FACULTEIT ECONOMIE EN BEDRIJFSKUNDE

CLIMATE POLICY POLARIZATION IN EUROPE: ANALYSING THE DEBATE SURROUNDING THE BELGIAN NUCLEAR EXIT AND THE EFFECT OF SOCIAL MEDIA ON POLARIZATION

Aantal woorden / Word count: <17790>

Mathijs Vansieleghem
Stamnummer / student number : 01900270

Promotor / supervisor: Prof. Dr. Mariateresa Silvi

Masterproef voorgedragen tot het bekomen van de graad van:
Master's Dissertation submitted to obtain the degree of:

Master in Economics

Academiejaar / Academic year: 2023-2024

UNIVERSITEIT GENT

Dedication

This thesis is the capstone and culmination of many years of interesting study in the field of economics. After 5 years marked by unique and enriching experiences, great challenges and several obstacles, from a pandemic to several medical issues, it is with both immense happiness and a slight hint of sadness I now say goodbye to the Economics program. It is with great pride that I am now able to present this work.

I would like to offer my gratitude to all those who have supported me along the way, from the smallest of supporter to the biggest. I would especially like to thank my parents for giving me this opportunity and supporting me for the last 23 years. I could not have finished these studies without their support and am forever grateful for all the chances they have given me.

Further, my sincerest gratitude goes out to my promotor Prof. Dr. Mariateresa Silvi, for guiding me through the process and offering critical insights when I needed them, I could not have wished for a better cooperation.

Thank you also to all those who participated in the survey experiment, and especially to those who used their online reach and network to spread it far and wide. A special thanks goes out to Joris Verschelde for proofreading and correcting any language mistakes in this work.

Confidentiality- and Scientific Integrity clauses

Dutch

De auteur en de promotor geven de toelating deze masterproef voor consultatie beschikbaar te stellen en delen van de masterproef te kopiëren voor persoonlijk gebruik. Elk ander gebruik valt onder de beperkingen van het auteursrecht, in het bijzonder met betrekking tot de verplichting de bron uitdrukkelijk te vermelden bij het aanhalen van resultaten uit de masterproef.

Ik verklaar dat het onderzoek verlopen is volgens de regels die gelden inzake wetenschappelijke en academische integriteit. Ik verklaar kennis te hebben genomen van, en gehandeld te hebben in overeenstemming met, de ethische code van de faculteit.

English

The author and promotor grant permission to render this masters dissertation available for consultation and to copy parts of the masters dissertation for personal use. Every other use falls under copyright, in particular regarding the obligation to explicitly cite the source when quoting the results of this masters dissertation

I declare that the research has been carried out in accordance with the applicable rules regarding scientific and academic integrity. I declare that I have taken note of, and have acted in accordance with, the ethical code of the faculty.

Contents

List of Tables

List of Regression Equations

List of Figures

1 Introduction

While the science on climate change and its effects has become ever clearer, the debate surrounding climate change, its causes, and possible solutions has become more polarized and heated than ever. This aversion of some voters towards specific climate policies is described by Campbell and Kay (2014) as "Solution Aversion", a specific disagreement on the method and perceived implications of the policy. This rise in actual and perceived polarization has led to challenges in cooperation on the policy level, rising adversarial feelings between political factions, and negative impacts on the effectiveness of policy measures taken by governments. (Enders & Armaly, 2019; Iyengar et al., 2019; Judge et al., 2023) In short, the effects of polarization are barriers to effective cooperation and the implementation of highly needed climate policy. Seeing as the climate change debate consists of many lower level debates such as the existence of man-made climate change, the urgency of policy action, adaptation vs. mitigation, the most efficient ways to limit greenhouse gases, etc.

This thesis intends to study the levels of both opinion and intergroup polarization in the nuclear exit debate and the polarizing effects of social media posts through the use of a survey experiment. I have decided to limit the scope of this thesis to the highly relevant issue of the Belgian nuclear exit. This debate is a textbook example of a debate concerning the most efficient way to curb the emission of greenhouse gases. It has been an important topic raised by the opposition against the current government and continues to stay relevant in the discussion about the electrification of society. The implications of nuclear related policy taken in the present will have far-reaching ramifications for multiple decades through government finances and dependency on certain energy sources. The timing of this research could not be more opportune as this survey experiment will be conducted right within the campaigning period for elections on all political levels in Belgium (Federal, Regional, and European). For better or worse, climate change in general, and the nuclear exit in particular, have shaped up to be important issues in the campaign leading up to these elections. (MDK, 2024; NVA, 2024; Struys, 2024) Awareness around positions in this debate should thus be relatively higher than usual, creating an opportune environment for studying the effect of social media posts in shaping the opinions and perceptions of opinions of the electorate on these issues.

