DEPARTMENT OF POLITICAL SCIENCE
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THE COVID-19 PANDEMIC'S IMPACT ON THE PERCEPTION OF CLIMATE CHANGE IN THE EU

A quantitative study comparing the change in climate change perception in Western and Eastern Europe

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Abstract

The study examines how individuals' perceptions of climate change as a threat have changed due to the COVID-19 pandemic in Western and Eastern Europe. Different psychological theories about psychological links to the pandemic and climate change, psychological mechanisms, and the finite pool of worry effect were used to understand how the experience of the COVID-19 pandemic could affect individuals' perception of climate change as a threat. Additionally, a theory regarding differences in Western and Eastern Europeans value beliefs was used to explain the differences in climate change perception between the regions. Individuals' opinions from countries in Western and Eastern Europe were compared to each other with Eurobarometer data from 2019 before the pandemic and 2021, during the pandemic. Two OLS regression analyses were conducted per dataset, with four OLS regression analyses in total. This study finds that the COVID-19 pandemic affected the perception of climate change as a threat differently in Western and Eastern Europe, where Western Europeans showed an increased perception of climate change as a threat when compared to Eastern Europeans.

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Introduction

Since the outbreak of the COVID-19 pandemic, individuals around the world have been battling with a wide variety of crises. Individuals have had to self-isolate and deal with extensive life changes due to the pandemic, whilst simultaneously having to live amongst an ongoing climate change crisis. Furthermore, the COVID-19 pandemic has led to several positive changes regarding climate change. The restrictions that were applied to minimize the spread of the virus, have led to a drastic decrease in mobility around the world. This has caused a significant decrease in the emissions of particulates, which are the largest contributors in changes of surface temperature.[1] There is reason to believe that when individuals see the impact that the pandemic has had positively on halting global warming, they realize the positive impact reduced emissions have on climate change. This thereafter leads to a higher risk perception of climate change. Additionally, this may also lead to individuals continuing to live by their altered behaviour in ways such as decreasing their travel internationally and working from home more.[2] Furthermore, a heightened concern for climate change due to the COVID-19 pandemic has been observed in both emerging market economies such as China, and advanced economies such as the USA.[3] In addition, several psychological mechanisms may have become activated due to the pandemic such as norms of fairness and reciprocity,[4] feelings of gratitude towards others,[5] and an endorsement of a personal legacy motive. These psychological mechanisms can lead to a heightened perception of climate change as a threat, and to the willingness to act against climate change.[6] On the other hand, there is also reason to believe that the COVID-19 pandemic might have shifted the publics opinion on what crisis that they deem the most important. Individuals can experience a finite pool of worry effect, which might lead them to deeming the COVID-19 pandemic and the health and economic concerns it has caused as their main focus. This in turn leads to individuals caring less about other issues, such as climate change since their ability to focus on several crises is limited. This was exemplified during the terrorist attack of 9/11, which led to an increased concern for terrorism, whilst a decreased concern about other issues such as restrictions on civil liberties was seen.[7]

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[1] Gettelman, Andrew, Lamboll, Robin, Bardeen, Charles G., Forster, Piers M., & Watson-Parris, Duncan (2021). "Climate impacts of COVID-19 induced emission changes". *Geophysical Research Letters* 48.

[2] Jamison, Julian C., Bundy, Donald, Jamison, Dean T., Spitz, Jacob, & Verguet, Stephanie (2021). "Comparing the impact on COVID-19 mortality of self-imposed behavior change and of government regulations across 13 countries". *Health services research* 56(5), 874–884.

[3] Mohommad, Adil & Pugacheva, Evgenia (2022). "*Impact of COVID-19 on Attitudes to Climate Change and Support for Climate Policies".* SSRN *Scholarly Paper.* Rochester, NY: Social Science Research Network.

[4] Wade-Benzoni, Kimberly A., Hernandez, Morela, Medvec, Victoria & Messick, David (2008). "In fairness to future generations: the role of egocentrism, uncertainty, power, and stewardship in judgments of intergenerational allocations". *Journal of Experimental Social Psychology* 44(2), 233–245.

[5] Watkins, Hanne M. & Goodwin, Geoffrey P. (2020). "Reflecting on sacrifices made by past generations increases a sense of obligation towards future generations". *Personality & social psychology bulletin,* 46(7), 995–1012.

[6] Syropoulos, Stylianos & Markowitz, Ezra M. (2021). "Prosocial responses to COVID-19: Examining the role of gratitude, fairness, and legacy motives". *Pers. Individ. Dif.* 171:110488.

[7] Weber, Elke U. (2006). "Experience-Based and Description-Based Perceptions of Long-Term Risk: Why Global Warming does not Scare us (Yet)". *Climatic Change,* 77, 103-120.

Furthermore, previous studies have shown that individuals' views on climate change differ depending on whether they are from Eastern or Western Europe.[8] Those residing in Eastern Europe tend to display more "materialist" values, which leads them to value physical and economical security above all else.[9] These "materialist" values in combination with the low quality of democracy, high level of corruption, and perception of corruption in turn lead to less concern for climate change.[10] On the other hand, individuals from Western Europe, who have a higher level of material security, display "post-materialist" values which lead them to emphasize their quality of life and self-expression. This in turn leads to a heightened will to prioritize the protection of the environment and to be a member of environmental groups.[11] Thus, a research gap exists in this new field of post-pandemic studies. It has not yet been researched whether the COVID-19 pandemic affected the perception of climate change differently in Western and Eastern Europe.

Due to climate change being a vital threat facing all the countries in the European Union, it is interesting to research whether the pandemic has made a difference in individuals' perception of climate change as a threat, and how it may have affected individuals from Eastern versus Western Europe, whose inhabitants historically have had very different views on climate change.

Aim

The previous section sheds light on how individuals may react to the threat of climate change during an ongoing unrelated crisis and how the attitudes can differ due to whether the individual comes from Western or Eastern Europe. Previous research has not yet considered the effect that the COVID-19 pandemic might have had on individuals' perception of climate change as a threat amongst Western and Eastern Europeans. Therefore, this study will be researching whether the perception of climate change as a threat was different in individuals from Western and Eastern Europe during the COVID-19 pandemic.

Conclusively, this study will aim to analyze whether the COVID-19 pandemic has affected Western and Eastern European individuals' perception of climate change as being a threat differently.

Additionally, I will be researching whether there is a difference in the perception of climate change as being a threat in individuals that identify on the right and left sides of the political spectrum, their age, educational level, and sex. This study will therefore contribute to the new field of post-pandemic research, by researching whether the COVID-19 pandemic has impacted Eastern and Western European individuals' perception of climate change as a threat differently.

[8] McCright, Aaron M., Dunlap, Riley E. & Marquart-Pyatt, Sandra T. (2016). "Political ideology and views about climate change in the European Union". *Environmental Politics*, 25(2), 338-358.
[9] Inglehart, Ronald (1995). "Public Support for Environmental Protection: Objective Problems and Subjective Values in 43 Societies". *PS: Political Science and Politics 28*(1), 57–72.
[10] Chaisty, Paul & Whitefield, Stephen (2015). "Attitudes towards the environment: are post-Communist societies (still) different?" *Environmental Politics*, 24(4), 598-616.
[11] Inglehart, Ronald (1995).

To fulfil the aim of this study the following research question will be formed:

- *Has the COVID-19 pandemic affected the perception of climate change as a threat amongst Western and Eastern Europeans?*

Theory and previous research

This section will begin by explaining how the COVID-19 pandemic has affected climate change, and by presenting the psychological links between climate change and the pandemic. Thereafter the different psychological mechanisms that can affect climate change perception will be presented. Afterwards, the finite pool of worry effect will be discussed, along with previous research in climate change perception in emerging market and advanced economies. Thereafter, differences between Eastern and Western Europe will be presented. Lastly, a summarized theoretical model using the theory, and the previous research will be presented along with the hypothesis.

