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STUDENTS' PERCEPTION OF THE VALIDITY OF PRO-ENVIRONMENTAL DEMANDS MADE BY ENVIRONMENTALISTS AND SCIENTISTS

Ariadna CIĄŻELA

The Maria Grzegorzewska University, Institute of Human Development Support and Education, Warsaw;
adciazela@aps.edu.pl, ORCID: 0000-0003-4725-0982

Purpose: The aim of the article is to present a study on the assessment of the validity of demands, and arguments related to environmental protection, depending on who is presenting them.
Design/methodology/approach: The study was conducted in 2022 and 2023 on a group of 760 students of various faculties and universities in Poland. Students assessed the validity of the same demands depending on whether the agent presenting them was an environmentalist, a scientist, an environmental organization, or a conservation organization.
Findings: The students' assessment of the validity of the demands and their willingness to comply with them, or sign the petition, did not change irrespective of who the representative was. The demands to limit meat production and consumption were assessed as less valid, regardless of who presented them.
Research limitations/implications: The perception of the credibility of various communicators varies over time and is sensitive to current events and issues, as well as the discussions surrounding them. The results of the survey largely reflect the state of affairs at a given moment in history. The problem, however, is universal: who can society trust when various representatives sound the alarm and call for action and sacrifice.
Practical implications: The study confirmed differences in the perception of various environmental issues and actions. It's worth raising awareness of the effects of meat consumption.
Social implications: The study's results are worth further reflection. They may inspire work to rebuild trust in the scientific community, and their authority among young people.
Originality/value: No similar studies were conducted in Poland. The results of this study may inspire other researchers to conduct further research on how to reach target audiences regarding environmental protection issues effectively.
Keywords: trust in science, trust in environmentalists, environmental denial, students' attitudes towards the natural environment.
Category of the paper: Research paper.

1. Introduction

One of the most critical issues of our time is the degradation of the natural environment and the looming prospect of a climate catastrophe. The cause-and-effect relationships surrounding these problems are often unclear, especially from the perspective of non-experts, who constitute the majority of society. Some of the consequences of current activities will take place long in the future. These consequences, some of them catastrophic, will only become apparent in several years or even decades. Alarming reports are accompanied by calls for change, for the introduction of new solutions, and often for restrictions and sacrifices, both at the systemic level and in the lives of individuals. It's worth considering who is perceived as a credible communicator when discussing threats and advocating for change.

Environmental activists raise alarms about threats and call for change. These are often individuals without a professional or specialized education. Therefore, they are sometimes accused of incompetence and at other times of over-publicizing threats (Tomiałojć, 2011). Furthermore, for many years, their negative image as troublemakers has persisted. More radical activists contribute to this image of troublemakers, contributing to the negative perception of environmentalists. They sincerely believe in what they do but sometimes operate in the edge of the of the law and can be overly alarmist about the threats. Greenpeace and Earth First! (and recently also Last Generation) are some examples of such organizations. Eco-terrorists, operating outside the law, using brutal methods, and taking bribes, harm the image of environmentalists the most (Tomiałojć, 2011). The actions of such activists are readily publicized by journalists (Pietrzak, 2015). The negative perception of environmentalists is not unique to Poland, as exemplified by "The Toxicity of Environmentalism" (Reisman, 2015), in which the author accuses environmentalists of being unscientific and over-hyping threats.

A separate group consists of individuals who masquerade as environmentalists for their own gain, for example, protesting against an environmentally unfriendly investment project solely because it is planned near their place of residence (Tomiałojć, 2011). In Poland, one of the very few examples of the environmentalist motif in fiction is the crime novel *With One Exception* (Puzyńska 2015). An environmental activist protesting against a company's use of environmentally unfriendly substances turns out to be a close relative of the boss of a rival company. Only in recent years did a more positive portrayal of environmental activists begin to emerge in Polish films, for example in *Apokawix* (Żuławski, 2022).

Does this mean that, scientists are the authority to whose appeals society will be more willing to heed? Objectified, verified, and confirmed knowledge is the result of the research work of scientists. Therefore, scientists should be perceived as trustworthy. Unfortunately, however, there is also talk of a decline in trust in science (Gryz, 2024).

