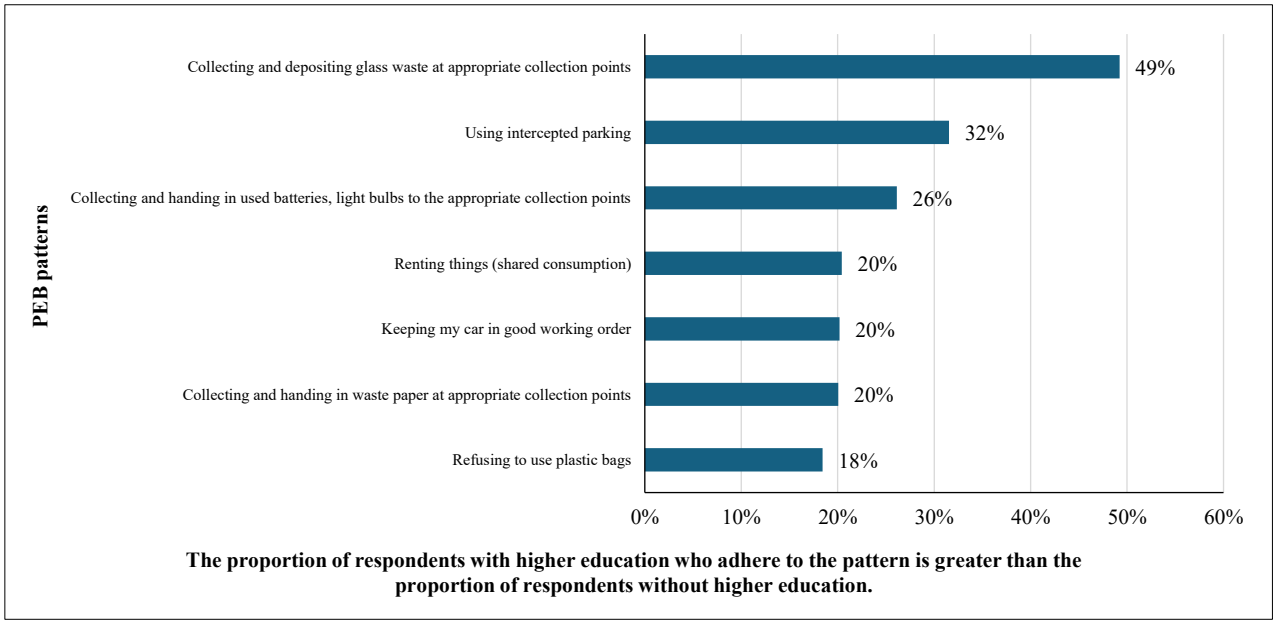

Figure 4. The excess of respondents with higher education who adhere to the pattern of their own pro-environmental behavior over the number of respondents without higher education

Hypothesis H1.3 was not confirmed, and it turned out that the higher the level of education, the more an individual will be inclined to demonstrate pro-environmental behavior in a group rather than individually; the differences are statistically significant according to the t-test for independent samples at a significance level of 5% (t = -3.60, df = 1500, sig. = 0.009). The average number of patterns of group pro-environmental behavior for people with higher education was 13 and for those without higher education, it was 12.

Hypothesis H2.1 was partially confirmed. A larger proportion of the younger generation demonstrated pro-environmental behavior compared with other age groups, but not in all PEB patterns. Among the 28 patterns of pro-environmental behavior, 10 were identified, for which statistically significant differences in the proportions of respondents adhering to the corresponding patterns were determined. The results were verified at a significance level of 5% using analysis of variance. The results were verified at a significance level of 5% using ANOVA (F min = 2.29 (sig. = 0.015), F max = 6.75 (sig. = 0.000)).

The following pro-environmental behavior patterns are most popular:

- People aged 20–39 use carsharing to get around to a greater extent.
- People aged 18–34 share unused food to a greater extent.
- People aged 18–34 rent things to a greater extent, with the largest proportion of respondents aged 18–19.
- People aged 18–44 choose goods with regard to their carbon footprint to a greater extent, with the largest proportion of respondents aged 18–19.
- People aged 18–44 collect and recycle used batteries and lamp bulbs at appropriate collection points to a greater extent, with the largest proportion of respondents being aged 18–19 and 35–39.
- People aged 18–19 collect and recycle waste paper at appropriate collection points to a greater extent.
- People aged 18–39 collect and recycle glassware at appropriate collection points to a greater extent.
- People aged 18–39 sell used unwanted or unused clothes to a greater extent, with the largest proportion of respondents aged 18–19.
- People aged 18–19 and 50–54 donate used clothes to other people, take them to the collection points for further donation to other persons, or recycle them to a greater extent.
- People aged 18 to 39 use food waste grinders to a greater extent.

The most significant differences in pro-environmental behavior by age were revealed in five patterns (Table 1).

Table 1. Proportion of pro-environmental behavior adherents by age groups (pro-environmental behavior patterns with the strongest differences by age are presented)

Respondent's age, years	Pro-environmental behavior patterns				
	Using food waste grinder	Selling used unwanted or unused items	Collecting and recycling waste paper at appropriate collection points	Renting things	Using carsharing to get around
18 – 19	23%	81%	53%	43%	32%
20 – 24	27%	74%	42%	39%	38%
25 – 29	30%	77%	40%	35%	40%
30 – 34	25%	75%	38%	38%	42%
35 – 39	23%	78%	37%	31%	42%
40 – 44	17%	72%	40%	25%	30%
45 – 49	10%	66%	24%	16%	25%
50 – 54	16%	60%	30%	21%	24%
55 – 59	7%	57%	19%	18%	19%
60 – 64	15%	44%	21%	15%	6%

Thus, people aged 18–39 years are more inclined to recycle waste and secondary raw materials and share goods than older generations.

Hypothesis H2.2 was confirmed. Younger generation representatives demonstrated a wider range of pro-environmental behavior types than other age groups. The differences were statistically significant according to the F-test at a significant level of 5% (F = 3.30 (sig. = 0.000)) (Figure 5).

