IN THE PAST, WINTER WAS WINTER, AND SUMMER WAS SUMMER: CLIMATE CHANGE IN THE EYES OF OLDER ADULTS FROM POLAND

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Abstract: Older adults have a long-time perspective when it comes to the perception of changes in local climate and are uniquely vulnerable to these developments in terms of health. The discussed in-depth, qualitative study is based on interviews with people from the age group over 65 years (N = 10; five females), who live in different regions of Poland, concerning their views on climate change and its mitigation. Reflexive thematic analysis was used to create a map of their observations and attitudes. Results indicate the importance of perceiving climate change in specific and local categories as well as show frequent identification of this issue with traditional environmentalism focussed on pollution and littering. This foregrounds difficulties in understanding invisible greenhouse gases and how they work. In terms of mitigation, the study has revealed little faith in climate action undertaken by fellow citizens and the government, as well as a sense of limited agency, which is also disproportionally projected onto children and young adults. However, through everyday observations, older adults appear to be profoundly aware of how climate change impacts the environment. Contrary to stereotypes, they also declare high emotional engagement in this issue. Consequently, despite being overlooked with respect to this subject, older adults can play an important role in promoting climate awareness and climate-friendly policies.

Key words: climate change, personal experience, environmentalism, late adulthood, agency, science communication

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Old people don't care about climate change – this is why you should. This punchline comes from a social advertisement addressed to young voters. It features an elderly actress who speaks with satisfaction about the unexpected joys of old age: it feels wonderful not to care about climate change. An elderly man echoes this sentiment, announcing with a smile that 'it's after I'm dead problem' (Old People Don't Care 2016).

The advertisement refers to study results that show that both in the USA and other countries, older adults have less knowledge about climate and are more disengaged when it comes to climate action (Ayalon et al. 2023). In reality, however, attitudes in this age group are far more varied than they would seem (Haq et al. 2010, Griffin 2018). Little is known in this context about the attitudes of people from East-Central Europe, where climate change is palpable, yet less dramatic than elsewhere (Kundzewicz, Matczak 2012). To fill this gap, an in-depth qualitative study was developed, involving conversations about climate change with older adults from various parts of Poland.

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Perception of climate change

Climate change is highly complex in cognitive terms because it differently affects various parts of the globe, its temporal scale being non-linear, which translates into a wide range of possible weather patterns. This necessitates an analysis-based approach to thinking about climate rather than an affect-based one, thus requiring greater effort than is typical for expert knowledge and not for common sense (Weber 2010).

Construal-level theory of psychological distance proposes that while people are intellectually capable of adopting a longer and less egocentric perspective, embracing remote localities and temporalities, their initial engagement prioritises what is close in space and time, or what has directly observable consequences (Trope, Liberman 2010). This means that global problems such as climate change are more engaging when construed from a personal and local perspective rooted in the present. However, since climate change appears to be a threat, people try to protect themselves by construing this issue as temporally distant, unrelated to their lives, and more severe in remote geographical locations. As a result, many environmental problems are perceived as more urgent elsewhere (Ballew et al. 2019). The iconic representation of climate change as a polar bear cast adrift aptly captures the mechanism of distancing oneself because this animal represents a faraway region that is not inhabited by humans.

This defence mechanism constitutes one of many cognitive distortion's characteristic of the perception of climate change. Aside from deficits in knowledge and the effects of disinformation (Swim et al. 2009, Lamb 2020), this issue is something that people are actively distancing themselves from, as Norgaard (2011) has demonstrated. Such socially constructed repression is meant to protect individuals from emotions such as guilt and to create a comfortable parallel reality, where climate change may be real but does not pose a problem that is serious enough to break the status quo.

On the other hand, people who are profoundly aware of the threat posed by climate change often pay a high emotional price for this knowledge (Swim et al. 2009, Budziszewska, Kałwak 2022). Norgaard (2011) identified three main consequences of accepting the actual scale of the problem in spiritual and psychological terms: a sense of guilt caused by dangers looming over individual and collective identity (owing to their contribution to climate change), fear about the future related to ontological insecurity (the world not being as it was), and particularly acute helplessness and powerlessness. Numerous other studies also add persistent anxiety to this list (Swim et al. 2009, Weintrobe 2012, Budziszewska, Kałwak 2022).

Glenn (2011) developed the now widespread concept of solastalgia, which denotes the longing for a world whose stability would provide comfort and relief. Subtle properties of local climate and landscape — colours associated with seasons, vegetation cycles, scents, and sounds — comprise a mental blueprint of childhood and homeliness. They manifest in culture and language, in poetry, and in the way, people describe their locality. From the perspective of solastalgia, climate change entails not only material problems but also the loss of some part of one's culture.