Climate change and the COVID-19 pandemic

The pandemic has led to several restrictions on movement such as social distancing and self-quarantining in many areas. This has in turn led to several improvements regarding climate change, such as positive changes in air quality[12] and decreased CO_2 emissions.[13] These emissions of particulates are the largest contributors to surface temperature changes.[14] Nevertheless, this impact is only temporary since a more consistent effort is needed to upkeep these changes.[15] However this draws attention to the fact that climate change is a human-caused issue,[16] and when individuals understand this it can affect the climate risk perception.[17] Furthermore, if these behavioural changes such as taking fewer international trips and working from home are upkept after the pandemic, it can lead to continued reduced carbon emissions and climate change. This in turn leads to a possibility of a heightened will to take measures against climate change.[18]

Psychological links between the COVID-19 pandemic and climate change

Psychologists in the United States have noted the similarities and links that exist between the COVID-19 pandemic and climate change. The pandemic, as well as climate change, are

[12] Hammer, Melanie S., Van Donkelaar, Aaron, Martin, Randall V., McDuffie, Erin E., Lyapustin, Alexei, Sayer, Andrew M., Hsu, N. Christina, Levy, Robert C., Garay, Michael J., Kalashnikova, Olga V. & Kahn, Ralph A. (2021). "Effects of COVID-19 Lockdowns on Fine Particulate Matter Concentrations." *Science Advances* 7(26).
[13] Corinne, Le Quéré, Jackson, Robert B., Jones, Matthew W., Smith, Adam J. P., Abernethy, Sam, Andrew, Robbie M., De-Gol, Anthony J., Willis, David R., Shan, Yuli, Canadell, Josep G., Friedlingstein, Pierre, Creutzig, Felix & Peters, Glen P. (2020). "Temporary Reduction in Daily Global CO2 Emissions During the COVID-19 Forced Confinement." *Nature Climate Change* 10: 647–653.
[14] Gettelman, A., Lamboll, R., Bardeen, C. G., Forster, P. M., & Watson-Parris, D. (2021).
[15] Forster, Piers M., Forster, Harriet I., Evans, Mat J., Gidden, Matthew J., Jones, Chris D., Keller, Christoph A., Lamboll, Robin D., Le Quere, Corinne, Rogelj, Joeri, Rosen, Deborah, Schleussner, Carl-Friedrich, Richardson, Thomas B., Smith, Christopher & Turnock, Steven T. (2020). "Current and future global climate impacts resulting from COVID-19". *Nature Climate Change*, 10, 913–919.
[16] Mohommad, Adil & Pugacheva, Evgenia (2022).
[17] Ming, Lee T., Markowitz, Ezra M., Howe, Peter D., Ko, Chia-Ying, & Lieserowitz, Anthony A. (2015). "Predictors of Public Climate Change Awareness and Risk Perception Around the World." *Nature Climate Change 5*: 1014–1020.
[18] Mohommad, Adil & Pugacheva, Evgenia (2022).

global threats that cause individuals to think about the health and security of not only themselves and the people closest to them, but also about the collective society. Therefore, both crises demand a change in behaviours to protect everyone else. Furthermore, research has shown that altering habits is considerably easier during times of transition.[19] Previous research has shown that individuals that have relocated relatively recently, display a significant change in sustainable behaviour. These individuals were much more likely to adopt new sustainable behaviour, whilst non-movers did not experience this. Therefore, when individuals' old habits are temporarily interrupted, people become more responsive to new information, and alter their mindset to allow behavioural change.[20] This in turn may lead to individuals changing their behaviour during the COVID-19 crisis to become more environmentally friendly, since the pandemic restrictions have altered people's old habits significantly.[21]

Psychological mechanisms activated due to the COVID-19 pandemic

The COVID-19 pandemic has not only affected individuals' patterns of travel, consumption, and social interaction. It has also led to a complex impact on individuals' mental health and psychological functioning. Individuals have experienced both direct stress due to falling ill with COVID-19, and due to the threat of potentially falling ill. Furthermore, enduring life during the pandemic has had effects on a variety of psychological dimensions and forces. This impacts individuals' decision-making and understanding of the world, which may lead to individuals acting against climate change. Three core psychological mechanisms that promote prosocial behaviour,[22] and intergenerational prosociality,[23] may have potentially been activated in individuals due to the pandemic: norms of fairness and reciprocity,[24] feelings of gratitude towards others,[25] and an endorsement of a personal legacy motive.[26]

Fairness

The COVID-19 pandemic has led individuals to ponder about fairness and inequality[27] since the disease is more likely to affect individuals from a lower socioeconomic status,[28] as well as people of colour.[29] Therefore the concern about fairness has likely heightened due to the COVID-19 pandemic, given the tight links that exist between conceptions of inequality and

[19] DeAngelis, Tori (2020). "Could COVID-19 change our environmental behaviors?". *American Psychological Association* 51(5).
[20] Verplanken, Bas, & Roy, Deborah (2016). "Empowering interventions to promote sustainable lifestyles: Testing the habit discontinuity hypothesis in a field experiment". *Journal of Environmental Psychology*, 45, 127-134.
[21] DeAngelis, Tori (2020).
[22] Prosocial behavior- Social behavior that benefits other individuals or the society as a whole
[23] Intergenerational prosociality- Voluntary helping behavior with the intention to benefit younger generations
[24] Wade-Benzoni, Kimberly A., Hernandez, Morela, Medvec, Victoria & Messick, David (2008).
[25] Watkins, Hanne M. & Goodwin, Geoffrey P. (2020).
[26] Syropoulos, Stylianos & Markowitz, Ezra M. (2021).
[27] Syropoulos, Stylianos & Markowitz, Ezra M. (2021).
[28] Karmakar, Monika, Lantz, Paula M. & Tipirneni, Renuka (2021). "Association of social and demographic factors with COVID-19 incidence and death rates in the US". *J. Am. Med. Assoc*. 4(1).
[29] Centers for Disease Control and Preventions (2020). *COVID-19 Racial* and *Ethnic Health Disparities*. Retrieved 2022-11-02.

fairness.[30] This in turn may lead to the possibility of heightened prosocial motivation for issues such as climate change, which is also an issue that involves fairness. Since the pandemic has made it evident to people that economic inequality and systematic racism prevails in our society, individuals understand that a collective effort is needed to help these issues. This can lead to individuals being willing to act against climate change since it is also linked to a collective conceptualisation of fairness. Furthermore, an emphasis on an intergenerational fashion is present, since how individuals act today affects the climate-related risks the future generations will experience. Therefore, a sense of fairness may help individuals engage in collective efforts to combat climate change and gain interest in constructive intergenerational environmental stewardship.[31] Furthermore, a sense of fairness has been shown to affect individuals' decision-making processes and moral judgement to act on preventing climate change.[32]

Gratitude and responsibility to others

The COVID-19 pandemic has led individuals to experience gratitude due to reasons such as strangers helping each other, reading about, and seeing essential workers that risk their lives to help those in need. These feelings of gratitude lead individuals to express greater prosocial behavioural tendencies, which has led to a reduction in the spread of COVID-19.[33] Gratitude also encourages altruism and helping behaviours, even when they come at a high cost to the individual.[34] Furthermore, elevated gratitude both in forms as a disposition, such as a trait, and as an experienced emotion such as a state, leads to heightened prosociality.[35] Recent research shows that gratitude is a vital motivator of intergenerational stewardship.[3637] Therefore an opportunity to encourage a higher engagement and action on threats such as climate change may arise due to the COVID-19 pandemic.[38]

Legacy motives

One of the ways the COVID-19 pandemic has affected individuals is by increasing the thoughts of the individual's mortality. The COVID-19 pandemic has activated the psychological mechanism of terror management whereas the experience of seeing how frail

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[30] Graham, Jesse, Haidt, Jonathan, & Nosek, Brian A. (2009). "Liberals and conservatives rely on different sets of moral foundations". *Journal of Personality and Social Psychology* 96(5), 1029–1046.
& Low, Michelle & and Wui, Ma G. L. (2015). "Moral foundations and attitudes towards the poor". *Curr. Psychol*. 3 (5), 650–656.