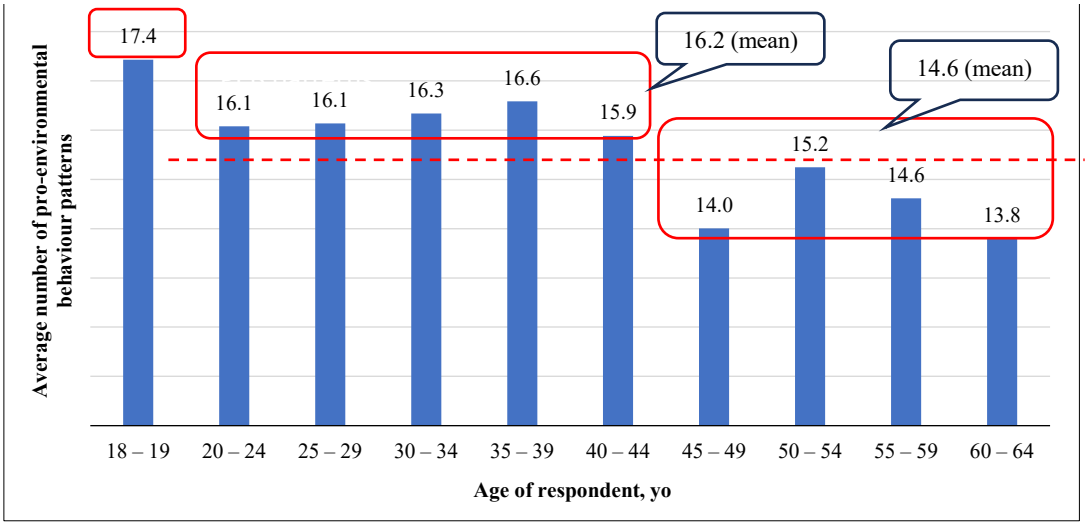

Figure 5. Average number of pro-environmental behavior patterns for the age groups

For respondents aged 18–19, the average number of pro-environmental behavior patterns was maximum, exceeding 17, 16 for people aged 20–44, and 14 for participants aged 45–64.

Hypothesis H3 was confirmed. Individual pro-environmental behavior depends most strongly on the pro-environmental behavior of the social environment. A statistically significant relationship between one's own behavior and the behavior of his/her social surroundings was found for all 28 pro-environmental behavior patterns (significance level 5%, chi-square test: 103,42 ≤ Pearson Chi-Square ≤ 455,98, sig. = 0.000). Figure 6 shows the proportion of the respondents' social surroundings adhering to the same pattern for each PEB pattern among respondents adhering to the corresponding pattern.

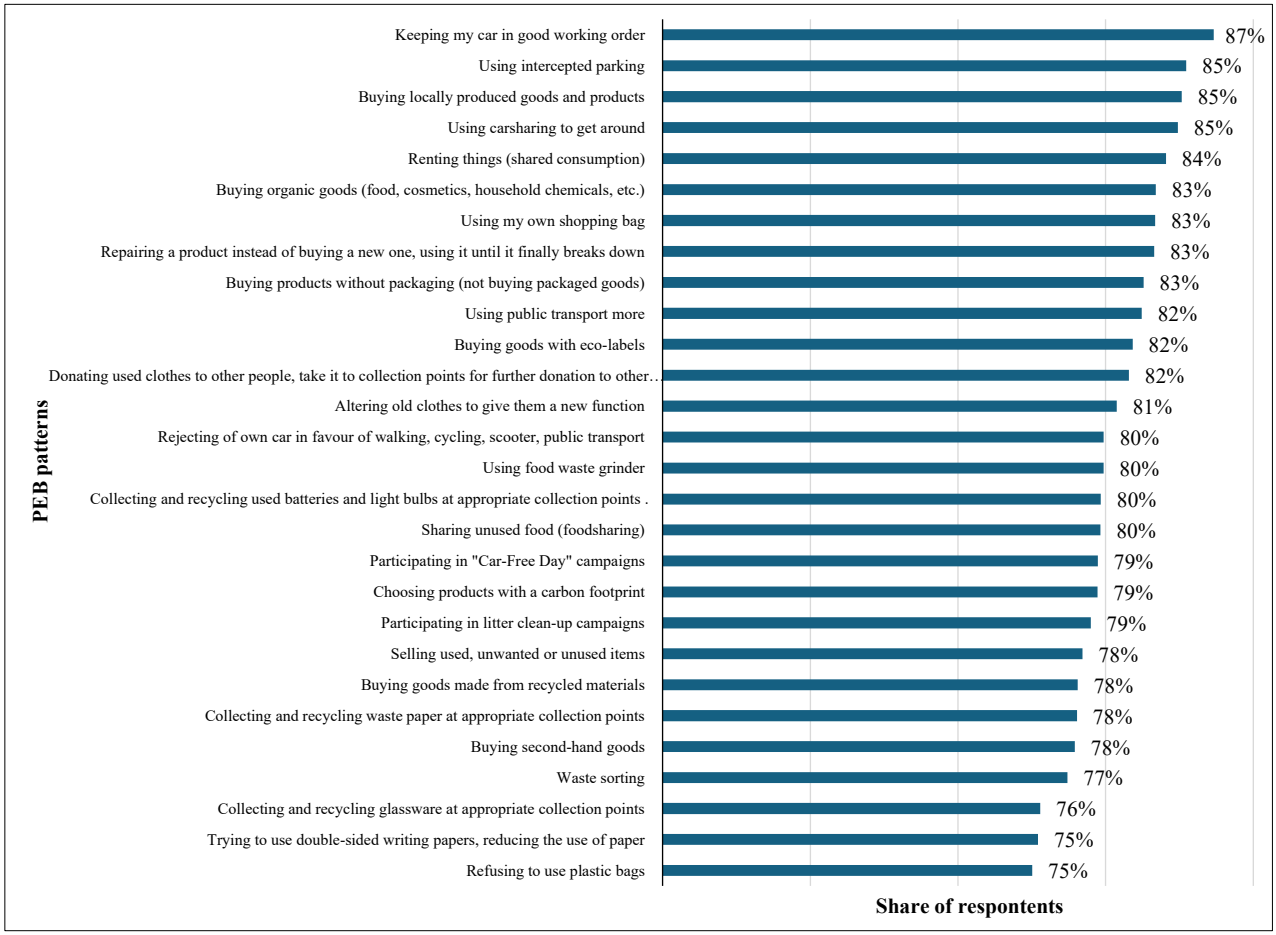

Figure 6. The proportion of the respondents' social surroundings adhering to the pro-environmental behavior pattern among respondents adhering to the corresponding pattern

It should be noted that for all patterns, the share of people around the respondents (social surroundings) adhering to the pro-environmental behavior pattern among respondents adhering to the corresponding pattern was at least 75%.

Hypothesis H4.1 was partially confirmed. A high-income level is partially associated with active pro-environmental behavior. Among the 28 PEB patterns, 15 were identified for which statistically significant differences were determined in the proportion of respondents with different income levels adhering to the corresponding patterns. The results were verified at a significance level of 5% using ANOVA (F min = 2.68 (sig. = 0.046), F max = 17.07 (sig. = 0.000)) (Figure 7).