The Covid-19 pandemic, among other factors, contributed to the decline in trust in scientists and the rise of conspiracy theories. Conspiracy theories are nothing new. They have been developing since the outbreak of the French Revolution as an explanation for profound changes in Western civilization. They operated on the margins of official intellectual life (Butter, 2022; Robison, 2023). Their rise in importance could be observed in the first half of the 20th century, but they were discredited along with their proponents – the propagators of Nazism and Stalinism (Butter, 2022). Unfortunately, at the turn of the 21st century, they experienced a rapid revival due to two overlapping phenomena: the social crisis associated with the collapse of the affluent society (Frank, 2008) and the rapid development of electronic media, primarily the Internet (Ancona, 2017). Meanwhile, the Internet, as a field of discussion devoid of any moderation, becomes a realm in which radical, uninhibited demagogy triumphs (Grzesiak-Feldman, 2016).

Conspiracy theories about science have long been prevalent. These include the theory that the HIV virus was created in a laboratory (King, 2022). In the case of the Covid-19 pandemic, two popular conspiracy theories were that that the virus was allegedly created in a laboratory to reduce the world's population (King, 2022) and that vaccines were supposedly dangerous. There is also the recurring theory that doctors diagnose diseases and drug addiction to keep the pharmaceutical industry operating. For the same reason, they conceal the fact that cures have already been discovered for diseases such as cancer and AIDS (King, 2022).

It's also worth noting the image of scientists in popular culture. The figure of the mad scientist has long appeared in films, as exemplified by *Metropolis* (Wiene, 1927), in which an evil scientist imprisons the positive protagonist – a gentle pacifist – and creates a chaos- and conflict-inducing robot in her place. Fantasizing about the possibilities of science is nothing new, as evidenced by classics such as *Frankenstein; or, The Modern Prometheus* (Shelley, 1818) and *The Island of Doctor Moreau* (Wells, 1896). The mad scientist has appeared in numerous science fiction and horror films from the 20th and 21st centuries, both in well-known and crowd-pleasing films, as well as in multiple lesser-known (and often not highly rated) productions. Deadly weapons, viruses, robots, and monsters were created in fictional laboratories. The environmentally friendly cartoon *Captain Planet and the Planeteers* (Turner, Pyle, 1990-1996) also follows this trend. One of the villains is a scientist, Dr. Blight, who destroys the environment, alongside, among others, a greedy businessman. Contemporary examples of negative scientist characters include the popular series *Stranger Things* (Duffer, Duffer, 2016-2025) and the movies from *X-Men* franchise (2000-2024).

However, theories concern not only unethical actions involving the creation of deadly viruses, but also other unethical actions. There are also those based on the assumption that scientists (either for their own interests or at the behest of some higher body) use their authority to impose theories that serve to compel specific behaviors resulting from voluntary acceptance of scientific authority or obedience to scientific authority enforced by state power (Butter, 2022; King, 2022; Pipes, 1998; Zdybel, 2002).

The worldview underlying conspiracy theories is particularly dangerous because it invalidates the traditional premise of understanding science as an endeavor to distinguish truth from falsehood. In its place, it introduces the motive of self-interest, which negates the search for truth as the fundamental motive for science and scientific debate. This mode of thinking underlies the offensive of denialism towards the threat of ecological catastrophe. It poses a significant problem for the development of contemporary environmental awareness because its assumptions exclude the possibility of treating environmental arguments as assessed according to the criteria of truth and falsehood, treating them instead as calculated deception.

It is becoming more and more commonplace to question the results of science in relation to the study of the natural environment, and diagnosing the conditions that threaten the well-being of societies or the future of human civilization on Earth. Issues such as the greenhouse effect, greenhouse gas emissions, etc., often arouse criticism, which has even been given a separate term, so-called climate change denial (Adamczyk, 2019; Cukiernik, 2019; Klaus, 2008; Klinsky, 2023; Lomborg, 2024; Mastalerz, 2000; Morano, 2023; Przekora, Zamorski, 2023; Reisman, 2015; Scruton, 2017; Schellenberger, 2021; Teluk, 2009; Warzecha, 2021; Whyte, 2015; Ziemkiewicz, 2019).