The choice for the nuclear phase-out as my field of study was very straightforward. It is an issue on which several parties have taken clear opposing stances, and the outcome of this debate and the policies surrounding this issue will have financial and climate consequences for decades to come. I have chosen not to make a judgement on which policy choice is optimal in this debate in order to focus specifically on the polarization effect of social media in these public debates. This research is a continuation of work in the field of polarization and its determinants. (Ahler, 2014; Banks et al., 2021; Merkley & Stecula, 2021)

I aim to find out whether or not exposure to social media posts has significant effects on different types of polarization and additionally try to confirm the Spiral of Silence theory set forth by Noelle-Neumann (1974), specifically within the nuclear debate. To this end, I first studied the work that came before me in the field of polarization: How to define polarization, what potential causes might be identified, what the effects of polarization on decision making might entail; finally focusing on the nuclear debate and the key drivers of opinion within it. After this, I evaluated several possible methodologies and decided upon a survey experiment specifically testing the effect of X (Twitter) posts on polarization. Throughout the rest of this thesis I will refer interchangeably to either the "nuclear exit" or the "nuclear phase-out" as both are used in the literature.

2 Literature review

2.1 Defining Polarization

To explore the concept of political polarization, it is key that we first define this concept and its many subdivisions. Key to an understanding of polarization is the realization that there are multiple types of polarization; and that there are many conceptualisations and definitions of polarization. As argued by Schedler (2023) academics have been struggling to find a unified definition of polarization. They make an attempt at unifying definitions by creating a very generalized definition as "a form of public conflict" that has gone "from healthy to pathological competition" because of political intolerance. For a more analytical approach to the problem, I followed the work of Judge et al. (2023). They distinguish between 4 types of polarization each defined by 2 axes. In what follows I will explore the following four concepts: Actual Opinion Polarization, Perceived Opinion Polarization, Actual Intergroup Polarization, and Perceived Intergroup Polarization. Important concepts and innovations in this field are the inclusion of emotional processes in polarization and making the distinction between actual and perceived polarization. Other typologies, such as the one proposed by van der Veen (2023) exist, but will not be elaborated on in this thesis.

2.1.1 Actual Opinion Polarization

Koudenburg et al. (2021) defines Opinion Polarization as "a situation in which the state of an opinion distribution is such that there are opposing viewpoints within an opinion spectrum". It is characterized by opposing ideological viewpoints about the issues, an adversarial nature in this opposition is crucial to the definition. Judge et al. (2023) notes that this form of polarization is generally characterized by bimodal clusters of linked opinions where people are likely to repeatedly align within the same groups, this process is known as partisan alignment.

Polarization is not present in all ideological discussions, evidence from Evans (2003) finds that some issues, such as abortion and sexuality, are heavily polarized whereas other possibly contentious issues such as race and gender have depolarized. They conclude that while elected officials have become increasingly polarized on economic issues, the general public has instead polarized on moral issues. Although we have recently been confronted with cases of polarization in the political arena, there is a robust debate about the size of existing polarization. (Abramowitz & Saunders, 1998; M. Fiorina et al., 2008)

Evidence for opinion polarization in the climate change debate is found by Brewer (2012) for the United States. They find that there is a large majority of voters who believe in the existence of man-made climate change. There is however evidence for polarization across the political spectrum concerning the policy choices needed to tackle said climate change. McCright et al. (2016) concur, finding a consistent ideological divide concerning climate change in Western European countries. Notable is the absence of such a divide in former Soviet Union countries, although the authors nuance this finding, left-right differentiation might be harder to identify due to the specific political histories of these countries, and climate change might be perceived as a less pressing issue in these countries. These findings are corroborated by McCright and Dunlap (2011b), who find a large divide on climate change opinions between liberal and conservative citizens with liberal citizens being far more likely to align their opinion with the scientific consensus. They observed growing polarization for the period of 2001-2010 by analysing Gallup poll data.