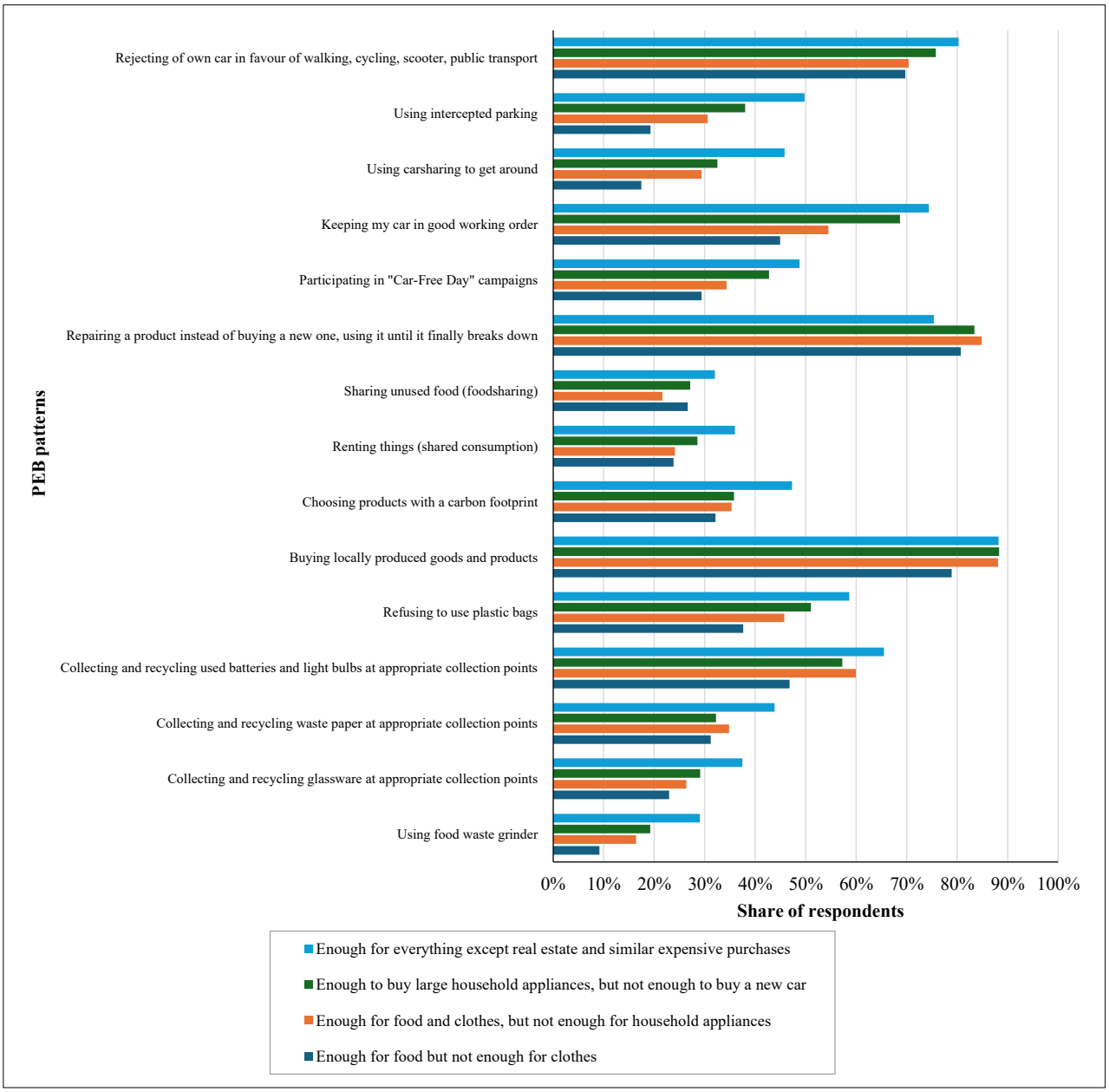

Figure 7. The proportion of respondents by income levels, who adhere to the corresponding patterns of their own pro-environmental behavior

For 14 out of 15 pro-environmental behavior patterns, there is a priority of the shares of people with high incomes (enough to buy everything except real estate and similar expensive purchases) – except for the pattern "Repairing a product instead of buying a new one, using it until it finally breaks down."

For the pattern "Buying locally produced goods and food products," there was parity of the shares of people with high incomes and the other two income levels – "Enough to buy food and clothing, but not enough to buy household appliances," "Enough to buy large household appliances, but not enough to buy a new car."

The most significant differences in pro-environmental behavior according to income level were found for the three patterns (Table 2).

Table 2. The proportion of pro-environmental behavior adherents by income levels (pro-environmental behavior patterns with the strongest differences by income are presented)

A statement that corresponds to the respondent's personal level of financial standing	Pro-environmental behavior patterns		
	Keeping own car in good working order	Using carsharing to get around	Using intercepted parking lots
Enough to buy food, but not enough to buy clothes	45%	17%	19%
Enough to buy food and clothing, but not enough to buy household appliances	54%	29%	31%
Enough to buy large household appliances, but not enough to buy a new car	69%	33%	38%
Enough to buy everything except real estate and similar expensive purchases	74%	46%	50%

Thus, people with higher incomes are more likely to keep their cars in a good working order and use the opportunities of the metropolis to optimize their transportation options than are people with lower incomes.

Hypothesis H4.2 was not confirmed based on the previous findings (hypothesis H4.1). High income is not associated with pro-environmental behavior, which is primarily a personal benefit. The main differences in the PEB of people with high incomes are associated with both personal benefits (patterns of using a food waste grinder, carsharing, and intercepted parking lots) and social benefits (collecting recyclable materials and choosing goods based on their carbon footprints).

Hypothesis H5.1 was confirmed for only two patterns of pro-environmental behavior (Figure 8). According to them, individuals with labor status of "part-time employment" are more likely to exhibit pro-environmental behavior. No statistically significant difference was observed for the remaining patterns (at a significance level of 5%, verified using the F-criterion, F min = 4.08 (sig. = 0.044), F max = 5.99 (sig. = 0.015)).