The article presents the results of a study examining the impact of the communicator on the reception of a message's content among students. Its aim is to answer the question of whether, and if so to what extent, the nature of the communicator's profession has an impact on the reception of the message's content. This question arises in the context of the current crisis of scientific authority in public debate and popular culture (Gryz, 2024). Because, in the context of environmental issues, science is sometimes pitted against the ideology of environmental activists (Tomiałojć, 2011, Reisman, 2015), conducted research will be interpreted in reference to the level of trust placed in scientists and environmentalists. Environmental awareness is a changing and dynamic phenomenon, highly susceptible to social and political impulses. Interpreting the study will therefore require placing it in a historical context (Ziemianie atakują Raport, 2024). The presented study was conducted and completed before the recent wave of radical criticism of the Green Deal and the controversial actions of the environmental organization Last Generation.

2. Literature review

The identity of the communicator and the characteristics that make a communicator to be considered as credible are the subject of social psychology research. Attributes of a communicator perceived as credible include competence and honest intentions. A classic psychology study has shown that the same exact text was evaluated differently depending on who the supposed author was, or which newspaper it came from. The same text was presented

to different audiences, with only the supposed author or source varying. An article on atomic submarines was presented to one group as authored by Robert J. Oppenheimer, while to another group as an article from the Soviet magazine Pravda. An article on Antihistamine drugs was presented as an article from the New England Journal of Biology and Medicine or as an article from a mass circulation monthly pictorial magazine (Hovland, Weiss, 1951). The texts were judged significantly more credible if they came from a source perceived as credible (Hovland, Weiss, 1951). As the study shows, scientists were perceived as credible communicators.

In a 2012 study, students assessed the advisability of supporting various initiatives and were asked whether they would support each initiative with a monetary donation (Ciążela, 2014). Participants declared both the lowest level of support and the lowest level of financial support for an environmental organization. The environmental organization was ranked last, being placed below initiatives such as an addiction treatment center and support for motorcyclists after accidents, a group associated with fast and reckless driving. Initiatives such as the protection of endangered animal species and the construction of an environmentally friendly facility also received relatively low support (Ciążela, 2014).

Ten years later, in a study conducted in 2022, students were asked about the characteristics of environmentalists and individuals involved in environmental protection (Ciążela, 2023a). The most frequently attributed characteristic was empathy, mentioned by 20% of the participants. Frequently attributed characteristics also included sensitivity, responsibility, and courage. Only a few participants mentioned attributes such as intelligence, knowledge, or forward-thinking (Ciążela, 2023a). This may indicate that environmentalists are not credited with expertise and competence, and that their actions and proposals are seen to stem primarily from sensitivity and idealism, not from an awareness of threats. They are not considered to be based on scientific knowledge.

It is also worth recalling the analysis of civil society in Poland (Dzwończyk, 2016). According to a study conducted on a sample of 1,000 Poles, respondents who were asked about the most important and most recommended areas of NGO activity, ranked environmental protection highest (Dzwończyk, 2016). The same study shows that environmental protection accounts for a small percentage of NGO activity (Dzwończyk, 2016). According to the author, the discrepancy between the association of environmental organizations with third sector activities and the actual state of affairs may, to some extent, result from media reports about spectacular actions by environmental organizations, such as the defense of the Rospuda Valley (Dzwończyk, 2016). The Young Values Report (2022) presents interesting research results: despite being the Climate strike generation, there is only little environmental activism among young people (Chmura-Rutkowska, Kozłowska, 2022).

A report on the environmental awareness of adolescents from Bełchatów and the surrounding area shows that 33% of respondents identified environmental organizations as responsible for protecting the natural environment (Bełchatów 2050, 2020). However, in response to the question "Where do you get your knowledge about environmental

protection?" only 18% of participants responded, "from an environmental organization". 74% indicated the internet, and 58% social media (Bełchatów 2050, 2020). An interesting question, however, is who the communicators of information on the internet and social media are – are they mostly influencers, or do they include others, for example scientists or environmentalists, politicians or perhaps even conspiracy theorists.

The attitudes towards demands related to environmental protection vary, and some are even considered controversial. This depends on many factors, including how long a given issue has been discussed, the emotions it evokes, and the lifestyle changes and sacrifices change requires.