[31] Syropoulos, Stylianos & Markowitz, Ezra M. (2021).

[32] Dickinson, Janis L., McLeod, Poppy, Bloomfield, Robert & Allred, Shorna (2016). "Which moral foundations predict willingness to make lifestyle changes to avert climate change in the USA?" *PLoS one*, 11(10).

[33] Syropoulos, Stylianos & Markowitz, Ezra M. (2021).

[34] Bartlett, Monica, & DeSteno, David (2006). "Gratitude and prosocial behavior: Helping when it costs you". *Psychological Science 17*, 319–325.

[35] Ma, Lawrence K., Tunney, Richard J. & Ferguson, Eamonn (2017). "Does gratitude enhance prosociality? A meta-analytic review". *Psychological bulletin*, 143(6), 601–635.

[36] Intergenerational stewardship- The responsible use of resources so that they meet the needs of current and future generations

[37] Barnett, Michael. D., Archuleta, William. P., & Cantu, Christina (2019). "Politics, concern for future generations, and the environment: Generativity mediates political conservatism and environmental attitudes". *Journal of Applied Social Psychology* 49, 647–654.

[38] Syropoulos, Stylianos & Markowitz, Ezra M. (2021).

our lives are, affects individuals' behaviour and attitudes. This effect has also been seen in individuals who perceive the threats of the virus to be excessive.[39] Furthermore, when individuals think about their own mortality, they also think about the positive legacies that they will leave behind.[40] These legacy motives[41] are proven to lead to the encouragement of environmental stewardship[42][43] and pro-environmental attitudes. Previous research has shown that when individuals have been experimentally primed to think about their legacy, they showed greater belief in climate change, whilst also increasing the amount that they donate to environmental charities.[44] The COVID-19 pandemic has therefore shown individuals the consequences of inaction when experiencing a collective threat, and how it affects society. This experience can lead to individuals taking more action against the threat of climate change since the pandemic has made individuals think about what they can do to leave behind a positive legacy during times of distress and crisis.[45] Furthermore, individuals who express concern for their legacy may influence other individuals to do so as well, which leads to a sequence of public support for pro-environmental issues.[46]

The finite pool of worry effect

Ever since the COVID-19 pandemic broke out, individuals across the world have been dealing with several threats that are affecting both the individual's health and economic status. This might lead to individuals having less capacity to worry about climate change, and therefore see it as a less important threat in their life. A study has shown that individuals have a finite amount of concern and worry about different risks. Therefore, individuals have a main threat that they focus on, which takes up their capacity for worry and concern. This was tested by showing Argentine farmers two fictive scenarios of a farm decision experiment, where the farmers had to rate the extent of which they worried about different factors influencing their work in farming. The factors examined were the political situation, and weather and climate. The findings suggest that farmers who rated the political risk higher on a scale from 1 to 10, tended to worry less about climate change risk, and therefore rate it lower. Therefore, a limit on worry and concern was observed in the individuals. In the real world, the finite pool of worry effect was seen shortly after the terrorist act of 9/11. The U.S. citizens showed an increased concern for terrorism, whilst simultaneously showing decreased concern about other threats such as climate change and restrictions on civil liberties.[47] Other national issues such as education, healthcare, and the economy seem to concur as well with the threat of

[39] Pyszczynski, Tom, Lockett, McKenzie, Greenberg, Jeff & Solomon, Sheldon (2021). "Terror management theory and the COVID-19 pandemic". *J. Human. Psychol*. 61(2), 173–189.
[40] Wade-Benzoni, Kimberly A. (2019). "Legacy motivations and the psychology of intergenerational decisions". *Current opinion in psychology*, 26, 19–22.
[41] Legacy motive- A meaning attached to one's identity that will last the test of time
[42] Zaval, Lisa, Markowitz, Ezra M. & Weber, Elke U. (2015). "How will I be remembered? Conserving the environment for the sake of one's legacy". *Psychological Sci*ence 26, 231–236. & Bansal, Pratima & Hoffman, Andrew J. (2013) The Oxford Handbook of Business and the Environment.Oxford: Oxford University Press.
[43] Environmental stewardship- Often interpreted as diverse actions that aim to conserve, protect, and create a more sustainable environment
[44] Zaval, Lisa, Markowitz, Ezra M. & Weber, Elke U. (2015).
[45] Syropoulos, Stylianos & Markowitz, Ezra M. (2021).
[46] Han, Hyemin, Kim, Jeongmin, Jeong, Changwoo & Cohen, Geoffrey L. (2017). "Attainable and relevant moral exemplars are more effective than extraordinary exemplars in promoting voluntary service engagement". *Frontiers in Psychology* 8 (283).
[47] Weber, Elke U. (2006).

climate change.[48] Furthermore, during the global economic crisis of 2008, the perception of climate change as a threat was lowered.[49] Since the COVID-19 pandemic has also caused an economic crisis,[50] this effect may apply as well. Therefore, the COVID-19 pandemic might reduce and mute the climate change concern.

Heightened climate change concern in emerging market economies and advanced economies

Previous research has shown that individuals from both emerging market economies, such as Russia and China, and advanced economies, such as the United States have experienced a higher concern regarding climate change after the COVID-19 pandemic. The most drastic increase was seen in individuals from emerging market economies, whilst certain individuals from advanced economies also experienced a heightened level of worry. On the other hand, it was not as a dramatic increase. This was because the base level of worry was already high in countries with advanced economies. 52% of the individuals from emerging market economies displayed worry about climate change, whilst 39% of the individuals from advanced economies displayed worry about climate change. This concern was amplified when being controlled for whether the individual had experienced a COVID-19 health shock either directly by contracting the virus, or indirectly. The results showed that when experiencing a COVID-19 health shock, the likelihood to display increased concern for climate change was 8 percentage points. Furthermore, individuals who experienced a financial shock due to the COVID-19 pandemic also displayed a heightened concern for climate change by 7 percentage points. Therefore, the experience of the COVID-19 pandemic has played a role in the heightened perception of climate change as a threat in individuals from both emerging, and advanced economies due to the financial and health shocks the pandemic caused.[51]

Differences between Eastern and Western Europe

The former countries of the Soviet Union and other countries of Eastern Europe display significant differences from their Western counterparts. After the separation of the communist states, a wave of economic and political uncertainty hit these countries. This led to the hypothesis that these countries would show a higher concern for survival than the environmental protection of their citizens.[52] The theory behind this is that environmentalism is associated with the surfacing of post-materialist values in advanced industrial societies, such as in Western Europe. Individuals residing in Western Europe display more ¨post-materialist¨ values, whereas they emphasize their quality of life and self-expression. This in turn leads to a higher willingness to prioritize the protection of the environment and being