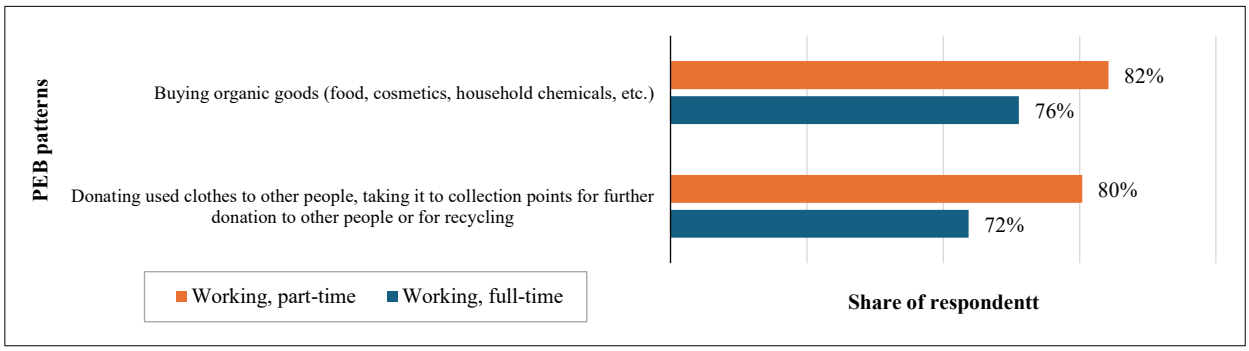

Figure 8. The proportions of full-time and part-time employed respondents, adhering to their own pro-environmental behavior pattern

Part-time employed respondents buy organic goods (food products, cosmetics, household chemicals, etc.) 8% more often than full-time employed respondents do. Part-time employed respondents donate used clothes to other people and take them to the collection points for further donation to other persons or recycling 6% more often than full-time employed respondents do.

Hypothesis H5.2 was not confirmed. Individuals with the "part-time employment" status do not exhibit a wider range of pro-environmental behavior patterns. The results were verified using a t-test at a significance level of 5% (t = -0.56, df = 1101, sig. = 0.732). People with full- and part-time employment adhere to an average of 16 PEB patterns.

Based on the above, it can be concluded that the most stable average number and proportion of pro-environmental behavior patterns were 15-16 (54-57%). In future studies, we will evaluate the dynamics of the changes in the average number of pro-environmental behavior patterns.

Hypothesis H6.1 was confirmed. If an individual exhibits a pro-environmental behavior pattern for segregated waste collection, then he/she is inclined to exhibit other PEB patterns. Thus, among people who sort waste, the proportion of those adhering to other pro-environmental behavior patterns is higher than among people who do not sort waste (Figure 9). Moreover, the differences were statistically significant according to the F-criterion, with a significance level of 5% (F min = 24.57 (sig. = 0.000), F max = 279.42 (sig. = 0.000)).

Figure 10 clearly shows that the differences in pro-environmental behavior among people who sort and do not sort waste are significant. Patterns were identified in which the differences were most significant (the proportion of people who adhered to the pattern of sorting waste exceeded the proportion of people who did not sort waste more than 2 times, Figure 10).

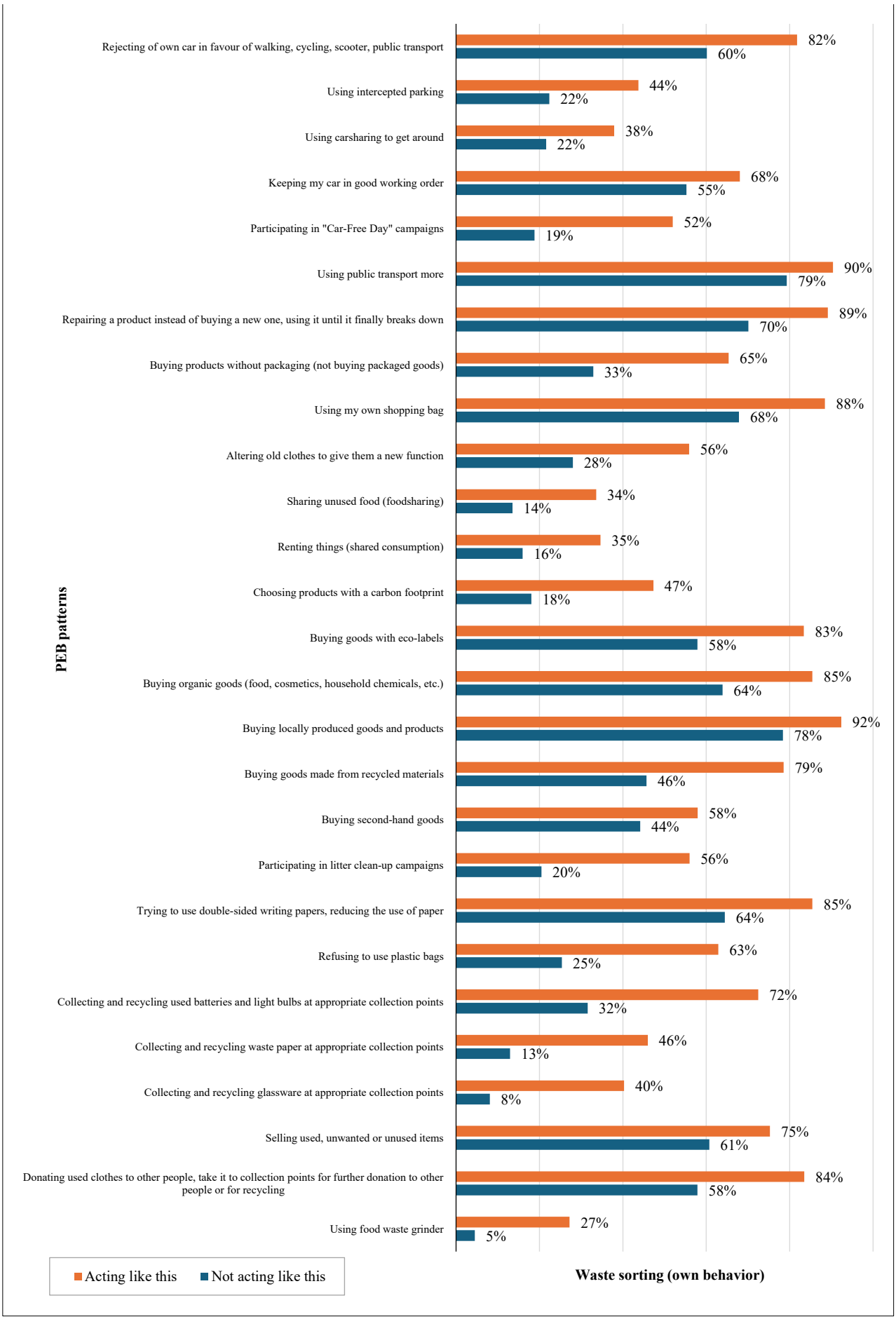

Figure 9. The proportion of people sorting waste who adhere to their own pro-environmental behavior patterns