In 2019, young people from Bełchatów were asked which environmental issues they consider to be priorities and which should be addressed first, and 53% of them indicated tree planting as the most important pro-environmental action (Bełchatów 2050 Report). Three years later, 47% considered reducing deforestation a priority (Debiutanci'23, 2023).

A study conducted in 2019 on behalf of the Ministry of Climate and Environment found that nearly 60% of respondents believed that a ban on the sale of everyday plastic items would serve to protect the natural environment. One-third of respondents said that everyday plastic products should be available for sale and that they could be recycled (Świadomość i zachowania ekologiczne Polaków, 2019). Plastic has become a popular topic in the media. Advertisements for plastic-free credit cards have appeared, for example, in 2021, advertised by Credit Agricole bank.

An issue that remains controversial, or perhaps not yet widely recognized, is limiting meat consumption and production. The causes of controversy around the issue include misconceptions about the negative health effects of vegetarian diet and the unpleasant consequences of not eating meat such as lack of energy or constant feeling of hunger, as well as the belief that meat has always been present in the human diet (Sowa, 2019). Only 11% of young people indicated reducing meat consumption as the most important environmental action (Bełchatów 2050, 2020). Three years later, only 15% of respondents prioritized promoting the reduction of animal products (Debiutanci'23, 2023).

The Young Values Report (Chmura-Rutkowska, Kozłowska, 2022) shows that giving up meat was undertaken less frequently than other environmental actions, such as preserving water and electricity, choosing to use public transport, or limiting general consumption, i.e., buying new things. Significantly more men (59.5%) than women (27.8%) declared that they would never give up eating meat (Chmura-Rutkowska, Kozłowska, 2022). Knowledge about the effects of meat consumption also isn’t widespread yet. In a study involving 710 young Poles, only 56% of participants correctly answered the question that reducing meat consumption is a way to reduce greenhouse gas emissions (Ciążela, 2023b).

3. Method and sample

The study was conducted on a group of 760 students (615 women, 145 men, aged 19-26, with an average age of 21.78). Participants included students from various fields of study and universities in Warsaw, Toruń, Bydgoszcz, and Siedlce: the University of Warsaw, Cardinal Stefan Wyszyński University, Warsaw University of Life Sciences, Warsaw School of Economics, The Maria Grzegorzewska University, War Studies University, Nicolaus Copernicus University in Toruń, Kazimierz Wielki University in Bydgoszcz, and Siedlce University.

The study was conducted using Google Forms. It was distributed to student groups by lecturers or deans. Each participant was asked to evaluate one statement regarding environmental protection. The content and format of the statements were identical; the statements differed only in the subject. In the first variant, the message was attributed to environmentalists or scientists, whereas in the second variant, the message was attributed to an environmental organization or a conservation organization. Each participant rated one statement, unaware of the existence of other versions.

The study consisted of 8 statements. The statements concerned uncontroversial topics, such as stopping deforestation or reducing the use of plastic, or a potentially controversial topic – limiting meat consumption and production. The content of the statements is presented below.

1) uncontroversial topic – limiting the use of plastic

Version I: *Environmentalists warn that the continued mass use of plastic in the economy and trade will soon lead to irreversible environmental degradation, and therefore they advocate limiting the use of plastic, including single-use plastic packaging.*

Version II: *Scientists warn that the continued mass use of plastic in the economy and trade will soon lead to irreversible environmental degradation, and therefore they advocate limiting the use of plastic, including single-use plastic packaging.*

2) potentially controversial topic – limiting meat consumption

Version I: *Environmentalists warn that industrial farming of animals for meat produces enormous amounts of gases that contribute to climate change, and therefore advocate limiting meat consumption or completely switching to vegetarianism.*

Version II: *Scientists warn that industrial farming of animals for meat produces vast amounts of gases that contribute to climate change, and therefore advocate reducing meat consumption or completely switching to vegetarianism.*

Questions: *Rate the persuasiveness of the information on a scale of 1 to 10, where 1 means "definitely not persuasive" and 10 means "very persuasive".*

Would you comply with the proposal? Rate them on a scale of 1 to 10, where 1 means "I would definitely not comply" and 10 means "I would definitely comply".