[48] Leiserowitz, Anthony (2007). "International Public Opinion, Perception, and Understanding of Global Climate Change" *United Nations Development Programme*, 31.
[49] Capstick, Stuart, Whitmarsh, Lorraine, Poortinga, Wouter, Pidgeon, Nick & Upham, Paul (2015). "International trends in public perceptions of climate change over the past quarter century". *Wiley Interdisciplinary Reviews: Climate Change, 6.*
[50] Ingham, Hilary (2022). "COVID-19, the Great Recession and Economic Recovery: A Tale of Two Crises". JCMS: *Journal of Common Market Studies*. Doi:10.1111/jcms.13383.
[51] Mohommad, Adil & Pugacheva, Evgenia (2022).
[52] Chaisty, Paul & Whitefield, Stephen (2015).

active members of environmental groups. On the other hand, individuals from Eastern Europe display more "materialist" values, whereas they emphasize economic and physical security above all else. Therefore, when individuals' material security increases, their value priorities change, whereas the concern with the basic goal of survival lessens, and the "post-materialist" values heighten. This in turn leads to a heightened support for environmental issues.[53] Further research has shown that post-Communist countries continue to be less supportive of environmentalism than advanced democracies, such as Western European countries. Additionally, these differences have grown between 1993 and 2010. These differences can be explained due to the low quality of democracy in the Eastern region, the high level of corruption and perception of corruption, and a negative variety of capitalism.[54] On the other hand, these differences in climate change perception may become lessened due to the COVID-19 pandemic, since in the theory discussed above, the experience of the pandemic can lead to a heightened perception of climate change as a threat.

Other factors that impact attitudes to climate change

Political ideology

In the European Union, there is a prevalence of a consistent ideological divide on climate change views. The individuals residing in Western European countries who identify on the right scale of the political spectrum, show higher disbelief that climate change is occurring, and conclusively perceive it to be a less serious threat. On the other hand, individuals who identify themselves on the left side of the political spectrum perceive climate change as a serious problem, and are willing to act against it, and support policies that reduce greenhouse gas emissions. Furthermore, this left, and right political divide has not been observed in Eastern European countries.[55] A 'post-communism' effect has been observed in Eastern European countries, where the connection of environmental issues to economic and political questions has been relatively weak. Therefore, the climate change issue is not as strongly connected to the left-right political spectrum in these regions compared to Western Europe.[56] On the other hand, this may shift since the previously discussed theory implies that there is a possibility for a heightened perception of climate change as a threat to occur due to the COVID-19 pandemic.

Gender, age, and education level

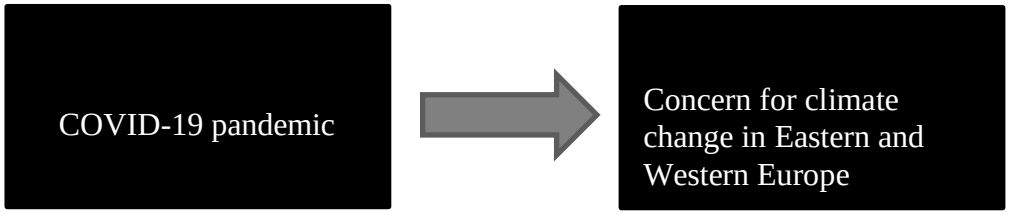
Previous research deducted in the United Kingdom shows that men express more scepticism towards climate change than women. Additionally, younger individuals express more concern about climate change than older individuals.[57] This observation has also been seen in the United States, where the younger individuals had more prominent pro-environmental

[53] Inglehart, Ronald (1995).
[54] Chaisty, Paul & Whitefield, Stephen (2015).
[55] McCright, Aaron M., Dunlap, Riley E. & Marquart-Pyatt, Sandra T. (2016).
[56] Chaisty, Paul & Whitefield, Stephen (2015).
[57] Whitmarsh, Lorraine (2011). "Scepticism and Uncertainty about Climate Change: Dimensions, Determinants and Change over Time". *Global Environmental Change* 21(2), 690-700.

attitudes, whilst older individuals' opinions did not have such a pro-environmental tinge.[58] Additional research has also shown that individuals with higher levels of education perceive the impacts of climate change more negatively and displayed higher levels of concern about climate change than individuals with a lower level of education.[59]

Hypothesizing the relationship between the COVID-19 pandemic and climate change perceptions

Figure 1: Theoretical model



A differing perception of climate change as a threat could be observed in Western and Eastern Europe due to the temporary improvements in climate change, because of the decreased $C0_2$ emissions due the restrictions, and the decreased mobility.[60] This can lead individuals to view climate change as a human-caused issue,[61] and lead to a higher risk perception of climate change.[62] The COVID-19 pandemic has also vastly altered individuals' old habits due to the restrictions imposed in many countries.[63] This can lead to individuals continuing to live by their altered habits, which can lead them to adopt more sustainable behaviour and therefore become more environmentally friendly. Additionally, the psychological mechanisms consisting of norms of fairness and reciprocity, feelings of gratitude towards others, and an endorsement of a personal legacy motive[64] may become activated in individuals from Western or Eastern Europe, which could lead to a higher perception of climate change as a threat. A lowered perception of climate change as a threat could be observed in either Western or Eastern Europe due to the finite pool of worry effect. This would imply that the concern for

[58] Weber, Elke U. (2010). "What Shapes Perceptions of Climate Change?" Wiley Interdisciplinary Reviews: *Climate Change*, 1, 332-342.
[59] Poortinga, Wouter, Whitmarsh, Lorraine, Steg, Linda, Böhm, Gisela & Fisher, Stephen (2019). "Climate change perceptions and their individual-level determinants: A cross-European analysis". *Global Environmental Change* 55, 25-35
[60] Corinne, Le Quéré, Jackson, Robert B., Jones, Matthew W., Smith, Adam J. P., Abernethy, Sam, Andrew, Robbie M., De-Gol, Anthony J., Willis, David R., Shan, Yuli, Canadell, Josep G., Friedlingstein, Pierre, Creutzig, Felix & Peters, Glen P. (2020).
[61] Mohommad, Adil & Pugacheva, Evgenia (2022).
[62] Ming, Lee T., Markowitz, Ezra M., Howe, Peter D., Ko, Chia-Ying, & Lieserowitz, Anthony A. (2015).
[63] DeAngelis, Tori (2020).
[64] Verplanken, Bas, & Roy, Deborah (2016).

the pandemic, and the health and economic issues it has caused, could crowd out the concern for climate change.[65]

Additionally, since Western and Eastern Europeans differ quite vastly, the perception of climate change as a threat might differ between the two regions. Western Europeans tend to display more "post-materialistic" values that lead to a higher willingness to protect the environment. Eastern Europeans on the other hand, display "materialist" values. These values lead to the emphasis of survival over other issues such as climate change.[66] Individuals from Eastern Europe may also display a weakened perception of climate change as a threat due to the high level of corruption and perception of corruption.[67] This can lead to more concern about climate change in Western Europe than in Eastern Europe. On the other hand, it might also be possible for Western European countries to not experience a heightened perception of climate change as a threat, due to the baseline of worry for climate change being already historically high in advanced economies.[68]

Therefore, the following hypothesis will be tested:

H1: *The COVID-19 pandemic has affected the perception of climate change as a threat differently in Western and Eastern Europe*

[65] Weber, Elke U. (2006).
[66] Inglehart, Ronald (1995).
[67] Chaisty, Paul & Whitefield, Stephen (2015).
[68] Mohommad, Adil & Pugacheva, Evgenia (2022).

Material and method

This section begins with a presentation of the material that will be used in the study. Eurobarometer 91.3 (2019) and Eurobarometer 95.1 (2021) will be presented and discussed in detail, and the potential drawbacks and advantages of using the datasets will be discussed. Thereafter, the choice of the quantitative method will be discussed, along with a discussion of the potential advantages and drawbacks of using it for the study. Lastly, the chosen variables will be discussed in detail.