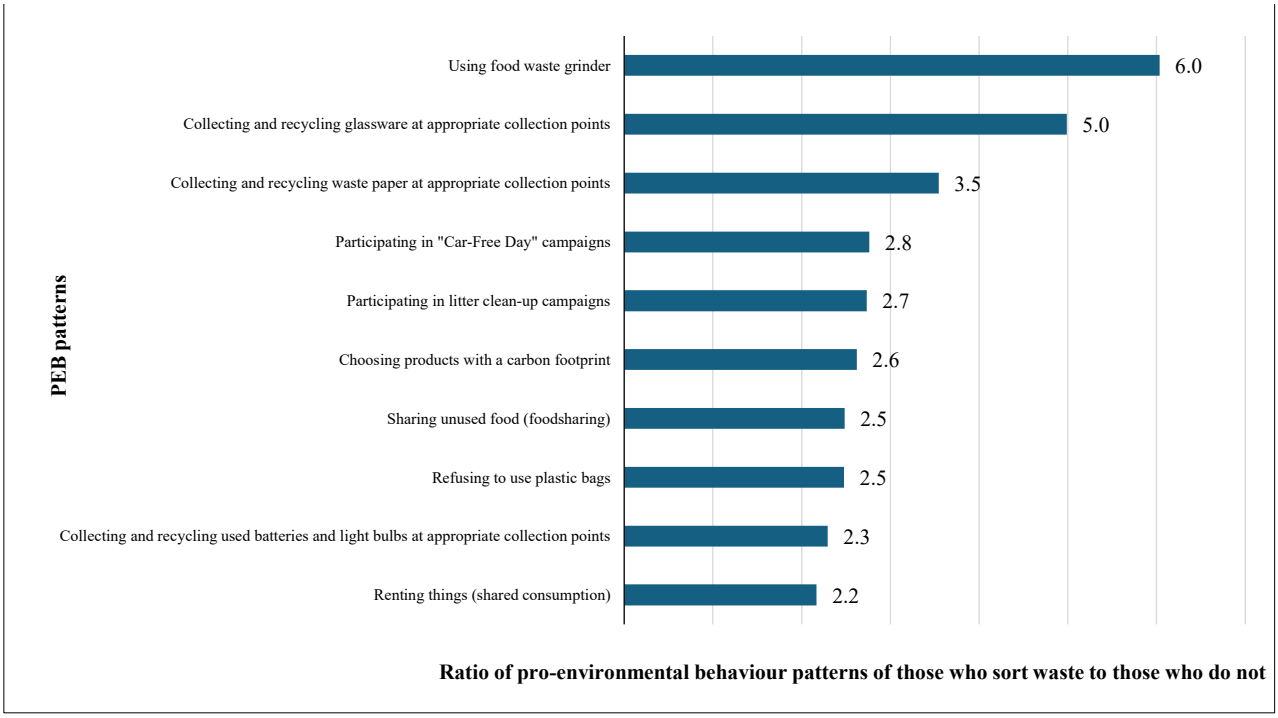

Figure 10. Own pro-environmental behavior patterns, in which the differences are most significant between people who sort and do not sort waste (the proportion of people who adhere to the waste sorting pattern is doubled compared to the proportion of people who do not sort waste).

The most significant differences were revealed in:

- Using a household food waste grinder (six times more of those who follow the pattern than those who sort their waste);
- Collecting and recycling glassware at appropriate collection points (5 times more);
- Collecting and recycling waste paper at appropriate collection points (3.5 times more).

Such results are logical, since each of these patterns is associated with the sorting and segregated disposal of waste and recyclable materials. The remaining factors (showing increase by more than twice, but less than thrice): participating in "Car-Free Day" and litter clean-up campaigns; choosing goods with regard to their carbon footprint; food-sharing; refusing to use plastic bags; collecting and recycling used batteries and lamp bulbs at appropriate collection points; renting things (shared consumption) are associated with either participation in environmental practices, separate collection of recyclable materials, or with the reduction in the amount of waste.

Table 3 presents eight patterns of pro-environmental behavior, followed by more than half of the respondents who sort waste and less than half of the respondents who do not sort waste.

Table 3. The proportion of adherents of pro-environmental behavior, who sort and do not sort waste (patterns of which are followed by more than half of respondents who sort waste and less than half of respondents who do not sort waste)

Pro-environmental behavior patterns	Attitude to waste sorting		Difference in the proportion of respondents adhering to the pattern between those who sort and those who do not sort waste
	Sort waste	DO NOT sort waste	
Collecting and recycling used batteries, and lamp bulbs	32%	72%	40%
Refusing to use plastic bags	25%	63%	38%
Participating in litter clean-up campaigns	20%	56%	36%
Buying goods made of recycled materials	46%	79%	33%
Participating in "Car-Free Day" campaigns	19%	52%	33%
Buying products without packaging	33%	65%	32%
Refashioning, remodeling old things	28%	56%	28%
Buying second-hand goods	44%	58%	14%

In addition to previous findings, it should be noted that people who sort waste tend to pollute the environment less and even improve it by actively participating in waste clean-up events.

Hypothesis H6.2 was not confirmed. If an individual does not exhibit a pro-environmental behavior pattern for segregated waste collection, the remaining pro-environmental behavior patterns are not associated with demonstrative pro-environmental behavior, because PEB patterns among people who do not segregate waste are not associated with demonstrative pro-environmental behavior. The significance of motives for demonstrative pro-environmental behavior is assessed as follows: public censure, fashion in a person's environment, emphasizing the status; imitation of others "everyone does it" are rated on average from "rather insignificant" to "insignificant".

5- Discussion

The obtained data deepen our knowledge of the impact of higher education on the demonstration of pro-environmental behavior patterns. Table 4 presents the hypotheses proposed in this study and the status of their confirmation.