Direct experience of nature in childhood shapes one's attachment to place (Amel et al. 2017). Sites associated with play, holidays, and free time can vastly differ among various generations, making their understanding of locality dissimilar. Kahn (1999) brought attention to the phenomenon of 'environmental generational amnesia' — loss of memory concerning past states of the environment, causing childhood memories to be the norm for each generation. For this reason, the elderly would assume that the Polish climate is synonymous with the one they remember from their childhood, while today's children will regard the current climate as the standard model. Hence, if climate change is to be noted locally, it becomes necessary to foster intergenerational dialogue.

Perception of possible solutions to climate change

Motivated cognitive and emotional mechanisms affect not only the perception of climate change but also (and perhaps even more strongly) the perception of its possible mitigation. For the latter, it is crucial to consider both the environment and other people — society and politics

(Wójcik et al. in press). Key factors in this area include lack of knowledge and disinformation, which are sometimes rooted in political discourses that go to great lengths to undermine pro-climate transformation and delay it (Lamb 2020). Many studies also indicate the crucial impact of a personal and collective sense of agency (Swim et al. 2009, Gifford 2011), whose deficiency may engender fatalism.

As far as responsibility for climate change is concerned, one frequently encountered defence mechanism is shifting blame elsewhere (Lamb et al. 2020), as exemplified by offloading culpability on other social groups, countries, or generations (Bieńkowska et al. 2021). However, this tendency appears to be more widespread in the media rather than in private conversations (Lamb et al. 2020). Many people declare readiness to make personal sacrifices to achieve a more sustainable lifestyle, invoking ethical norms (Wójcik et al. in press). The apparent lack of engagement in climate issues may stem not from a lack of care for the environment, but from a lack of faith in other people's commitment as well as doubtfulness about collective agency and political workability (Kemkes, Akerman 2019). Finally, this could be connected with disbelief in the possibility of broader social change and focus on individual choices, which appear more viable in this context (Wójcik et al. in press).

Despite these concerns, citizens' support for climate policy can be substantial and dependent on more factors than the perception of climate change itself. In a survey conducted worldwide across 28 countries, including top emitters and both advanced and emerging market economies (Dabla-Norris et al. 2023), several policy attributes decided about citizens' support for climate mitigation measures. These attributes were the policy's perceived effectiveness, fairness of distributing related burdens, and perceived co-benefits regarding better health, air quality, or new jobs. Similar results were found in Poland (Byrka, Wójcik 2016, Worek et al. 2021), demonstrating that there is already an existing broad support base for introducing climate-friendly policies, especially if these transitions are framed in terms of their co-benefits. In a study (Wójcik 2023) on different energy policies, most respondents would not support further development of coal-based energy systems in Poland, while more than 90% of them would endorse developing more renewables and taking energy efficiency measures. Results from some studies (Bieńkowska et al. 2021, Worek et al. 2021) highlight, however, that if climate policies are framed as an external influence, for example, European Union requirement, or in a context of danger, there might be substantially more backlash against them. Altogether, these results demonstrate that social rather than purely environmental concerns decide climate policy support. And policy choice is often a form of social dilemma, choosing between different concerns and values within multiple frames of reference.

Older adults and climate change

Older adults are often described as having lesser knowledge about climate change and being less engaged in this issue than younger people (Ayalon et al. 2023). Indeed, in one survey conducted in England, researchers found that persons over fifty-five were less concerned about climate change and less inclined to support its mitigation; further, they would share more misconceptions about this topic (Haq et al. 2010). Using panel data from New Zealand, Milfont et al. (2021) confirmed the existence of a generational gap in beliefs about climate change. However, they explained this by indicating different starting points for each generation. In a scoping review of global studies, Ayalon et al. (2023) found that while generational differences in knowledge, attitudes, and behaviours are typically identified in studies worldwide, they can be quite small. Studies usually focus on how older people are perceived in the context of climate change. Some researchers emphasise intergenerational conflict, while others stress solidarity, the transfer of knowledge, and the value of life experience.

According to the socioemotional selectivity theory (Carstensen et al. 2003), the shorter perspective of remaining life causes older adults to have different goals and motivations than younger people. This also surfaces in ways of seeking and processing information. The elderly prefer positive information that does not endanger their beliefs, better serving their well-being, over information that concerns future risks and is thus regarded as having lesser importance.

Attitudes to climate change in Poland

In Poland, attitudes to climate and the environment as well as concern over these issues have changed over time. In regular polls conducted by CBOS, Poles are asked which phenomena arising from civilisational progress are the most dangerous. In 2018, 75% of respondents answered that it was pollution, while 37%, climate change. Since the early 1990s, distress about the environment diminished in Poland: from 78% to 40% at the lowest point in 2006, then remaining at a considerably low level until 2016. Two subsequent years, however, brought abrupt change, which could be rooted in the rising media attention to smog and the increasing international emphasis on air pollution. At that point, the greatest level of concern for the environment was demonstrated by people aged 35–44 and 55–64, while the lowest was by those over 65 and those aged 18–24 (CBOS 2018). Later years also brought a distinct increase in concern for climate change. In a country-wide poll by Kantar (2019), as many as 72% of respondents agreed that the state of the Earth is serious and requires immediate action, including over a half viewing climate change (51%) and pollution (55%) as a serious threat for the world. In 2022, one study using a representative dataset found that people aged 46–65 are more inclined than those younger to accept sacrifices to mitigate climate change by limiting consumption. Additionally, researchers have demonstrated that, contrary to popular stereotypes, the most engaged social group in Poland is not the youth, who often declare frustration at the fact that problems are shoved their way although their contribution is smallest, and at the calls to limit consumption while older generations are not following suit.