Material

This study used data from the Eurobarometer 91.3 (2019), and Eurobarometer 95.1 (2021). The reasons why these datasets were chosen was because they contained the same questions and answer alternatives, and they contained the variables needed to answer my research question. The data collection time was also fitting for my study since I wanted to compare the changes in the perception of climate change as a threat before and during the COVID-19 pandemic. The data for the Eurobarometer 91.3 was collected in April 2019,[69] and the data for the Eurobarometer 95.1 was collected in June 2021.[70] Eurobarometer surveys have been conducted since 1974 and are the official polling instrument used by the European Commission, the European Parliament, and other EU institutions. Eurobarometer surveys aim to monitor public opinion in Europe on issues related to the European Union and attitudes toward political and social subjects.[71] A sample size of at least 1000 individuals from the age of 15 years old from each country are randomly selected to participate in the survey. In countries with fewer than 1 million inhabitants, a sample size of 500 individuals is used.[72] The interviews for both the Eurobarometer 95.1 and Eurobarometer 91.3 were conducted face-to-face at the individuals' homes in their mother tongues.[73] However, because of the COVID-19 pandemic, the interviews for Eurobarometer 95.1 were conducted online after recruitment by telephone in some of the participating countries. A potential drawback of conducting interviews in different languages is that the concepts used in the questions may be interpreted differently in each language and country. Additionally, previous studies have shown that research conducted with a mixed method using both online and face-to-face interviews had a difference in recruitment. Individuals with a high education tend to be over-represented in online interviews, whilst individuals with a low or middle level of education are under-represented.[74] Furthermore, having an interviewer present during a face-to-face interview may motivate respondents to answer, and help with questions that are hard to answer. On the other hand, the interviewer's presence may lead to the interviewee responding

[69] European Commission (2019). *Eurobarometer 91.3* (2019). *GESIS Data Archive*, Cologne.
[70] European Commission and European Parliament (2021). *Eurobarometer 95.1* (2021). *GESIS Data Archive*, Cologne.
[71] European Parliament (n.d). *Eurobarometer*. Retrieved 2022-11-27.
[72] European Parliament (n.d). *About Eurobarometer*. Retrieved 2022-11-27.
[73] European Commission (2019) & European Commission and European Parliament (2021).
[74] Luijkx, Ruud, Jonsdottir, Gudbjord, Gummer, Tobias, Ernst Staehli, Michele, Frederiksen, Morten, Ketola, Kimmo, Reeskens, Tim, Brislinger, Evelyn, Christmann, Pablo, Gunnarsson, Stefan, Bragi Hjaltason, Arni, Joye, Dominique, Lomazzi, Vera, Maineri, Angelica, Milbert, Patricia, Ochsner, Michael, Pollien, Alexandre, Sapin, Marlene, Solanes, Ivet, & Wolf, Christof (2021). "The European Values Study 2017: On the way to the future using mixed-modes". *European Sociological Review 37*(2), 330-347.

in a socially desirable way, and not expressing their truthful opinion.[75] Since the chosen variables from Eurobarometer 95.1 (2021) and Eurobarometer 91.3 (2019) were explained in detail, and the datasets used in this study were available for public use, this study can be replicated and therefore the reliability is high.[76]

Method

Like previous studies conducted about attitudes toward climate change, this study used a quantitative method. This choice of method gives a result that can be generalised to a broad population, and therefore grant an overview of the big picture.[77] The OLS (ordinary least square) regression analysis was used for the four regression analyses. The regression analyses were multivariate since one dependent variable and several independent variables were used. Additionally, using a multivariate regression analysis allows the researcher to examine the relationships between different variables, unlike a bivariate regression analysis which consists of only one independent variable and dependent variable.[78] The control variables were presented and discussed in another subchapter.

An alternative method that could have been used would be a qualitative method, such as conducting interviews. This would lead to a deeper insight into the interviewee's reasoning, but this choice of method would not provide the breadth required to obtain a clear European context in a way that a quantitative method would.[79] Furthermore, it would not be optimal to find individuals from different countries in the European Union and schedule interviews with them during this relatively short time frame of the study. Additionally, language barriers might be prominent since it is not certain that everyone would be able to speak English. As previously mentioned, the goal of this study was to obtain a result that could be generalised to the public, which could not be possible if I were to conduct interviews since the sample size would be significantly smaller, and therefore harder to generalise.[80]

Examining the effects of significant events

An issue that can arise when trying to find the correlation between the COVID-19 pandemic and the perception of climate change as a threat, is that it is hard to prove that the COVID-19 pandemic has specifically affected the perception of climate change as a threat between the Eurobarometer surveys. Other issues can also impact the perception of climate change as a threat, and there is no way of knowing directly if the change has been caused because of the COVID-19 pandemic. Therefore it is difficult to claim that it was solely the COVID-19

[75] Kvale, Steinar & Brinkmann, Svend (2014). Den kvalitativa forskningsintervjun. Tredje [reviderade] upplagan. Lund: Studentlitteratur. p.127
[76] Djurfeldt, Göran, Larsson, Rolf & Stjärnhagen, Ola (2018). Statistisk verktygslåda 1:samhällsvetenskaplig orsaksanalys med kvantitativa metoder. Tredje upplagan. Lund: Studentlitteratur. p.104–105
[77] Djurfeldt, Göran, Larsson, Rolf & Stjärnhagen, Ola (2018). p.37
[78] Djurfeldt, Göran, Larsson, Rolf & Stjärnhagen, Ola (2018). p.322
[79] Djurfeldt, Göran, Larsson, Rolf & Stjärnhagen, Ola (2018). p.20–21
[80] Djurfeldt, Göran, Larsson, Rolf & Stjärnhagen, Ola (2018). p.37

pandemic that caused these changes, whilst it also cannot be ruled out that the pandemic has affected the results.

Choice of the dependent variable

The dependent variable was on a continuous interval scale and depicted the individual's perception of the severity of climate change. The following question was asked: And how serious a problem do you think climate change is at this moment? Please use a scale from 1 to 10, with '1' meaning it is "not at all a serious problem" and '10' meaning it is "an extremely serious problem". There was also an opportunity to answer "Don't know", which was coded as a missing value. In the Eurobarometer 91.3 dataset the number of people who answered don't know was only 1.3% (357), and in the Eurobarometer 95.1 dataset it was 0.3% (69). This very small number of missing values does not distort the results. The usage of a scale of 1-10 can be problematic when measuring the perception of climate change as a threat, since it is regarded as a subjective measurement, and the numbers on the scale may mean different things to different people. Therefore it cannot be perceived as the perfect measurement for the perception of climate change as a threat. This can therefore be seen as a validity problem.[81]

Choice of the independent variable

Since previous research has shown that there are differences in the perception of climate change in Western and Eastern Europe, whereas Western Europeans display more concern for climate change than Eastern Europeans,[82] this study will control for it as well. The EU member states that will be analysed in Eastern Europe are the following: Bulgaria, the Czech Republic, Croatia, East Germany, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia. The following EU member states in Western Europe will be analysed: Austria, Belgium, Denmark, Finland, France, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and West Germany. The countries that were not analysed were the following: Cyprus, Malta, and Greece. Those 3 countries are not as easily categorised in either of the two groups. Therefore in total 12 countries will be analysed in Eastern Europe, and 13 in Western Europe, which is consistent with previous research.[83] The Western and Eastern European countries were coded into one variable, whereas the Western European countries took the value of 0, and the Eastern European countries took the value of 1. This made Western Europe the reference group. In the Eurobarometer 91.3 dataset, the number of individuals who participated in the survey was in total 27655, however, this number decreased by 12,9% (3579) to 24076 when removing the European countries that could not be categorised in either Western or Eastern Europe. Of the 24076 individuals, 46,7% (11247) were from Eastern Europe and 53,3% (12829) were from Western Europe. In the Eurobarometer 95.1 dataset, the number of individuals who participated in the study was in total 26669. This number decreased by 7,6% (2036) to 24633 when removing the countries that could not be categorised into either Western or Eastern Europe. Of the 24633 individuals

[81] Djurfeldt, Göran, Larsson, Rolf & Stjärnhagen, Ola (2018). p.104
[82] Chaisty, Paul & Whitefield, Stephen (2015) & Inglehart, Ronald (1995).
[83] McCright, Aaron M., Dunlap, Riley E. & Marquart-Pyatt, Sandra T. (2016).

analysed, 47,8% (11785) were from Eastern Europe, and 52,2% (12848) were from Western Europe.