Table 4. PEB research hypotheses and the status of their confirmation

Individual's factors	The main hypothesis	Additional hypotheses	Hypothesis confirmation
Education	H1: People with a high level of education are more prone to pro-environmental behavior	H1.1: individuals with a higher level of education will tend to exhibit a wide range of types of pro-environmental behavior	Confirmed
		H1.2: individuals with a higher level of education will tend to a similar type of pro-environmental behavior	Partially confirmed
		H1.3: the lower the level of education, the more an individual will be inclined to exhibit pro-environmental behavior in a group than individually	Not confirmed
Age	H2: There are statistically significant differences in the individuals' behavior depending on age	H2.1: a larger proportion of the younger generation will exhibit pro-environmental behavior compared to other age groups	Partially confirmed
		H2.2: representatives of the younger generation will exhibit a wider range of types of pro-environmental behavior compared to other age groups	Confirmed
Social setting	H3: Individual pro-environmental behavior depends on the pro-environmental behavior of the social environment	-	Confirmed
Economic standing (income)	H4: People with high incomes may have more opportunities to purchase environmentally friendly goods and services, but this is not necessarily associated with a deeper understanding and commitment to environmental principles of sustainable development	H4.1: high income will be associated with active pro-environmental behavior	Partially confirmed
		H4.2: high income will be associated with pro-environmental behavior that is primarily of personal benefit	Not confirmed
Labor status (employment)	H5: Differences in psychosocial experience conditioned by differences in employment status will influence the manifestation of pro-environmental behavior	H5.1: individuals with the part-time employment status will be more inclined to manifest pro-environmental behavior	Partially confirmed
		H5.2: individuals with the part-time employment status will demonstrate a wider range of pro-environmental behavior types	Not confirmed
"Segregated waste collection" behavior	H6: The impact of the pro-environmental behavior pattern, which is associated with participation in segregated collection and sorting of waste is predominant	H6.1: if individuals exhibit a pro-environmental behavior pattern for segregated waste collection, they will also be inclined to exhibit other patterns of pro-environmental behavior	Confirmed
		H6.2: if individuals do not exhibit a pro-environmental behavior pattern for segregated waste collection, other patterns of pro-environmental behavior will be associated with demonstrative pro-environmental behavior	Not confirmed

Consistent with the findings of Frick et al. (2004) [33] and Vicente et al. (2021) [43], our study confirmed that the level of education (i.e., higher education rather than environmental education) allows individuals to recognize and understand the depth of environmental processes, making them more prone to PEB demonstration.

Studies on the age-dependence of the manifestation of pro-environmental behavior patterns were confirmed, which is consistent with the general conclusions of Collado (2009) [48] and Jaciow & Wolny (2021) [49]. Moreover, we may agree that young individuals are more likely to demonstrate pro-environmental behaviors. It was revealed that young people were more active in a variety of PEB patterns, and the youngest (18−19-year-old group) showed the largest number of patterns (more than 17 out of 28). However, at the same time, they show greater inertia in certain patterns than the older generation. For example, respondents aged 20–24 showed less activity in the pattern "Choosing goods with regard to their carbon footprint" than respondents aged 25–29, 30–34, and 35–39 (see Figure 4).

That is, it is impossible to say unequivocally that the younger the respondents, the more active they are in demonstrating PEB patterns. Thus, according to the results of our study, people aged 18–44 are most active in the pattern "collecting and recycling used batteries, and light bulbs at appropriate collection points," However, the largest proportion of respondents were aged 18–19 and 35–39. People aged 18–19 and 50–54 are most active in the pattern "donate used clothes to other people (including friends and relatives), take them to the collection points for further donation to other persons or recycling." The result obtained is well explained by Moser & Bader (2023) [21], where differences in the perception of personal costs and benefits provide clues as to why people participate in specific sustainable development initiatives and do not participate in others. Based on the findings of these authors, we can state that the perception of personal costs and benefits, which certainly depends on age, will determine inertia in the manifestation of the pro-environmental behavior of individuals in different age groups.

The results of the third hypothesis about the relationship between social setting and pro-environmental behavior, where individual pro-environmental behavior depends on the pro-environmental behavior of the social setting, made it possible to test the findings of Jaciow & Wolny (2021) [49] on a larger sample and 28 patterns of pro-environmental behavior, which indicates a significant influence of social approval on the PEB manifestation in an individual. This, in turn, indicates the need for active promotion and communication support, which is desirable for spreading pro-environmental behavior patterns in society to form a positive attitude toward the manifestation of these patterns. At the same time, all the data were self-reported; therefore, it should be considered that answers present the respondents' perceptions of what their social surroundings are doing, which could be not the same as what others are actually doing. Nevertheless, individuals' perception of their social surroundings will motivate them to demonstrate pro-environmental behavior and might significantly facilitate the adoption of novel pro-environmental practices and patterns. However, there is a need to understand the barriers to and drivers of involvement; this should result in an extension of the existing methodological and theoretical models.

The most controversial issue regarding the influence on an individual's pro-environmental behavior is the impact of income [53]. Our results showed statistically significant differences for 15 of the 28 studied patterns, which confirms the conclusions obtained in earlier studies that failed to unambiguously determine (positive/negative) the influence of income on pro-environmental behavior. At the same time, the fact that hypothesis H4.2 "high income will be associated with pro-environmental behavior that is primarily of personal benefit" was not confirmed, suggesting that income gives individuals opportunities to demonstrate pro-environmental behavior, but this behavior is or is not demonstrated under the influence of other factors. We tend to explain the observed phenomenon as the greater influence of perceived personal costs and benefits than income on an individual's behavior.

Verification of hypothesis H5 showed that only for two of the 28 studied patterns, individuals with the "part-time employment" status were more active in demonstrating PEB than individuals with the "full-time employment" status. Thus, we do not agree with the conclusions of Sheasby and Smith (2023) [56]. These results suggest that there are other factors that collectively affect pro-environmental behavior [54, 55].

For a more detailed verification of the hypothesis, it was suggested that differences in commitment to pro-environmental behavior patterns, along with employment, are also influenced by income level. Therefore, six groups of respondents were considered: full- and part-time employment and three main income levels:

- Can buy only food and clothing,
- Can buy large household appliances,
- Can buy a car (everything except real estate).

Statistically significant differences were identified in the four patterns of pro-environmental behavior (Figure 11).

More than half of the people with full employment and high income (53%) used intercepted parking lots. People with part-time employment and high income (61%) use car-sharing. This can be explained by the way people with full employment work (personal car – public transport), whereas people with part-time employment need to be mobile in the city.

People with part-time employment and high income (83%) were more likely to keep their cars in a good working order.

People with part-time employment and average incomes (84-85%) and those with full employment and high income (84%) buy organic food products. Apparently, organic products are affordable for people with high and

average income. Perhaps the difference in the results appears to be conditioned by the fact that part-time employment gives a person more time to collect information and choose and buy organic products.