4 sentences related to the content of a petition authored by an environmental organization or a conservation organization. The study assumed that the term ‘conservation organization’ would sound more neutral than ‘environmental organization’ and would not evoke associations with eco-terrorists and other radical activists perceived as troublemakers.

1) uncontroversial topic – stopping deforestation

Version I: *An environmental organization filed a petition against the clearing of forests for the planned construction of a recreation and leisure center. The justification for its opposition is that the forests are a habitat for numerous plant and animal species.*

Version II: *A conservation organization has filed a petition against the clearing of forests for the planned construction of a recreation and leisure center. The justification for its opposition is that the forests are a habitat for numerous plant and animal species.*

2) potentially controversial topic – limiting meat production

Version I: *An environmental organization has filed a petition to introduce a statutory limit of 50% on the current industrial farming of animals for meat. The petition is justified by the fact that animal farming results in the production of gases that contribute to climate change.*

Version II: *A conservation organization has filed a petition to introduce a statutory limit of 50% on the current industrial farming of animals for meat. The petition is justified by the fact that animal farming results in the production of gases that contribute to climate change.*

Questions: *Rate the validity of the organization's proposals on a scale of 1 to 10, where 1 means "definitely wrong" and 10 "very right".*

Would you sign such a petition? Rate it on a scale of 1 to 10, where 1 means "I would definitely not sign" and 10 "I would definitely sign".

After responding to the statement, each participant answered two more questions:

Do you consider environmental protection an important issue? Rate on a scale of 1 to 10, where 1 means "definitely unimportant" and 10 "very important."

How would you rate your daily environmental protection activities, such as sorting waste, saving water, and buying eco-friendly products? Rate on a scale of 1 to 10, where 1 means "I do very little" and 10 means "I do a lot".

Participants were randomly assigned to groups evaluating individual statements. The requirement was that a similar number of participants responded to each pair of statements. For six of the eight statements, the response was between 65 and 69. For one pair of statements, 175 and 186 responses were received, because of the size of the groups to which the email requesting participation in the study was sent by the lecturers.

Table 1.
Number of participants who responded to individual statements

	Number
Environmentalists - plastic	186
Scientists - plastic	175
Environmentalists - meat consumption	66
Scientists - meat consumption	66
Environmental organization - deforestation	65
Conservation organization - deforestation	66
Environmental organization - meat production	69
Conservation organization - meat production	67
Total	760

The aim of the study was to determine whether the communicator's identity would cause respondents to assess the validity of the same demands and the arguments supporting them differently, as well as influence their readiness to comply with the demands or, respectively, sign the petition. The aim was also to determine whether study participants considered environmental protection important and whether this perception was related to the assessment of the validity of the demands and their declared willingness to act or sign the petition.

4. Results

The results compared the evaluations of the two groups, which differed in terms of the person making the proposal. Very similar results were obtained in groups assessing the validity of proposals concerning reducing plastic use, made by environmentalists (M = 7.47) and scientists (M = 7.50). Similarly, in assessing the willingness to comply with the proposal to reduce plastic use, the results obtained from both groups were similar: the group assessing the proposal from environmentalists (M = 7.46) and the group assessing the proposal from scientists (M = 7.69). Whether the proposals came from scientists or environmentalists did not affect the assessment of the proposals' validity or the willingness to comply with them.

The participants assessed the validity of the proposal to limit meat consumption as lower than the validity of the proposal to reduce the use of plastic, both when the information came from environmentalists (M = 6.15) and scientists (M = 6.17). The identity of the source of information did not differentiate the inclination to comply with the demand (M = 5.55 and M = 5.88, respectively). Comparison of the results revealed no significant differences between the groups. The results are presented in Tables 2 and 3.

Table 2.
Assessment of the validity of the demand of limiting the use of plastic and declared inclination to limit the use of plastic

	M	Me	SD	Min	Max
Environmentalists - validity	7.47	8	2.295	1	10
Environmentalists - compliance	7.46	8	2.288	1	10
Scientists - validity	7.50	8	2.168	1	10
Scientists - compliance	7.69	8	1.947	2	10

Table 3.
Assessment of the validity of the demand of limiting meat consumption and declared inclination to reduce meat consumption

	M	Me	SD	Min	Max
Environmentalists - validity	6.15	6.5	2.808	1	10
Environmentalists - compliance	5.55	5	2.889	1	10
Scientists - validity	6.17	6.5	2.721	1	10
Scientists - compliance	5.88	6	2.964	1	10

The demand for stopping deforestation was rated as the most valid by participants, regardless of who made the statement. The validity rating was high for both the environmental organization (M = 8.65) and the conservation organization (M = 8.59). Participants also declared a high willingness to sign the petition (M = 8 and M = 8.03, respectively).