Aim of the study

Owing to ambiguous results of studies concerning the perception of climate change concerning old age, as well as their focus on Anglophone countries, this study aims to offer a better understanding of how older adults in Poland perceive climate change, how they experience it and how they regard possible action to mitigate it. This qualitative study aims to provide unique insight into the experiences of people based on a small and relatively homogenous sample. These findings can shed more light on the issue and stimulate the formulation of hypotheses to be verified in further studies. However, it does not provide quantitative knowledge about prevailing social attitudes.

The following research questions have been asked: 1) How do older (65+) Polish adults perceive and understand climate change? What are their sources of information? How do they perceive it in their local environments? How does their understanding relate to the scientific knowledge? 2) How do older adults react to climate change emotionally? 3) How do they perceive possible mitigation options and the questions of responsibility for mitigation?

Methods

Overview of research design

This interview-based study is idiographic, explorative, and interpretative. Partly based on phenomenology and partly on critical realism, it focuses on personal, subjective experience and meaning-making processes, relying on the reflexive thematic analysis method (Braun, Clarke 2021). The purpose of reflexive TA is to provide insights into the possible ways of thinking, feeling, and experiencing the world in a small selected group of participants and not to give conclusions on any general population (Braun, Clarke 2021). While small, such insight can be used to create or refine theory, generate workable hypotheses, or plan further research. They are also helpful for science communication as they complement existing sources of knowledge with lived context and examples.

Participants

Using purposeful snowball sampling, Magdalena Majchrowicz, a young female psychology student approached older adults, previously unknown to her but referred to by others, beginning with ones recommended by her grandparents. This approach aimed to reach people who have no personal connection to the subject of climate, as could be the case with volunteering participants. At the same time, the

goal was to interview older adults who would be more trusting because they were recommended by their acquaintances. However, no study participants were previously known to researchers, or personally related to them. The sole criterion was one of being aged 65 or above, but it was deliberately sought to reach people living outside the biggest cities and in different regions, as well as to retain gender balance.

A total of 10 interviews were carried out with people aged 66–86 (averaging 75 years). They live in bigger and smaller cities in various parts of Poland, although its southern part is overrepresented. Their life situation is stable: they all have adult children and are pensioners, although two people are still professionally active. Their lines of work are very different, but men tend to have experience in technical occupations. Even though most would have apartments in blocks of flats, some also have property or allotment outside the city. In terms of education levels, more than half of the participants had higher education; few people had secondary education accompanied by vocational education, and a small group had primary education.

The number of interviews was determined based on saturation and general guidelines for this type of research. In reflexive qualitative studies, it is recommended to keep sample sizes rather small, between 6 and 8 (Piekiewicz, Smith 2014), or around 12 interviews (Braun, Clarke 2021). The final number is decided by data saturation.

Table 1 presents selected information about the study participants. To retain confidentiality, their names were changed.

Tools and procedures

After the initial telephone conversation, during which study participants agreed to be interviewed, an interview date would be fixed. Interviews were carried out remotely in 2020 and 2021. They were recorded and transcribed verbatim. The study was conducted in agreement with ethical guidelines concerning psychological research. Participants were informed about the possibility to withdraw, the confidentiality of personal information, and the right to access reported results.

Interviews were carried out based on a semi-structured script developed beforehand, their length varying from 43 min to 83 min. Sample questions concerned knowledge: 'Can you please tell us what you know about climate change? What associations do you have with this topic?'; observations: 'Have you observed in your vicinity any changes that you feel are a consequence of climate change?'; emotions: 'What emotions do you feel in connection with climate change?'; and finally, perception of possible

Table 1. Overview of study participants.

No.	Name	Basic information
1.	Bogdan	Aged 66, a pensioner from a small city, with experience in geodesy and construction. Married with children and living in a house.
2.	Mirosława	Aged 70, a pensioner from a mid-sized city, with experience in environmental protection at a mining facility, currently a student at the third-age university. Has children and lives alone in a flat.
3.	Zofia	Aged 77, a pensioner from a mid-sized city. Has children and professional experience as a medical technician.
4.	Maria	Aged 70, a pensioner from a mid-sized city, with experience in administration. A widow with children and living alone in a block of flats.
5.	Wiesława	Aged 74, a pensioner from a large city, with experience in many sectors. Has children and a partner. Lives in a block of flats.
6.	Bogusław	Aged 80, a pensioner from a large city, with experience in management. Has children and is currently also a partner. Lives alone in a block of flats, but also has a summer house in Masuria.
7.	Marian	Aged 71, a pensioner from a large city, running his own business and living in a house with his wife and children. Also has a garden plot.
8.	Stefania	Aged 86, a pensioner from a mid-sized city, with experience in education. A widow, she lives alone in a block of flats, near her children.
9.	Lucjan	Aged 71, a pensioner from a mid-sized city, still professionally active as a technical expert. Has a wife and children. Lives in a block of flats, but also has a plot of land at a lake.
10.	Władysław	Aged 83, a pensioner from a mid-sized city, with experience working in an electric company. Has a wife and children. Lives in a flat, but also has a plot with a house.