2.1.2 Perceived Opinion Polarization

Perceived opinion polarization can be defined as "the perception, whether accurate or inaccurate, of differences in public opinion about issues or ideology" (Judge et al., 2023). In effect, this is the public's perception of the size of opinion polarization in their society. This is greatly shaped by political narratives and news media reporting. These beliefs about other's beliefs can be an important field of study. In a study on US data, Enders and Armaly (2019) find that perceived polarization is larger than actual polarization and that ideological opponents are perceived as holding more radical views than ideological allies.

2.1.3 Actual Intergroup Polarization

Intergroup Polarization, also referred to as affective polarization, deals with the emotional reactions towards the ideological out-group. As elaborated on by Iyengar et al. (2019) party political distinctions are often formed along broader societal categories because of their stability over time. They separate the notions of opinion polarization and intergroup polarization as they find that opinion polarization is not a necessary condition for intergroup polarization to form. The seminal work of Iyengar et al. (2012) argues that even arbitrary divisions between people can arouse positive feelings for the in-group and negative feelings for the out-group, but that the more important the division is to the person's identity the stronger the bias towards out-group members becomes. A lot of the academic work on intergroup polarization has been conducted on data collected in the United States, the work of Reiljan (2020), however, stipulates that this trend is also present in European nations, this allows us to review the findings of research conducted in the US and tentatively generalize them to the European Union. Interesting to note however is the existence of large differences in affective polarization across Europe, with Central Eastern and Southern Europe being more polarized than the US, while Northwestern Europe is found to be more moderate than the US. As this thesis focuses on Flemish social media users this would suggest that we might find a lower rate of intergroup polarization than studies conducted in the US.

2.1.4 Perceived Intergroup Polarization

Likewise to perceived opinion polarization, perceived intergroup polarization deals with perceptions about the size of polarization between societal groups. van der Veen (2023) defined this very succinctly as "the extent to which diferent political groups feel distant from one another". As discussed by Druckman et al. (2022) these perceptions can often be very far removed from reality. People often falsely view all members of the out-group as they view the most radical and vocal members of that out-group, often spurred on by biased media coverage or interactions on social media.

2.2 Sources of (Climate Related) Polarization

Political polarization is seen as a growing problem that continues to escalate in modern Western societies. What is causing this problem and where should our attention lie in an attempt to reverse this split? Several factors contribute to the formation of polarization within a society, in what follows I will attempt to highlight the most important ones.

2.2.1 Traditional News Media

The narratives created by news media can profoundly impact reality. For news media in the United States, Levendusky and Malhotra (2016) find a growing prevalence of stories and discussions concerning polarization starting in the 2000s. They further find a generalization of discussions of polarization. Where in the past the discussion of polarization was centered around 1 or 2 specific issues, polarization is now increasingly discussed as a general phenomenon. There is also a general trend of focusing on instances of uncivil discourse

and lack of a will to compromise in these narratives. The authors find this focus on polarization within media narratives to have a positive impact on intergroup polarization, especially on perceived polarization. A possible effect they highlight is the "anti-cue", where a negative reaction to the perceived presence of polarization leads a person to moderate their opinion towards the median, thus decreasing actual opinion polarization. They also find evidence to support this effect. Earlier work by Levendusky and Malhotra (2013), by way of an experimental setup, found support for the existence of a 'false' polarization created by media narratives about the societal debate. In this way the media reporting about polarization as a pressing and important issue is likely to raise the perceived polarization within society.

Furthermore, Ahler (2014) finds perceptions of polarization to be self-fulfilling. A person who is made aware of the actual opinion distribution is highly likely to moderate their attitudes and opinions. While most people can correctly identify the level of extremism within their own ideological group, he also finds a tendency to "overattribute extremism to the out-group". Additionally, Prior (2007) argues that the fragmentation of media sources, and thus more choice for the population has led to a decrease in exposure to conflicting opinions. In addition, work by Melki and Pickering (2014) studying OECD data finds evidence for a statistically significant positive correlation between media penetration and polarization. Further evidence for the stance of Prior is found by Iyengar and Hahn (2009) for the existence of an "echo chamber" effect in traditional media. In an experimental setting they find that demand for news and the willingness to read and to trust an article is directly linked to the perceived political stance of the publication. In this way people holding opposing viewpoints are less likely to come into contact with political content they do not agree with. Even for non-political content or so called "soft news" this preference is measurable and significant. Important to note is that for Republicans this segregation has already largely been fulfilled by the dominance of Fox News. For Democrats there is, until now, less evidence that points towards a current echo chamber, though current trends project it emerging.