As with the statements about environmentalists and scientists, the demand to reduce meat production was rated as less valid, both coming from the environmental organization (M = 6.78) and the conservation organization (M = 6.04). The inclination to sign the petition was also lower than for the no-deforestation petition. The identity of the communicator did not change the willingness to comply – M = 6.16 for the environmental organization and M = 5.61 for the conservation organization. Comparison of results revealed no significant differences between groups. The results are presented in Tables 4 and 5. The results were similar to the results of statements concerning reducing meat consumption. The willingness to sign the petition also turned out to be similar to the willingness to comply with the demands concerning meat consumption.

Table 4.
Assessment of the validity of the demand of stopping deforestation and declared willingness to sign a petition against deforestation

	M	Me	SD	Min	Max
Environmental organization - validity	8.65	10	2.110	1	10
Environmental organization- petition	8	9	2.646	1	10
Conservation organization- validity	8.59	9	1.780	2	10
Conservation organization- petition	8.03	9	2.300	1	10

Table 5.
Assessment of the validity of the demand of limiting meat production and declared willingness to sign a petition

	M	Me	SD	Min	Max
Environmental organization- validity	6.78	7	2.623	1	10
Environmental organization- petition	6.16	6	2.969	1	10
Conservation organization- validity	6.04	5	3.027	1	10
Conservation organization- petition	5.61	5	3.380	1	10

According to the results, the identity of the communicator did not differentiate the assessment of the validity of the demands – both in case of environmentalists or scientists and environmental organization or conservation organization. The validity of the demands regarding uncontroversial topics (stopping deforestation and limiting the use of plastic) was rated higher than the validity of the demands regarding controversial topics (limiting meat consumption and production).

The participants rated environmental protection as a very important issue (M = 9.09). 55.5% of participants rated the importance of environmental protection as 10. They rated their own environmental protection activities lower (M = 6.66). The results are presented in Table 6. The correlation between considering environmental protection an important issue and declared environmental action is significant, but not high ($\rho = 0.252$; $p < 0.01$).

Table 6.
Perceived importance of environmental protection and individual pro-environmental activity

	M	Me	SD	Min	Max
Importance	9.09	10	1.315	2	10
Own activity	6.66	7	1.639	1	10

Significant correlations were found between the assessment of the validity of the demands and the signing of the petition for all statements. The correlations are presented in Table 7.

Table 7.
Correlations between the assessment of the validity of the demands and the signing of the petition

	Importance	Own activity
Environmentalists - plastic - validity	**0.383****	**0.194****
- compliance	**0.435****	**0.314****
Scientists - plastic - validity	**0.397****	**0.237****
- compliance	**0.394****	**0.280****
Environmentalists - meat consumption - validity	**0.352****	**0.267***
- compliance	**0.385****	**0.323****
Scientists - meat consumption – validity	**0.419****	**0.363****
- compliance	**0.459****	**0.280***
Environmental organization - deforestation - validity	**0.454****	**0.334****
- petition	**0.562****	**0.406****
Conservation organization - deforestation - validity	**0.447****	-0.060
- petition	**0.456****	-0.039

Cont. table 7.

Environmental organization - meat production - validity	**0.533****	0.156
- petition	**0.421****	0.168
Conservation organization - meat production - validity	**0.533****	0.099
- petition	**0.513****	0.024

* - p<0,05; ** - p<0,01

5. Discussion

In light of the ongoing transformations in the social context, the study results prove difficult to interpret in many respects. The study's most important finding is that the results regarding the credibility of scientists closely align with the credibility of environmentalists. One explanation for these results could be an increase in trust in environmentalists or a decrease in the credibility of science.