mitigation: 'Do you think measures should be taken to hinder climate change and what should they consist of?' The interviewer worked with the script, actively pursuing specific threads during the conversation.

Analysis of qualitative data

The obtained results were elaborated using reflexive thematic analysis (Braun, Clarke 2021). This approach facilitates obtaining insights that are crucial from the perspective of research. It is described in detail in the subject literature and hence is not discussed here. Magdalena Budziszewska conducted the thematic analysis presented, based on an earlier, lengthier, and more phenomenologically focussed analysis carried out together with Magdalena Majchorowicz using a different method (Majchrowicz 2021).

Results

An overview of themes identified in the analysis is presented in Table 2.

Theme 1. Perception of climate change

To see is to believe: The primacy of the local and the visible

Study participants would argue that climate change is undeniable because it is visible to the naked eye. They would refer to evidence rooted in experience based on the perspective of life's course and make comparisons:

When I was a young boy […] there were snowbanks so high that you had to dig in around two meters to reach the main entrance. Winters would start in November and last until March. […]I live in the suburbs and can recall only two times clearing snow between my house and the street last winter. Two times! (Lucjan)

I believe that the climate must be warming. I can see it myself […]. I remember that I when used to go to primary school, classes would be cancelled because it was minus thirty outside and we had to stay home […] there was all the snow you could need […]. We would even make takeoffs […]. And where is this snow now? […] I am thoroughly convinced that the climate has indeed changed. (Bogdan)

Differences in the frequency of certain meteorological phenomena would be described in terms drawn from one's life history. Further, evidence rooted in experience would be considered more persuasive than indirect sources.

I distinctly feel that these last hot summers have been scorching. I really cannot recall such heat, and also winters without snow. […] The summers would be rainy, without any drought as it happens today and dries up rivers. […] This is a colossal change. (Zofia)

I do not remember such heat in the summer from my childhood. […] Of course, there would be terrible hail or winds that tear down roofs, and so on. These things would happen, but not like today. Not so often. […] So, there must be something to it – something is off and certain politicians, even ours, distort the truth when they question it and say somebody invented it. Nobody made it up, it is real. (Wiesława)

The above quotes notably refer to childhood and are based on material everyday practices such as clearing snow, going to school, or taking part in sports activities. Their current perception of climate displays a similar privileging of practical experience. Participants could feel the change at home, but would also frequently refer to allotments, which proved highly important for them.

First of all, I physically feel it myself because I am no fan of big heat. Still, for many years it was

Table 2. Overview of themes.

Themes	Subthemes
1. Perception of climate change	1.1. To see is to believe: the primacy of the local and the visible
	1.2. Confusion: climate change is indistinguishable from traditional protection of the environment
	1.3. Misunderstood science: how do we know that humanity contributes to climate change?
2. Perception of the possibility of mitigating climate change	2.1. Hell is other people: climate change and comparing social groups
	2.2. After me, the flood: climate change and criticising authorities
	2.3. What can individuals do? Paradoxes of limited agency
	2.4. This concerns the young, not us: projecting responsibility
	2.5. Action is impossible but necessary: hope and the obligation to act

unnecessary to install air conditioning. In the last few years, however, […] I have decided to buy an AC unit. […] [Near my allotment] ducks would be swimming. […] Now, groundwater levels are so low that this pond, which used to spill over, remains shallow. […] We need to do the watering every day. (Marian)

I have an allotment by a hill […]. When there was snow in the forest, around a meter and a half would lie there from December to February. And so, we had a water intake working […]. But then there was little snow and it dried up, which forced me, ten years ago, to connect the allotment to the public water system. Now I have regular tap water and can make myself a cup of tea […] but the water tastes different. There is clear difference when drinking tea. That's what makes climate change tangible. (Bogusław)

Perception of climate change among the elderly is often characterised by a sense of loss, which is similar to the classical notion of solastalgia. Many people note the disappearance of the traditional Polish cycle of seasons:

It used to be clear-cut: spring would be spring and winter would be winter. Then everything got mixed up […] This obviously has bad consequences. We expect a beautiful Polish spring or autumn, but these are gone. (Lucjan)

Accounts of snow also have a nostalgic ring to them. Lack of snow disrupts the continuity of experience between generations as well as the memory of childhood play:

My son, who is thirty-eight, can still remember snowy winters, but the next generation – my grandchildren – will have no such memories. For them, snow is something abstract and when it snowed one time in December, they made a snowman, so happy that there was snow falling from the sky. (Maria)

Confusion: Climate change is indistinguishable from traditional protection of the environment

One subtopic frequently addressed by study participants is the identification of climate crisis with the traditional protection of the environment that focuses on pollution and preservation of the landscape. Issues such as clean air and littering as well as waste sorting are almost invariably the first association with climate change. On this topic, participants would speak of smog and pollution, combining and often confusing these problems. It is especially the former that appears to be vividly sensual as well as a health issue:

When you come down from the mountains, you can feel what the air is like, what change there is. It's choking, stinking, and difficult to breathe. […] I'm probably a victim of this since I suffer from asthma. (Zofia)

In some cases, carbon dioxide is easily included among perceptible aspects of pollution:

Around two years ago, it was a Sunday I think, I woke up and said to myself 'Good God! What's that burnt smell?' I kept checking if something caught fire in my apartment. I also have a large terrace and when I entered it, this smell of carbon dioxide struck me. 'Mother of God! […] I can smell this carbon dioxide!' As they keep pumping it into the air, it's only getting worse. (Wiesława)

Recurring here is the primacy of practical and sensory experience. What also emerges in this context is the difficulty in perceiving the harmfulness of carbon dioxide — a scentless and transparent greenhouse gas that works in ways invisible to humans. Another outcome of conflating climate, smog, and traditional environmentalism is the belief that there surely exists an easy solution to this problem:

Some kind of filter should be installed to catch all these particles of dirt and other stuff like carbon dioxide, sulfur – all these pollutants. […] The worst thing, as I see it, […] is this dust, and gases in general. […] People should burn clean fuels, not plastic bottles or whatnot. (Mirosława)

The belief that clean fuel (gas) or the frequently invoked electric cars (in a country where the energy sector relies on coal) can solve the problem of climate change also testifies to confusion. Such responses address smog and not climate — the latter cannot be addressed using these measures. Moreover, such paths, entailing dependency on gas, can even become blind alleys for mitigation. Despite its cumbersome character, the problem of smog stirs less helplessness and appears easier to mitigate.

For this reason, focus on smog and pollution — two classic environmental issues — is ubiquitous, pushing the much different topic of climate change into the background. Waste and its improper sorting seem to have appalled participants, testifying to their thoughtfulness, but it also inclined them to make comparisons between social groups. Littering and burning solid waste make it easy to distinguish who is 'ecological' and who is not, in contrast to much more complex

considerations of individual carbon footprints. In one answer, littering was even hailed as more pressing than climate change:

I am annoyed by this mess, this lack of […] respect for nature, even one's direct surroundings, as with those people who litter so much. […] This is what draws my attention and makes me angry. (Stefania)

Participants would engage with full conviction in the ecologically minded sorting of waste. This shows, on the one hand, a well-grounded sense of civic duty, and on the other, a belief in the rightness of respect for nature. Importantly, such an approach facilitates the development of a positive self-narrative.

Many negative emotions are also aroused by another environmental question: the transformation of the landscape. The hottest issue proved to be the loss of places dear to people, and felling trees:

Since I was a child, I have visited certain places and now they differ so much from what they used to be. Forests are cut down, right? It pains me that there are few beautiful wild places left. (Zofia)

There is one place […] with a little square where beautiful chestnuts grow. I used to go there with my grandson when he needed chestnuts for school. And then they cut them all down. (Władysław)

Another response contains an account of dealing with these negative emotions:

I console myself by saying that the world is still beautiful. I keep looking for places that resemble these former, wild areas untrodden by crowds. […] I always try to find new and beautiful places to comfort myself [laughs] that maybe I lost something but gained something else in turn. (Zofia)

For many older people, reserves of wild and urban nature are a vital part of their sense of local identity. The above responses confirm that a lot of anxiety and pain arises from their destruction.

Misunderstood science: How do we know that humanity contributes to climate change?

Although study participants would express a lot of respect for science and scientists, their understanding of anthropogenic climate change appears uncertain and the mechanism of change is unclear.

I have a keen interest in this and believe that our actions unfortunately contribute to global warming. (Marian)

Humankind is harming itself. I believe that if it had not been for our interference with nature, it could cope on its own. I really believe that it would. (Bogdan)

One participant even attempted to estimate the degree of human contribution to climate change:

I read somewhere that the earth's axis or something is shifting […] so I thought that this has to have an impact. It's not only people but the cosmos too. […] But I think that people are about 60–70% responsible. (Wiesława)

Answers feature hesitation and attempts to make intuitive judgements. As a result, many participants would say they 'believe' or 'suspect' something — not that they 'know' it. Some would even directly admit that they have no idea what impact humanity has had on climate. In the study sample, this uncertainty is mainly rooted in the belief that dealing with today's overload of information requires greater expertise than they have — not in suspicions about scientific findings, which virtually nobody questioned in this age group.