Work by Babutsidze et al. (2023) finds that in general higher media consumption is correlated with more pro-environmental attitudes. A disparity is however recorded depending on the political leanings of the media consumer. Progressive consumers tend to develop more pro-environmental opinions while in general conservative consumers tend to develop more anti-environmental opinions. Brulle et al. (2012) concur with these findings, stating the following regarding climate change: "The greater the quantity of media coverage of climate change, the greater the level of public concern." Further evidence for this effect is found by Corner et al. (2012) in an experimental setting. They find that people process new information about climate change in different ways. Those that were already sceptical were more likely to find sceptical articles about climate change to be more convincing than those that were non-sceptical. Meanwhile those that were less or non-sceptical found the sceptical article to be less reliable and convincing than a pro-climate change editorial.

Of course the framing of the presented information can have a profound impact on how the media consumer processes said information. Nisbet (2009) argues that there are general categories in which these frames fall. They argue that partisan news sources frame the issue of climate change very differently. Where a Democratic leaning news source is more likely to frame the issue as using a "Social Progress" or "Economic Development" frame where the challenge of climate change might push us to develop new ways of living and new technologies ultimately leading to a better society a Republican leaning news source is more likely to use a "Scientific and technical uncertainty" or "Conflict and Strategy frame" where climate change is represented as a debate about whether or not there is scientific consensus on the issue, or that the issue is being used as a strategic political consideration by elites. These frames carry with them positive and negative associations regarding climate policy.

In the next section I discuss the effects of Internet access and social media platforms, but as argued by Baum and Groeling (2008) it is important to recognize and define a third intermediate category: "New Media". Where traditional media organisations such as the VRT in Flanders have long been the gatekeepers and had a monopoly on providing trustworthy information. With the advent of the internet and the world wide web came a proliferation of online independent news blogs that began challenging traditional media for that role of provider of trustworthy information. They do find strong evidence for a partisan bias in these new media sources on both sides of the ideological spectrum. They also find that the rise of these new media have had an effect on traditional non-partisan gatekeepers such as the Associated Press and Reuters. The AP and Reuters are aggregators of news which thus also aggregate stories written by these new media sources. Baum and Groeling (2008) find them to have a slight bias that leads them to prefer stories critical of conservative political actors.

2.2.2 Internet access and Social Media Platforms

Once heralded as a new age of information without gatekeepers and bias, the internet age has come with its own challenges in the information environment and information diets of citizens. Lelkes et al. (2017) studied the impact of broadband internet access on partisan polarization. They find evidence to support the hypothesis that the introduction of high speed internet has led to a rise in polarization but do not think this is the only determinant, nor the most important determinant in this rise of partisan polarization. Rather they find that this proliferation of high speed internet has fostered a new media environment which is more susceptible to polarizing forces. Barberá et al. (2015) finds evidence for the existence of "echo chamber" effects on social media, most notably on X (formerly Twitter), just as there were in traditional news media environments. The nature of the issue being discussed is however pivotal, political events are very likely to be discussed within like-minded circles while online discussions of cultural or sporting events are less likely to be had within online "echo chambers". Perhaps surprisingly they find an asymmetry in this effect, with left wing social media users being more likely to engage with cross-ideological content online than right wing social media users.

As found by Banks et al. (2021) through their experimental design, it is especially perceived opinion polarization that is enlarged by biased social media posts. Their experiments do not find a strong impact on actual intergroup or opinion polarization. They stipulate that this effect is mostly caused by negative frames by political opponents. Nuance is brought by the work of Bakshy et al. (2015) studying Facebook friend networks. They find that on average around 20 percent of people's friends are from across the political aisle and see this as evidence for exposure to politically different viewpoints. They posit that the composition of your friend network is thus an important determinant for polarization of Facebook in particular and social media in general. They argue that this might allow for more cross-ideological exposure than the traditional news media where people also decide their own demand for news. A review by Tucker et al. (2018) adds that audiovisual content on social media sites are likely to be more persuasive and impactful than textual content disseminated on social media. A case study by Flamino et al. (2023) on Twitter about the 2016 and 2020 US presidential elections found that in this period influencers from traditional media organisations lost influence and were mostly replaced by influencers with links to centre and right-leaning political organizations. Such shifts in influences can have a profound impact on opinion formation in these information ecosystems. Shifts in these social media platforms and their algorithm or policies can thus effect the findings of further research. They also found evidence for a growing echo chamber effect across this period.