One of the possible reasons why the communicator's identity did not influence the assessments of the respondents may be that environmental protection is perceived as being important and the need for action is considered obvious and essential. It may also be the result of increased trust in environmentalists, associated with a shift in perception of this issue. A study of the attitudes toward environmental protection and environmental knowledge of students conducted over five years, 2016-2021, which was a period marked by changes in Poland's approach to environmental protection, shows an increased belief in the reality of a severe ecological crisis and an increase in knowledge on current topics such as smog (Ciążela, 2024). The perception of the crisis as real is also evidenced by a study conducted on a group of students in 2022 (Kozłowska et al., 2023). This may indicate a shift in the perception of environmental protection issues and an increased belief in the need to take action to protect the environment. This possibility is supported by the participants' assessment of environmental protection as important. This may lead to increased trust in environmentalists as acting for a good cause (If the study had been conducted after the actions of the Last Generation, the results might have been different).

The results of the study indicate that environmental protection is perceived as an important issue. This is another change that has become visible over the years. Approximately 10 years earlier, environmental protection and related issues, such as the depletion of natural resources, were not considered significant issues (Stanaszek, Tędziagolska, 2011; Kachaniak et al., 2014). However, in July 2019, Polish respondents to a Eurobarometer survey ranked climate change third (out of 12) among the issues causing the most concern (Special Eurobarometer 2019, published August 3, 2019). The assessment of the validity of the demands turned out to correlate with the recognition of environmental protection as an important issue. Perhaps it would be

worthwhile to consider the factors that influence young people's perception of the importance of this issue.

The study results confirm that stopping deforestation is an uncontroversial topic among young people. Limiting meat consumption, however, remains a relatively controversial issue. While the results are not entirely low, they are still lower compared to attitudes towards stopping deforestation and limiting the use of plastic. This may also indicate that awareness of this issue is slowly increasing. In 2019, students' attitudes toward meat consumption and their intentions to reduce it for environmental reasons were surveyed (Borusiak, Kucharska, 2020). 42% of students stated that they had reduced their meat consumption in the three years preceding the study. Approximately 40% of respondents declared their intention to reduce meat consumption for environmental reasons (Borusiak, Kucharska, 2020). Nevertheless, it is worth remembering, that the majority of participants of the study were women. Women typically exhibit more pro-environmental attitudes and engage in more pro-environmental behaviors (Zelezny, Chua, Aldrich, 2000; Xiao, McCright, 2015). This trend is also evident in Poland (Chmura -Rutkowska, Kozłowska, 2022). The numerical predominance of women could have influenced the higher assessment and declared willingness to act, as well as the higher assessment of the importance of environmental protection.

It is also worth addressing the sources of information on environmental protection in general. The primary source is social media (Ciążela, 2021, Ciążela, 2023b, Ciążela, Gogacz, 2024), including among students in Kazakhstan (Ciążela et al., 2024). The question remains: who expresses their opinions on social media, and who are young people inclined to believe? Who shapes their attitudes?

6. Summary and conclusions

The results of the study indicate no differences in students' assessment of the validity of pro-environmental demands depending on the identity of the communicator: environmentalists or scientists, an environmental organization or conservation organization. As expected, the demands regarding limiting meat consumption and production were rated as less valid than the demands regarding limiting the use of plastic and stopping deforestation. Participants consider environmental protection to be an important issue, but they do not (in their own opinion) take sufficient daily action to protect the environment.

The study's results raise the question of whether students perceive a difference between scientists and environmentalists in terms of competence and knowledge related to environmental protection. Perhaps students are accustomed to the presence of environmental issues in the public sphere and do not pay particular attention to who speaks on the subject. However, given that they are increasingly convinced of the reality of the climate catastrophe

threat, their trust in environmental activists has also grown, and they share their opinions and appeals, which are similar to those coming from the scientific community. This may have negative consequences, as failing to consider the credibility of the speaker on this topic may amplify the influence of unreliable communicators on recipients and their attitudes. uch communicators may be incompetent, lack honest intentions, or act for ideological reasons (pro- or anti-environmental) or to serve their own interests.

Environmental protection and climate change prevention are highly relevant topics, so it is worth researching which sources and communicators influence societal ecological awareness. Another critical issue is the perception of scientists and, consequently, the trust in them: are scientists considered authorities, or is their credibility questioned, and if so, why?

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