Choice of the control variables

The control variables chosen in this study were identified as important factors in previous research conducted about climate change attitudes. Differences in climate change attitudes have been observed between the individuals that identify on the right and the left scale of the political spectrum,[84] between the different genders,[85] and between younger and older individuals.[86] Additionally, educational level has had an impact on climate change attitudes in previous studies.[87]

Political orientation

Research has shown that individuals who identify themselves on the right scale of the political spectrum show higher disbelief in climate change, whilst the opposite has been observed in individuals on the left side of the political spectrum.[88] The question used for political orientation was: In political matters people talk of "the left" and "the right" Thinking about your views how would you place yourself on this scale? The interviewee had to answer this question by rating their placement on a scale from 1 to 10, where 1 was the left and 10 was the right. There was also the possibility to answer that you do not know your position in this scale, which was coded as a missing value. The answers were thereafter coded as the following: (1-4) as Left, (5-6) as Centre, and (7-10) as Right. The variable was on a nominal scale and was therefore necessary to dummy code.[89] Those who identified themselves on the left side were coded to take the value of 0 and became the reference group.[90] A drawback of using this variable is the fact that it used a scale of 1-10 to measure political orientation. This is regarded as a subjective measurement, which implies that the numbers on the scale may mean different things to different people. Therefore it cannot be perceived as the ideal measurement for political orientation. This can therefore be seen as a validity problem.[91]

Gender and age

Previous research has concluded that men are more sceptical towards climate change than women.[92] The variable for gender was necessary to dummy code since it was on a nominal scale. Men were recoded to take the value of 0, and women to take the value of 1, which made men the reference group.[93] Additionally, age has had an impact on attitudes toward climate change in previous studies. Younger individuals were more likely to view climate change as a

[84] McCright, Aaron M., Dunlap, Riley E. & Marquart-Pyatt, Sandra T. (2016).
[85] Whitmarsh, Lorraine (2011).
[86] Weber, Elke U. (2010) & Whitmarsh, Lorraine (2011).
[87] Poortinga, Wouter, Whitmarsh, Lorraine, Steg, Linda, Böhm, Gisela & Fisher, Stephen (2019).
[88] McCright, Aaron M., Dunlap, Riley E. & Marquart-Pyatt, Sandra T. (2016).
[89] Djurfeldt, Göran, Larsson, Rolf & Stjärnhagen, Ola (2018). p.321
[90] Djurfeldt, Göran, Larsson, Rolf & Stjärnhagen, Ola (2018). p.321
[91] Djurfeldt, Göran, Larsson, Rolf & Stjärnhagen, Ola (2018). p.104
[92] Whitmarsh, Lorraine (2011).
[93] Djurfeldt, Göran, Larsson, Rolf & Stjärnhagen, Ola (2018). p.321

threat, and express concern for it, whilst the opposite was observed in older individuals.[94] The variable age was on a ratio scale and was not necessary to dummy code.[95] Therefore, women and younger individuals were expected to be more likely to view climate change as a threat than men and older individuals.

Education level

Earlier research has concluded that individuals with a higher level of education are more concerned about climate change than those with a lower level of education.[96] The level of education was controlled with the variable: How old were you when you stopped full-time education? The answers to this question were coded as the following: Up to 15 years, 16-19 years, 20 years and older, Still studying, No-fulltime education, Refusal and Don't know. Those who answered Don't know were coded as missing values. This variable was coded so that the answers No-fulltime education, Still studying, Up to 15 years, and 16-19 years took the value of 0, and those with lower education thus became the reference group. The answer 20 years and older took the value of 1 and included the individuals that had received higher education. The reason why Still studying was included in the lower education group, is because there is no way of knowing whether the individual was still studying at high school or receiving higher education at university at the time the study was conducted. On the other hand, this group only contained 6.1% of the total respondents in the Eurobarometer 91.3 dataset and 8% in the Eurobarometer 95.1 dataset, which does not cause significant distortion. A potential drawback of using this variable is the fact that there is no way of knowing what kind of educational level the individual has attained. Some individuals might have decided to finish high school at an age of 20 or older and were still placed in the group who had attained higher education. However, this is not so common and most of the individuals' age when they stopped full-time education fits into the different educational levels. Since this was the only variable in the datasets measuring educational level, it was better to use it to gain more insight in the differences, than having no control variable for education albeit the potential drawbacks of using it.

[94] Weber, Elke U. (2010) & Whitmarsh, Lorraine (2011).
[95] Djurfeldt, Göran, Larsson, Rolf & Stjärnhagen, Ola (2018). p.321
[96] Poortinga, Wouter, Whitmarsh, Lorraine, Steg, Linda, Böhm, Gisela & Fisher, Stephen (2019).

Results and analysis

This section contains the results, and the analysis of the results. Firstly, a cross-tabulation analysis will be presented to showcase the changes in the perception of climate change as a threat in Eastern and Western Europe for year 2019 and 2021. Thereafter the results from the regression analysis with the Eurobarometer 91.3 data will be compared to the regression analysis with the Eurobarometer 95.1 data.

Cross-tabulation for the perception of climate change as a threat in Eastern and Western Europe

This cross-tabulation is a complement to the regression analyses, in order to see the amount of people who chose each of the answer alternatives in the dependent variable in Western and Eastern Europe for year 2019 and 2021.

Table 1: Cross-tabulation of the perception of climate change as a threat in Eastern and Western Europe for 2019 and 2020

Perception of climate change as a threat	**Eastern Europe 2019**	**Western Europe 2019**	**Eastern Europe 2021**	**Western Europe 2021**
1 – Not at all a serious problem	180 **(1.6%)**	149 **(1.2%)**	214 **(1.8%)**	162 **(1.3%)**
2	87 **(0.8%)**	114 **(0.9%)**	142 **(1.2%)**	165 **(1.3%)**
3	219 **(2%)**	222 **(1.7%)**	340 **(2.9%)**	264 **(2.1%)**
4	260 **(2.4%)**	284 **(2.2%)**	421 **(3.6%)**	346 **(2.7%)**
5	1160 **(10.5%)**	882 **(6.9%)**	1081 **(9.2%)**	805 **(6.3%)**
6	1070 **(9.7%)**	900 **(7.1%)**	1211 **(10.3%)**	890 **(6.9%)**
7	1699 **(15.4%)**	1859 **(14.6%)**	1889 **(16.1%)**	1824 **(14.2%)**
8	2079 **(18.9%)**	2624 **(20.6%)**	2002 **(17.0%)**	2476 **(19.3%)**
9	1276 **(11.6%)**	1756 **(13.8%)**	1282 **(10.9%)**	1728 **(13.5%)**
10 – An extremely serious problem	2980 **(27.1%)**	3951 **(31.0%)**	3160 **(26.9%)**	4169 **(32.5%)**
Population	11010 **(100%)**	12741 **(100%)**	11742 **(100%)**	12829 **(100%)**