Boxell et al. (2017) do not agree with the findings elaborated on above. They rather find that internet use only explains a small share of the rise of actual polarization. Their most surprising finding is that

opinion polarization is largest for those 65 years of age and up, and thus the least active internet users. This strengthens the hypothesis that traditional news media play a large part in the growing polarization of societies. As this study was conducted on opinion polarization, the findings of the works cited above are not invalidated by the findings of Boxell et al. (2017).

Matei et al. (2021) argues that social media such as Twitter and Facebook might play an important role in spreading information, as they are faster than traditional media in responding to chronic crisis situations and are a main driver of search activity on the topic. Newspapers were found to be less sensitive to responding to news of a drought. They thus argue that social media play a role in setting the agenda for traditional media.

Specifically for climate related polarization, research by Babutsidze et al. (2023) confirms some of the effects measured above. They find that increased internet use is generally associated with more pro-environmental opinions; they do however show that the political preferences of internet users influence the effect of internet use on environmental opinions. Progressive and green minded users are likely to develop more pro-environmental opinions while conservative users tend to develop more anti-environmental opinions. This effect is found to be larger than the effect mentioned above concerning TV consumption. Within the context of Finland Chen et al. (2021) however add that climate politics are not more prone to polarization than other politically relevant debates. What they do find is that climate debates are subject to partisan sorting.

2.2.3 Elite Polarization, Elite Cues and Partisan sorting

Elite Polarization or Party Polarization is the process by which the political platforms of parties diverge over time, creating clearer distinctions between parties. Though elite polarization itself could cause frictions in solving climate issues, it is also suspected to have further polarizing effects on the population. Gabel and Scheve (2007) identify a significant causal effect of elite opinion on public opinion formation through an IV estimation. As argued by Banda and Cluverius (2018) this phenomenon has occurred in the United States over the last decades. They find evidence for a link between this rise in elite polarization and a rise in affective polarization, as voters are likely to view the stakes of policy making to be higher if they believe the opposing party or parties to be further removed from their policy positions. As found with (social) media effects there are also asymmetrical effects of (perceived) elite polarization. A rise in extremism by the opposing party is found to have a larger effect on affective polarization than a rise in extremism for the preferred party. They also mention the possibility of this animosity being stoked by political leaders, leading to voters regarding those on the opposing side as untrustworthy, or leading to confrontations.

A comprehensive statistical analysis of affective polarization by Boxell et al. (2024) finds a direct positive and highly significant correlation between elite polarization and affective polarization. Specifically within the European Union Sohlberg (2017) studied the effect elites have on climate change related opinions. They find that when there is unity amongst political elites in support of climate policies, climate change is seen as a more pressing issue while if there exists a division amongst political elites it is not seen as a pressing issue by some. They believe the effect of party polarization on climate opinions has been underestimated in previous research. This effect can even be measured in individual actions undertaken by consumers. A time series analysis by Brulle et al. (2012) draws an even sharper conclusion: elite polarization is the most important factor influencing the public opinion on climate change. They believe that the impact of these elite cues on the discourse is strengthened by media coverage which is a function of these cues. Ross Arguedas et al. (2022) concur with this finding of elite cues as a critically important determinant. A perceived lack of consensus amongst political elites leads many voters to doubt the importance of certain issues such as climate change or COVID-19.

An interesting nuance added by Merkley and Stecula (2018) speculates that voters might also sometimes use cues by opposing party elites to form their opinion, in this way these cues would have the opposite of the intended effect. They contend that the abundance of communication from Democratic Party operatives combined with a lack of signals from Republican Party operatives might have had a boomerang effect, worsening the acceptance of climate measures within certain political groups. This position is elaborated on by Merkley and Stecula (2021) for the case of climate scepticism. Using a time-series analysis they find out-group cues by Democratic Party politicians caused a backlash with Republican party voters, leading them to believe in climate scepticism even more. Such a backlash is not found in Democratic Party voters; the authors believe this to be due to an already widespread acceptance of climate science in this group. Their analysis did not find a depolarizing effect following a cue showing consensus between political leaders.