Belief about anthropogenic climate change also entails difficult emotions about responsibility:

Overall, these are quite painful matters to us. This warming, it has not come out of nowhere. It's what we did. (Mirosława)

We all have our part in this just by living in today's world […]. We profit from this, without thinking how this can be harmful to humans and nature […]. Nowadays people must consider their every step, everything they do, because it all contributes to the greater whole. So far, people have enjoyed life excessively. I guess that we have simply had it too good. (Zofia)

Theme 2. Perception of the possibility of mitigating climate change

Hell is other people:
Climate change and comparing social groups

Not only does climate change surprisingly bring to mind smog and pollution, but it also invariably shifts the subject to other people and social comparisons. In complex matters, trust for other members of society regulates belief in the purposefulness of one's efforts. Such trust proved to be extremely low in the study group, bordering on negative self-stereotyping. Accordingly, other Poles are described as not interested in the

topic, egotistical, and incapable of cooperation. The negative perception of the mentality and behaviour of Poles also surfaces in comparisons made at individual and international levels ('I do not do that, but other Poles do'; 'the situation is bad in Poland, but other countries have done better').

Not all people take the same approach: some aim to help, while others remain nonchalant about it, behaving as if this did not concern them. They have their own 'environment' behind their fencing and they want to do whatever they wish in there. (Mirosława)

Some people find other matters more pressing than climate change. Part of the population simply does not care as they live day to day and conclude that it's a problem for another generation. This is a position a lot of individuals take. (Maria)

The topic of pollution returned once again in comparisons:

Only some individuals sort waste – others throw it all away in one big sack. This is something that annoys me very much. […] Why do we segregate then? […] Well, that's the kind of mentality we have here. (Maria)

At the same time, some of the elderly would describe their wholeheartedly ecological efforts in terms of small gestures, to which they ascribe a lot of importance:

I never wash the dishes under running water. I put everything in one bowl and use it to clean everything. When I asked a friend how she was doing it, she was surprised and said she used running water. And this is exactly how we waste it, unnecessarily so. First, it's expensive; second, there's little respect for it. But I was taught to respect it at home by my mother. (Maria)

Although individual actions can be taken in contrast to the bad example of others, these dilemmas gain in complexity when considered not on the backdrop of conventionally understood ecology but in the context of mitigating climate change, which requires coordinated action at a higher level. According to the participants, however, this is impossible:

I think it's unlikely that we can all unite to address this issue. […] It's the tired old liberum veto, you know. […] Unfortunately, we are not the kind of nation that could sacrifice something, like having it your way or feeling comfortable, in the name of the common good. (Wiesława)

One derivative of the recurring association between climate change and traditional protection of the environment is the belief of some study participants that those who do not conform should be penalised:

You'd have to control people for a long time, even punish them if they fail to learn […] to burn clean fuels and not plastic bottles or some other waste. If persuasion does not work, they should be penalized. (Mirosława)

These people should be fined because when their wallet suffers, they might finally wake up. (Wiesława)

To sum up, a negative impact on the climate was perceived in the study sample as a consequence of a lack of respect for the environment among certain people. This approach makes it possible to blame those who have not been brought up in the spirit of reverence for nature. Moreover, the perspective of shared responsibility for carbon dioxide emissions does not dovetail with the traditional paradigm of environmental protection endorsed by the elderly.

After me, the flood:
Climate change and criticising authorities

Lack of trust in authorities and state institutions is an obstacle to possible courses of action mitigating climate change. According to study participants, authorities do not care about climate or ecology and focus on cementing their power and avoiding anything that could put off substantial portions of voters.

When I look at how our authorities operate, it brings to my mind the saying 'after us, the deluge' […] The logic of this is that it doesn't matter what comes next, we must have money and power. (Wiesława)

If they spend it all on climate transformation and carbon dioxide emissions, then they might have nothing left to satisfy other needs, which could lead to a loss in elections. It doesn't matter that you were right when they voted you out of office. (Bogusław)

In practice, study participants would list numerous accurate ideas about mitigating climate change at the national level, invoking renewable and nuclear energy as well as protection of water and forests. Some, especially men, would have detailed knowledge about emissions caused by various energy models, along with their technical benefits and limitations. However, these ideas would be diminished by the belief that rational transformation at a higher scale is impossible in Poland due to the country's political class.

What can individuals do?
Paradoxes of limited agency

Lack of trust in the state, authorities, politicians, institutions, and other people greatly diminish individual sense of agency about climate change. Study participants would especially concur that their age group has little to no sense of agency.