Linear regression analysis with data from Eurobarometer 91.3

Table 2: OLS regression of the perception of climate change as a threat in 2019

Variables	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Eastern & Western Europe (Western Europe=0)	-.268*** (.030)	-.288*** (.030)	-.255*** (.030)	-.266*** (.-030)	-.223*** (.030)
Gender (Man=0)		.279*** (.030)	.280*** (.030)	.282*** (.029)	.283*** (.029)
Education (Lower Education=0)			.218*** (.030)	.218*** (.030)	.215*** (.030)
Age				-.005*** (.001)	-.005*** (.001)
Right political orientation (Left=0)					-.387*** (.039)
Middle political orientation (Left=0)					-.370*** (.035)
Intercept	7.9 (.020)	7.8 (.025)	7.7 (.028)	7.96 (.052)	8.22 (.056)
$\mathbf{R^2_{adj}}$	0,004	0,009	0,011	0,013	0,020
n	19466	19466	19466	19466	19466

Significance levels: + p<0,1,*: p< 0,05,**: p<0,01, ***: p<0,001. Standard errors in parenthesis

Linear regression analysis with data from Eurobarometer 95.1

Table 3: OLS regression of the perception of climate change as a threat in 2021

Variables	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Eastern & Western Europe (Western Europe=0)	-.440*** (.028)	-.462*** (.028)	.453*** (.028)	-.464*** (.028)	-.386*** (.028)
Gender (Man=0)		.454*** (.028)	.455*** (.028)	.451*** (.028)	.412*** (.028)
Education (Lower Education=0)			.065*** (.028)	.077*** (.028)	.096*** (.028)
Age				-.006*** (.001)	-.006*** (.001)
Right political orientation (Left=0)					-.790*** (.036)
Middle political orientation (Left=0)					-.461*** (.033)
Intercept	8.0 (.019)	7.74 (.024)	7.7 (.028)	8.0 (.050)	8.35 (.052)
$\mathbf{R^2_{adj}}$	0,010	0,021	0,021	0,023	0,044
n	23459	23459	23459	23459	23459

Significance levels: + p<0,1,*: p< 0,05,**: p<0,01, ***: p<0,001. Standard errors in parenthesis

Analysis of the models

Firstly, the cross-tabulation in model 1 will be analysed. It shows the ratings of the respondents' climate change perception on a scale from 1-10 divided by Eastern and Western Europe. It can be seen that the differences are not that vast between the regions in both of the years, which indicates that the regions do not have as vast differences as stated in previous research.[97]

The B-coefficient is the degree of change in the outcome variable, which is the variable for the perception of climate change as a threat on a scale from 1-10, for every 1 unit of change in the predictor variable, which is the variable that measures if you are from Western or Eastern Europe. By observing the b-coefficient in table 2, in the model 5, the b-coefficient is -.223 for year 2019 when comparing Eastern Europe to Western Europe. This means that by one unit of change in the scale from 1-10 in the variable for the perception of climate change as a threat, the perception of climate change as a threat is .223 lower in Eastern Europe compared to Western Europe on a scale point. The difference is controlled whilst holding every variable constant. For table 3, model 5, the b-coefficient is -.386, which implies that the perception of climate change as a threat is .386 less in Eastern Europe when compared to Western Europe at a scale point for year 2021. Therefore, the perception of climate change as a threat is different, and has lowered in Eastern Europe when compared to Western Europe. It has also heightened in Western Europe when compared to Eastern Europe during the pandemic when compared to before the pandemic, since the b-coefficient was +.223 before the pandemic and +.386 during the pandemic. This finding is also consistent with previous research stating that the concern for climate change is higher in Western Europe than in Eastern Europe.[98] In this study, one hypothesis was tested. This result concludes that **H1:** *The COVID-19 pandemic has affected the perception of climate change as a threat differently in Western and Eastern Europe***,** can be confirmed since it has gained support with the findings and the results.

The R^2_{adj} displays the percentage of the variation that a variable has in explaining the variance in the dependent variable. In table 2, model 1, the variable of being from Eastern or Western Europe had a R^2_{adj} value of only 0,04%. In table 3, model 2, the R^2_{adj} was 1% for the variable for Eastern and Western Europe. This implies that being from Eastern or Western Europe is solely not significant when explaining the differences between the regions. Therefore it can indicate that the differences between Eastern and Western Europeans in climate change perception have lessened, which contradicts previous research stating that the perception of climate change is low in Eastern Europe.[99] In table 2, model 5, which was the full model with all of the control variables, the R^2_{adj} increased to 2%. In table 3, model 5, it increased to 4,4%. Therefore 2% for year 2019 and 4,4% for year 2021 of the variance in climate change perception is explained by the models and its containing variables. This is quite a low value, which may indicate that the climate change perceptions are either beginning to converge between Eastern and Western Europeans or that other variables could explain the differences.

[97] McCright, Aaron M., Dunlap, Riley E. & Marquart-Pyatt, Sandra T. (2016).
[98] McCright, Aaron M., Dunlap, Riley E. & Marquart-Pyatt, Sandra T. (2016).
[99] McCright, Aaron M., Dunlap, Riley E. & Marquart-Pyatt, Sandra T. (2016).

All of the control variables displayed the highest significance level in both of the analyses, which is consistent with previous research. It is interesting that being on the right side of the political spectrum decreased the perception of climate change as a threat over the years, when compared to those on the left side of the political spectrum. This is consistent with previous research on the topic, which indicates that those identifying on the right side of the political spectrum display a lower perception of climate change as a threat. The b-coefficient for being on the right side of the political spectrum decreased from -.390 in 2019 to -.790 in 2021, which means that those who identified on the right side of the political spectrum perceived climate change as a less serious threat during the pandemic. The control variables for education, age and middle political orientation showed a small decrease, whilst gender showed a small increase. Being a woman compared to a man resulted in a higher perception of climate change as a threat in both of the regression analyses since the b-coefficient was .283 in 2019 (view table 2, model 5) and .412 in 2021 (view table 3, model 5), when men were the reference group. This implies that women's perception of climate change as a threat was .283 and .412 higher in 2019 and 2021, on a scale point level compared to men. This is consistent with previous research, which indicates that women have a higher perception of climate change as a threat.[100] Having higher education also resulted in a higher perception of climate change as a threat in both of the regression analyses, although the effect had lessened when comparing the b-coefficient of 2019 with the one from 2021. The b-coefficient was .218 in 2019 and .065 in 2021, when those with lower education were the reference group. This means that those with higher education showed a higher perception of climate change as a threat by .218 in 2019 and .065 in 2021 on a scale point compared to those with a lower education. The b-coefficient for age was –.005 in 2019 and -.006 in 2021, which means that being older by one year, results in a lower perception of climate change as a threat by .005 in 2019, and .006 in 2021 on a scale point. This is in line with previous research which stated that younger individuals express more concern for climate change.[101] Those who identified on the middle of the political spectrum viewed climate change as a less serious problem when compared to those on the left side of the political spectrum in both of the analyses. The b-coefficient was -.370 in 2019, and -.461 in 2021. This means that those identifying themselves on the middle of the political spectrum showed a lower perception of climate change as a threat by .370 in 2019 and .461 in 2021, on a scale point when compared to those on the left side of the political spectrum.