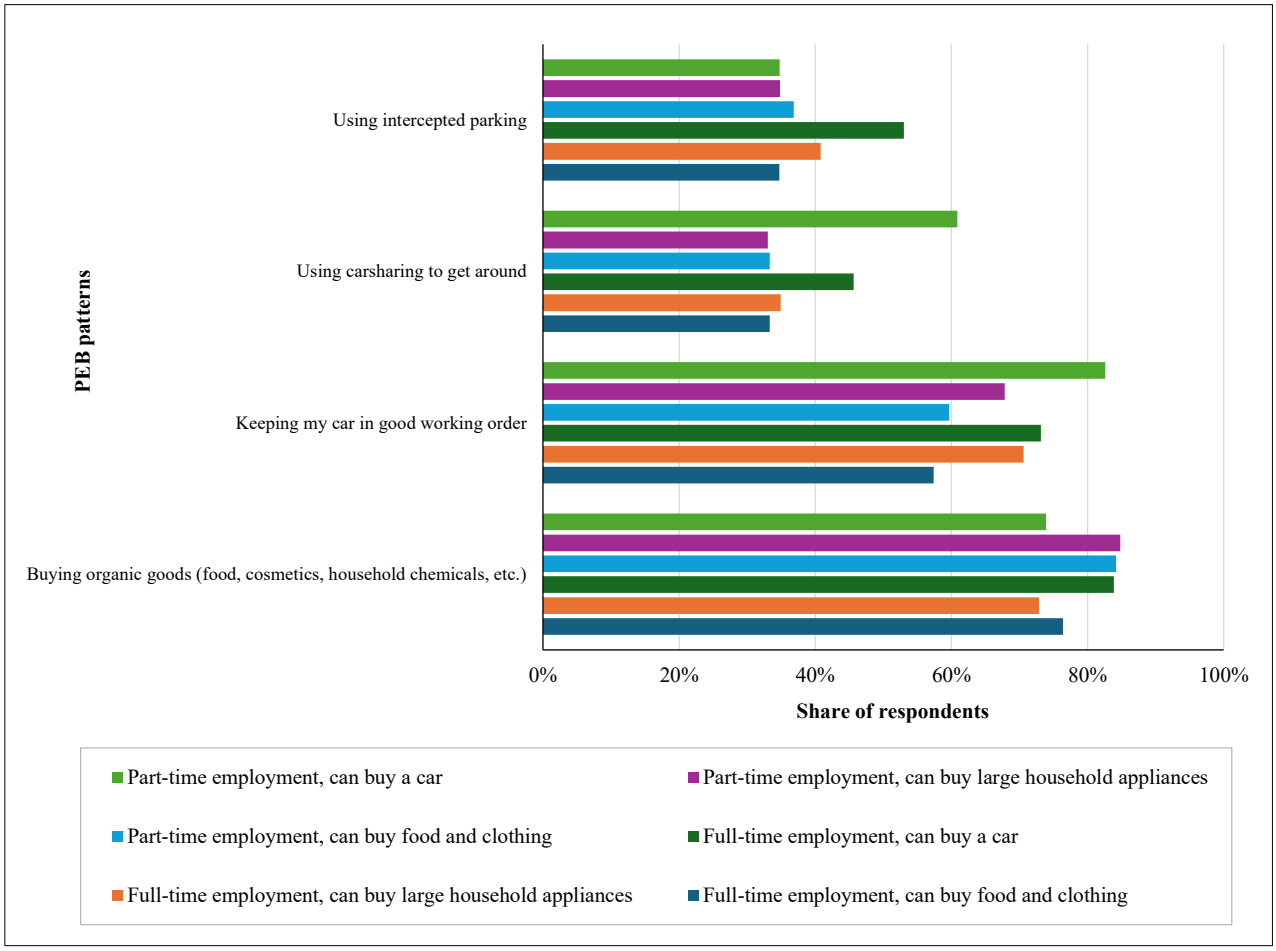

Figure 11. The percentage of respondents working full-time and part-time and having different income levels who adhere to their own pro-environmental behavior patterns

The results obtained in our study show the presence of one more sociodemographic factor that may influence the manifestation of pro-environmental behavior. Despite the empirical evidence of the impact of the labor status has been obtained for a few PEB it is necessary to study in more detail the influence of the internal, social and external factors as well as their interactions in order to be able to promote PEB. It is important, especially considering a general finding that has been well documented by behavioral economists, psychologists, and other social scientists, is that individuals do not always behave more sustainably despite having positive attitudes or favorable economic choices in order to demonstrate PEB [17].

In agreement with the conclusions of Crociata et al. [63] that segregated waste collection is one of the most labor-intensive and annoying patterns of pro-environmental behavior, we attempted to identify a connection between the fact that if individuals are not ready to make significant efforts to implement the PEB pattern, their PEB will be more demonstrative and can even be classified as eco-hypocrisy. But our hypothesis (H6.2) "If individuals do not exhibit a pro-environmental behavior pattern for segregated waste collection, other patterns of pro-environmental behavior will be associated with demonstrative pro-environmental behavior" was not confirmed, since pro-environmental behavior patterns among people who do not segregate waste are not associated with demonstrative pro-environmental behavior. The significance of motives for demonstrative PEB: public censure, fashion in a person's environment, emphasizing one's status; imitation of others "everyone does it", are on average rated from "rather insignificant" to "insignificant". Thus, to identify eco-hypocrisy in the behavior of individuals, which certainly leads to inertia in the manifestation of PEB, it is necessary to adjust the research methodology; the link to the labor costs of implementing PEB did not allow us to identify demonstrative PEB.

Based on the results of the online study, it can be argued that respondents' characteristics influenced pro-environmental behavior (Table 5).

Table 5. The influence of individuals' characteristics on pro-environmental behavior based on the results of the online study

Respondents' characteristics	Peculiarities of pro-environmental behavior					
	A wide range of behaviors	Similar behavior in a group	Group behavior	Proactive behavior	Personal benefit	Demonstrative behavior
Higher education	Yes	Yes (for 10 patterns)	Yes			
Younger generation	Yes			Yes (for 10 patterns)		
People around demonstrating pro-environmental behavior			Yes			
High income				Yes (for 15 patterns)	No. Behavior is related not only to personal benefit.	
Part-time employment	No			Yes (for 2 patterns)		
Segregated waste collection	Yes					
Not demonstrating "segregated waste collection" pattern						No

6- Conclusions

Our study makes a key contribution to the literature on pro-environmental behavior among metropolis residents and is based on the case of Moscow, one of the world's largest metropolises. First, unlike previous studies that did not differentiate between city and metropolis residents [71-73], however, the differences were identified in the literature [5]. This study uniquely identified pro-environmental behavior triggers, such as educational level and social setting, in relation to metropolitan residents. This was achieved using a research approach adapted to the metropolis context, which provides a deeper understanding of how different PEB patterns, in combination with an individual's personal characteristics and specific behavior, can influence pro-environmental practices aimed at protecting the environment. This study highlights the importance of the Theory of Planned Behavior (TPB) and Norm Activation Model (NAM) as mutually reinforcing frameworks for analyzing pro-environmental behavior. The TPB constructs of Attitudes, Subjective Norms, and Perceived Behavioral Control were assessed using a questionnaire aimed at identifying respondents' intentions and motivations for adopting each of the 28 PEB patterns. Simultaneously, the NAM constructs of Awareness of Consequences (AC) and Acceptance of Responsibility (AR) were included in the questionnaire to analyze the role of moral norms in motivating pro-environmental behavior.