I guess that individuals can do something in their households and families, but the global situation should be addressed differently because ordinary people cannot influence these things. (Lucjan)

Another participant explains that her inability to do anything — rooted in old age and other limitations — has paradoxically brought her relief:

Several years ago, I was terrified by all this: climate change, devastation of nature, pollution of seas and oceans, disappearance of coral reefs. I found it all so frightening that it would raise my blood pressure […]. So, I concluded that I should not take these things so emotionally. […] I try to explain to myself that I have no control over this. […] I've concluded that there's little a seventy-year-old individual can do – all we can do is complain and grumble to those who understand, not much more than that. (Maria)

A different participant would present his conscious emotional distance as a means of protecting himself from helplessness:

What helps me is my approach to life or my character. I accept, at least to a degree, inevitable things. I accept the weather and think this cannot be solved during my lifetime. […] If I kept worrying about it […], I'd live in constant stress. And so I get rid of it, you know. (Bogusław)

This concerns the young, not us:
Projecting responsibility

Participants would frequently conclude that climate change does not concern the elderly. They would offer various projections of the expected climate catastrophe, but they would typically forecast it after their departure. Participants often presented the question of climate change as a challenge for future generations, delegating responsibility accordingly:

This is certainly a serious issue, but perhaps it doesn't concern us or the next generation yet. (Bogdan)

Answers would also be formulated from the perspective of life's end, which does not leave much room for concern about the more distant future:

I just wish us good health, nothing more or better. How we celebrated after the war that there's something to put on our bread, my God! (Władysław)

We place all hope in younger people. […] All revolutions of this kind were started by the young. To initiate change, you need ideas and imagination, or perhaps less of the latter because it can create doubts. (Wiesława)

Delegation of the responsibility for saving the environment and mitigating climate change to children and youth is particularly visible in the enthusiasm for education:

It should all start in childhood, with schoolchildren learning about this. […] It's probably the only way. (Mirosława)

First of all, we should teach children, to take them into forests and mountains with garbage bags and collect trash. […] Especially small children in primary schools are so sensitive that several lessons could suffice. (Zofia)

They should be teaching this in schools. (Bogusław)

Action is impossible but necessary:
Hope and the obligation to act

Despite being fatalistic and delegating the problem to others, including youth, some participants would also express the belief that it is necessary to act despite everything. From this perspective, they would highly value education, popularisation of climate awareness, and participation in protests:

There is a sense of helplessness, but it's worthwhile to do something and protest. We should not give up entirely. We need to fight until the end. The effect of this fight is a different matter, but we should not give up and be passive. (Maria)

The more people we convince, the better. Individually, there's not much that we can achieve. […] But we certainly need to try. If we do nothing, nothing will change. (Wiesława)

Responses also feature the idea of organic work, which shines a beacon of agency against the backdrop of overall helplessness concerning climate change:

This is where caring for climate should begin – not with fighting carbon dioxide because this is something individuals cannot influence much. […] Organic work should begin with cleaning around yourself, not with going to the moon. […] Collect your trash – that's what we can all do: do not break bottles on sidewalks or stick gum under bus seats. These are the

little things that everyone should keep in mind – this is where ecological education should begin in my opinion, not with some great changes. (Władysław)

The focus on locality and local ecology is understandable in light of the above. However, as long as it is premised on lifestyle rather than 'great changes', it remains counterproductive in the face of the closing time window for mitigating climate change, which necessitates quick transformation according to experts. Nevertheless, local action is important not just due to its impact on climate, but also because it gives hope to people who engage in such practices:

We all need to have dreams. And hope. […] I cherish hope because it's difficult to live without it. It would be so hard. I hope that maybe people will come to their senses. […] Still, someone could say that I sound like a voice crying in the wilderness. (Maria)

Discussion

Results of this study show that the older adults' longer temporal perspective has enabled them to develop a deeper awareness of climate change, based on their personal experience. It is the younger generation that appears to be more sceptical in this area than older people, perhaps because their sources of information are often limited to the Internet and social media, where disinformation is widespread and real experience has less importance (Bieńkowska et al. 2021). Obtained results also reinforce existing knowledge about the importance of tangible and sensual locality in the perception of climate change by non-experts. This has significance for communication between scientists, policymakers, and citizens (Swim et al. 2009). Even though our sample consisted of more than half of the participants with higher education, the interviews have shown that localised and concrete knowledge is the primary mode of understanding, more than abstract, global, and academic modes of thinking.

Further, results show that at least some older adults experience climate change as something that strongly resonates with them emotionally, especially causing sadness, creating a sense of loss, and stirring anger against other people and politicians. Changes in one's close vicinity — whether in the city, in the mountains, or at garden plots — elicit vivid responses, just like in the classical account of solastalgia (Glenn 2011). However, some of the most visible changes do not stem from climate change but from more clearly discernible processes originating in anthropopressure, urbanisation, and landscape transformation. The discussed coping strategies include ones related to distancing or deliberate focus on the positives. This agrees with the literature on emotional self-regulation in old age (Carstensen et al. 2003).