It is also interesting to see that the perception of climate change as a threat is not that different when comparing Eastern Europe to Western Europe in both of the years. The b-coefficients for the independent variable of Eastern and Western Europe did not have that high values in both of the regression analyses for 2019 and 2021. The b-coefficients had a value that was smaller than 1 scale point (-.223 for 2019 and -.389 for 2021). Therefore the differences are not that major. This rebuts previous research that stated that there is a low perception of climate change as a threat in Eastern Europe,[102] at least to some extent. Although, the

[100] Whitmarsh, Lorraine (2011).
[101] Weber, Elke U. (2010) & Whitmarsh, Lorraine (2011).
[102] McCright, Aaron M., Dunlap, Riley E. & Marquart-Pyatt, Sandra T. (2016).

perception of climate change was different, and lower in Eastern Europe when compared to Western Europe during the pandemic, it is still quite close to the value in Western Europe.

Lastly, I have conducted an explorative analysis which showcases how the COVID-19 pandemic has affected the different subgroups. This is not part of my hypothesis testing, but it adds interesting findings to the topic. To view the full information, view table 4 in the appendix. It is interesting to see that age, right political orientation and middle political orientation became much more significant during the pandemic in Eastern Europe for the dependent variable of climate change perception. Prior to the pandemic age was not significant, and political orientation was at the lowest significance level. By observing the b-coefficient for the right political orientation, which was .110, before the pandemic in Eastern Europe, it indicated that those on the right side of the political spectrum showed a higher perception of climate change as a threat compared to those on the left. This changed during the pandemic, whereas those on the right side of the political spectrum showed a lower perception of climate change as a threat compared to those on the left since the b-coefficient was -.319. This may indicate that the "post-communism" effect has lost significance, and that Eastern Europeans now have a divide by political orientation for the perception of climate change as a threat, like in Western Europe. This is contradicting to previous studies on the topic.[103] Additionally, it is interesting to see that those who had a lower level of education in Eastern Europe during the pandemic, showed a higher perception of climate change as a threat compared to those with a higher level of education, since the b-coefficient was -.094 when those with low education were the reference group. This contradicts previous studies on the topic, which showed that those with higher education displayed more concern for climate change.[104] This was the opposite before the pandemic, because then those with higher education showed a higher perception of climate change as a threat since the b-coefficient was .102. Additionally, women, and younger individuals showed a higher perception of climate change, whilst those identifying on the middle of the political spectrum showed a lower perception of climate change before and during the pandemic. Regarding the changes in Western Europe, the subgroup variables did not show any changes in significance levels when comparing the results from 2019 and 2021.The b-coefficients were nearly identical for almost all of the groups, with only the right political orientation undergoing significant changes. In 2019, the b-coefficient for the right political orientation in table 4, model 3 was -.759 compared to those on the left side of political orientation. The b-coefficient decreased to -1.219 in 2021, which implies that there was a stronger a divide due to political orientation for the perception of climate change as a threat in Western Europe. Those who were women, had higher education, were younger, and were on the left side of the political spectrum showed a higher perception of climate change as a threat both before and during the pandemic in Western Europe. This is in line with previous research in the topic.

[103] Chaisty, Paul & Whitefield, Stephen (2015).
[104] Poortinga, Wouter, Whitmarsh, Lorraine, Steg, Linda, Böhm, Gisela & Fisher, Stephen (2019).

Conclusions

The aim of this study was to explore if the COVID-19 pandemic affected the perception of climate change as a threat differently in Western and Eastern Europe. The research question: *Has the COVID-19 pandemic affected the perception of climate change as a threat amongst Western and Eastern Europeans?* was answered by conducting two separate OLS regression analyses. The results from comparing the regression analyses led to the acceptance of **H1:** *The COVID-19 pandemic has affected the perception of climate change as a threat differently in Western and Eastern Europe*. These results may indicate that the differences in values in the inhabitants of Eastern and Western Europe, still have an effect on the perception of climate change as a threat. Western Europeans, who display "post-materialistic" values, showed a different perception of climate change as a threat when compared to Eastern Europeans, even during a pandemic, which is a crisis unrelated to climate change. Western Europeans perception of climate change as a threat was higher when compared to Eastern Europeans during the COVID-19 pandemic. The "post-materialistic" values might have led Western European individuals to emphasize their quality of life and self-expression, which in turn led to a higher willingness to prioritize the protection of the environment. On the other hand, Eastern Europeans who display "materialist" values viewed climate change as a less serious threat during the pandemic when compared to Western Europeans. These "materialist" values led to a higher emphasis on the individuals' economical and physical security since the pandemic affected both of these negatively. This in turn, left less room for concern about climate change amongst Eastern Europeans. Furthermore, the individuals from Eastern Europe might have been affected by the finite pool of worry effect, whereas the pandemic had shifted their focus away from the threat of climate change and led them to display worry about other problems such as their economical and health status, which had been affected negatively by the COVID-19 pandemic. The heightened perception of climate change as a threat in Western Europe when compared to Eastern Europe can be due to the activation of the psychological mechanisms of norms of fairness and reciprocity, feelings of gratitude towards others, and an endorsement of a personal legacy motive. Furthermore, the pandemic might have led more Western European than Eastern European individuals to realize that climate change is a human-caused issue that they can affect, which could have led to a heightened perception of climate change as a threat. The pandemic might have also led to a heightened environmental consciousness among Western Europeans when compared to Eastern Europeans due to the alteration of habits caused by the COVID-19 restrictions, since individuals tend to become more environmentally conscious when their old habits are disrupted.

Regarding the generalisability of this study, it would be difficult to allege that these results could be generalised to other parts of the world. Because the perception of climate change as a threat varies vastly amongst different countries, these results may not be generalised to other continents. As an example, more prosperous countries tend to have a higher concern for climate change than less prosperous countries.[105] Therefore these results from the prosperous

[105] Fairbrother, Malcolm (2013) "Rich People, Poor People, and Environmental Concern: Evidence across Nations and Time", *European Sociological Review* 29 (5): 910–922.

continent of Europe, may be hard to generalise to the other parts of the world. This study has just started to examine how the COVID-19 pandemic has impacted Western and Eastern Europeans perception of climate change as a threat. Possible future research ideas for this topic could be to redo this study by comparing data from before the pandemic with data after the COVID-19 pandemic to see if the perception of climate change as a threat has undergone more changes.

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Appendix

Table 4: OLS regression of the perception of climate change as a threat in 2019 & 2021, filtered by Western and Eastern Europe, and by using the control variables as the independent variables.

Variables	**Model 1** Eastern Europe 2019	**Modell 2** Eastern Europe 2021	**Modell 3** Western Europe 2019	**Modell 4** Western Europe 2021
Gender (Man=0)	.209*** (.046)	.505*** (.042)	.323*** (.080)	.320*** (.037)
Education (Low=0)	.102+ (.049)	-.094+ (.043)	.286*** (.038)	.248*** (.037)
Age	-.002 (.001)	-.007*** (.001)	-.006*** (.001)	-.004*** (.001)
Right political orientation (Left=0)	.110+ (.062)	-.319*** (.054)	-.759*** (.051)	-1.219*** (.047)
Middle political orientation (Left=0)	-.141+ (.058)	-.249*** (.051)	-.460*** (.044)	-.592*** (.042)
Intercept	7.65 (.90)	7.6 (.078)	8.35 (.069)	8.4 (.065)
$\mathbf{R^2_{adj}}$	0,006	0,019	.037	0,066
n	8542	11155	10924	12304

Significance levels: + p<0,1,*: p< 0,05,**: p<0,01, ***: p<0,001. Standard errors in parenthesis

Note: The variable for Eastern and Western Europe cannot be used when filtering answers from either Western or Eastern Europe