Second, the study used a rigorous research design based on the quantitative method for large sample sizes to analyze a wide range of PEB patterns, which provided a 2.5% confidence interval for estimating the proportion of individuals who adhered to pro-environmental behavior in Moscow. This approach, based on assessing the influence of not only individuals' socio-demographic characteristics but also the pro-environmental behavior of the people around them, contrasts with previous studies that typically used a single methodological approach. Third, our study integrates several theoretical frameworks, including the theory of planned behavior (TPB) and the norm activation model (NAM). This theoretical integration demonstrates how environmental and personal factors interact to determine pro-environmental behavior, extends the applicability of these theories to new research areas, and offers practical recommendations for improving educational and social strategies.

6-1- Findings of the Study

The results of this study make a valuable contribution to the existing literature and offer ideas for a deeper understanding of the relationships and triggers of PEB in metropolitan areas, as opposed to approaches that do not distinguish between residents of cities and super-metropolitan areas, and for future research in this area.

Based on the research results, we can discuss the confirmation of the following factors (triggers) that positively influence the manifestation of pro-environmental behavior, including the level of education, which positively influences the width of the implemented PEB patterns. The behavior of the social setting and the implementation of the labor-intensive pattern "segregated waste collection" can be considered determinants of PEB manifestation by an individual.

6-2- Theoretical Implications

The conceptual research model of pro-environmental behavior of metropolis residents, developed in this study, seeks to fill a significant gap in the research on the assessment of metropolises residents' pro-environmental behavior, using the theory of planned behavior (Theory of Planned Behavior, abbreviated TPB) and the model of activation of the norm of pro-social behavior (Norm Activation Model, abbreviated NAM) as a basis for the analysis of 28 patterns of pro-environmental behavior and identification of the influence of social and personal factors on them. The conceptual approach implemented in this study makes it possible deepens our knowledge of the influence of social and personal factors on individuals' pro-environmental behavior manifestation in the context of the development of large metropolises.

This study complemented existing research by demonstrating that pro-environmental behavior in the vast majority of cases is not only an individual's personal choice; it is formed within the framework of social behavior.

6-3- Practical Implications

By verifying several hypotheses, this study allowed us to examine the complex relationships between external factors of the social setting, personal characteristics of an individual, and specific types of behavior aimed at protecting the environment related to the purchase of goods, disposal of consumer waste, and transport behavior.

Young people and those with a higher education show a special predisposition to pro-environmental behavior. Therefore, it is crucial to engage in environmental education, primarily in children' and youth groups, within the framework of preschool and school education. It is also advisable to create appropriate social settings in secondary and higher-specialized educational institutions.

6-4- Limitations and Future Research

The limitations of the study are conditioned by a number of factors that must be considered when interpreting the results. The research methodology was based on an online survey, using a quota sample formed through an online panel. The peculiarity of online panel formation – a set of people who agreed to regularly participate in online marketing research – reduces the representativeness of the sample compared to a free survey of respondents outside the panel, which affects the representativeness of the results. A list of pro-environmental behavior patterns was formed based on literature and expert analyses, which also affected the results. The use of a limited list of pro-environmental behavior patterns, including 28 elements, did not allow us to consider the entire range of possible pro-environmental actions. The study was conducted in one metropolis, Moscow, where 9% of the population of Russia lives, which limits the generalizability and use of data from other cities, including other metropolises. The possible cross-cultural differences between the regions may affect the applicability of the findings of this study. Self-reported data also do not allow us to draw conclusions about the reasons for the formation of certain behavior patterns. Additionally, this study did not specifically assess the role of gender differences in the formation of pro-environmental behavioral patterns.

However, the results obtained cannot be considered complete, and it is necessary to continue research on other pro-environmental behavior patterns. In addition, from the perspective of further research, it would be interesting to understand the availability of stable sets of pro-environmental behavioral patterns in people with higher education, which will expand our understanding of the spread of PEB patterns in societies with different levels of education.

Our conclusion that the younger generation is inclined to get rid of unused things requires further research to identify the nature of this phenomenon, which will allow us to correctly promote other PEB patterns based on collaborative consumption, thereby reducing the burden on the environment.

It should be noted that we did not study the cause-and-effect relationship between separate waste collection and pro-environmental behavior. However, the identified link between waste sorting and other pro-environmental behavior patterns suggests that there may be other labor-intensive PEB patterns that make it possible to overcome the inertia of individuals' behavior and increase their involvement in the implementation of pro-environmental behavior patterns. We believe that this is the right to continue research to identify them. Based on the results of our study, it can be assumed that labor intensity in PEB manifestation may not be the most significant barrier to the implementation of PEB, but this fact requires further study and verification.

We also considered it appropriate to repeat the study in other metropolises and countries to compare the results and verify the developed conceptual approach.

7- Declarations

7-1- Author Contributions

Conceptualization, A.V.L., S.V.M., and R.R.S.; methodology, A.V.L, S.V.M., and R.R.S.; software, P.Y.N.; validation, E.A.L.; formal analysis, R.R.S.; investigation, A.V.L, S.V.M., R.R.S., P.Y.N., and E.A.L.; data curation, A.V.L.; writing—original draft preparation, A.V.L, S.V.M., and R.R.S.; writing—review and editing, R.R.S., A.V.L., and S.V.M.; visualization, P.Y.N. and S.V.M.; supervision, A.V.L.; project administration, R.R.S. and E.A.L. All authors have read and agreed to the published version of the manuscript.

7-2- Data Availability Statement

The data presented in this study are available in the article.

7-3- Funding

This research was supported by the Faculty of Economics of RUDN University with the grant No. 124110100015-6.

7-4- Acknowledgements

The authors would like to thank Dr. Irina I. Skorobogatykh and Dr. Inna V. Andronova for their valuable support in conducting this study.

7-5- Institutional Review Board Statement

The study was conducted in accordance with the Declaration of Helsinki. Under the guidelines of Helsinki, human rights have been preserved, and participants' safety was considered as a priority for sharing information. During the research, the study made sure to maintain the confidentiality of the respondents, the survey was anonymous, and the results were generated and presented based on demographic and psychographic factors rather than the 'identity revelation of the respondents. The respondents were not forced to share any personal information.

7-6- Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

7-7- Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancies have been completely observed by the authors.

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