Especially, notable from the perspective of communication is the cognitive and discursive coupling of climate and certain iconic yet distinct and far more local environmental issues such as smog and pollution. This could result from certain social campaigns in Poland (e.g. anti-smog ones that stigmatised burning solid waste) and the attachment to traditional notions of environmental protection, in whose spirit the study participants were raised. Self-narratives in the generation of 'nature lovers' brought up with respect for forests and water are often constructed in opposition to 'vandals' who leave trash behind them or burn it instead of using clean fuels. The awareness that carbon dioxide emissions produced by all citizens can be an even worse problem appears difficult to incorporate into the ecological consciousness developed throughout an entire lifetime. Concentration on pollution and littering suggests clearer criteria of valuing based on the opposition between ecological and unecological behaviour. Identifying environmental protection with climate change potentially shields one from guilt or helplessness, facilitating greater control and cementing a positive, pro-ecological self-narrative.

Relativisation of the experienced need for climate action is significantly shaped among older adults by their awareness of age and the narrowing perspective of a remaining lifetime. This is understandable in light of the above-mentioned preference among the elderly to maximise their mental well-being and minimise their exposition to negative information that could endanger security (Carstensen et al. 2003). As a result, responsibility for mitigating climate change can be easily shifted onto children and the youth. Also, notable is the mechanism of delegating responsibility between social classes (Bieńkowska et al. 2021). Unlike age, social class and limiting the frequently class-driven patterns of consumption remain largely disregarded in social debates on

mitigation, whereas littering and burning solid waste comprise a vivid yet inaccurate representation of the climate crisis.

Lack of agency and distrust of politicians proved to be critical subjects in narratives developed by study participants. Social comparisons emerge almost automatically in conversations on climate, just like criticism of authorities. It is surprising how unanimous study participants have been in their fatalistic assessment of policymakers and fellow Poles. The lifelong experience of low cooperation culture and bad governance might be a part of the historical legacy, including remnants of post-communist experience, the peripheral status of the Polish state and economy, the complicated background of the Polish transition to a free-market-economy, and the current political divide (Bieńkowska et al. 2021). Older participants have lived through all of these historical processes. Lack of faith in the Polish state and possible citizens' cooperation thus appears to be a more significant obstacle in the mitigation of climate change than any shortage of knowledge or commitment (Wójcik et al. in press).

For study participants, one way of addressing this issue, which greatly exceeds the limits of individual control, was to focus on 'organic work', or the kind of action in one's immediate vicinity that could translate into palpable results (Norgaard 2011). They would underscore the importance of efforts made at the smallest, local scale. In psychological terms, the focus on locality and environmental questions rather than ones about climate could be seen as a strategy that helps to regulate one's well-being and increases individual sense of agency (Wojcik et al. in press).

In summary, mechanisms explaining older citizens' attitudes involve primacy of personal experience and tangible, sensual locality for perception; the tendency to use positivity-focussed coping to disengage from the sense of loss and damage done to the natural environment while this harm is accepted as fact, and experienced emotionally; helplessness and mistrust towards authority and policymakers rooted possibly in historical lifetime experience, and attempts to maintain positive pro-environmental identity by focussing on small scale local actions and personal agency. While some of these mechanisms are universal, several of them can be enhanced in old age and by historical factors.

Limitations and self-reflexivity

In a study that is fundamentally qualitative and based on reflexive thematic analysis, the small sample size is not inherently limiting. However, it would be advisable to conduct future studies in such a way to cover more specifically determined regions, including not only areas connected with coal mining (which are often examined), but also other parts of Poland, along with representatives of specific professions (e.g. farmers) and social classes. One potentially insightful strategy could be to foster intergenerational dialogue, e.g. conversations between grandparents and grandchildren.

In terms of self-reflexivity, Magdalena Budziszewska who designed the study and analysed its results, as well as Magdalena Majchrowicz, who conducted the interviews, have considered their impact on the study through discussion, reflection, and supervision, considering both interviews and analysis. The context in which interviews were conducted and the method of selecting interviewees could have inclined the older adults to try to make a good impression. On the other hand, however, not all study participants were deeply engaged in the subject matter, voicing a range of different opinions.

Practical implications

The conducted study supports the idea that communication regarding climate change geared towards non-experts should focus on tangible and local changes, which emphasises everyday experiences and developments already in place. Regardless of this, the global character of climate change and the invisible functioning of greenhouse gases require better communication and separation of this issue from other environmental concerns. It appears particularly important that communication of solutions about climate change be separated from those addressing only air quality.

One important potential resource is the inclusion of older adults as witnesses to change and narrators of stories about the local environment. Strategies supporting intergenerational communication could help the elderly regain a sense of agency in the face of the climate crisis and find

their role in the efforts made to address this issue. This, in turn, could prove beneficial for the well-being of both older and younger people as they confront an overwhelming global problem. Intergenerational conversations and narrating climate history from local perspectives could also, to a degree, counteract social individualisation and atomisation, which accompany this problem, as well as prevent further diminishing of shared local knowledge safeguarded by older adults.

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