Pre-eminent scholars on the matter M. P. Fiorina and Abrams (2008) offer us a new important concept: Partisan sorting. They contend there is little evidence for increased opinion polarization over the past three decades, but that voters have begun to identify personally with their preferred political parties. In this process a voter becomes more likely to hold certain opinions because they are held within their party of choice; an increase in a sort of "inter-issue correlation". When the elites of said parties start polarizing this can lead to a larger divide within societal discourses and larger sorting effects. In this way people do not choose parties by comparing party programmes and stated positions, but rather by choosing which party to identify with. Davis and Dunaway (2016) find that elite polarization, and even the perception of it, has a highly positive impact on party sorting. They also studied the effects of media fragmentation on party sorting. They find mixed results for this effect, concluding that it can only truly be confirmed for those citizens that are highly interested in politics, and thus paying attention. Mason (2015) posits that this rise in sorting has led to an intensification of partisan bias, a rise in political anger and a rise in activism. Layman and Carsey (2002) argue that the response of the mass electorate has been rather limited with only those who already strongly identified with a party bringing their attitudes towards consistently following the party line. They argue that a large part of the populace has only a limited knowledge of the level of polarization that has occurred between the parties in the US political system.

2.3 Effects of Climate Related Polarization

Climate change is a complex societal problem that requires a large scale political project to be rectified. Through its effects on political decision making and science acceptance polarization can have a big negative impact on climate policy. (Judge et al., 2023). As mentioned before, the work of Sohlberg (2017) explores the direct effects of party polarization on personal climate related actions and finds that a higher level of polarization is associated with a lower level of personal actions undertaken. They also find that division amongst elites leads to climate change being perceived as a less pressing threat by citizens. Through this threat channel polarization is also shown to have an negative effect on perceptions about the beneficial economic effects of halting climate change. Concerning private actions, research by Coffey and Joseph (2013) finds a link between party identification and non-political actions related to climate issues such as recycling and nature conservation. They argue that this type of "lifestyle politics" extends the political into the non-political areas of life. This potentially has effects due to uneven uptake of governmental incentives and messaging. Linde (2020) argues that polarization and party cues can affect public risk perceptions on the issue leading to an underestimation of the importance of the threat. They also find that the more citizens perceive polarization the higher the chance they are less concerned about the topic even leading some to detach themselves from the debate or to lose trust in the government and its policies. Enders and Armaly (2019) found different effects for actual opinion polarization and perceived opinion polarization. Actual opin-

ion polarization has no significant effect on campaign participation and trust while having a negative effect on voter turnout. On the contrary, perceived opinion polarization has a strong positive effect on participation and voting while having a large negative effect on trust in government. Perceived polarization also creates loathsome feelings towards opposition party voters and activists. They speculate that this high perceived opinion polarization could lead to a higher actual intergroup polarization. Levendusky and Malhotra (2013) find that high perceived polarization due to narratives surrounding the debate is likely to cause higher rates of intergroup polarization and negative feelings about political figures while leading citizens to moderate their issue positions. They thus find that this 'false polarization' becomes a self-fulfilling prophecy where perceptions of polarization cause more polarization in society.

Evidence for a large gap between perceived and actual polarization is found by Sparkman et al. (2022). They find that 80 to 90 percent of Americans underestimate popular concerns about climate change and support for transformative climate policy. The existence of climate change in and of itself is not a polarized issue. This perceived polarization leads to a lack of a perceived political support base thus slowing down political action on climate change issues. They argue that these misconceptions might be a self-fulfilling prophecy where perceived polarization turns into actual polarization. This pluralistic ignorance, as this phenomenon is called, contributes to self-silencing within the climate debate argue Geiger and Swim (2016). A greater awareness about the actual general level of concern around climate change makes citizens more likely to participate in conversations on the topic. Their study finds that this effect is caused by the expectation that a person will receive more respect and look more competent in the conversation when their interlocutor agrees with them on the topic. They also find that concerns about "being liked" or "being disliked" do not play a role in this effect. Such effects have long been described by Noelle-Neumann (1974) with her "Spiral of Silence" theory. This theory posits that before giving their own opinion on a subject people scan their environment to see which opinions are held by the majority. If they perceive themselves to be in the minority they are more likely to self-silence, especially on controversial topics. Of course this behaviour is a vicious cycle: perceived minority members self-silence their opinion leading the next person who scans the environment to have even more reason to believe they are in the minority eventually turning a perceived minority into an actual one or reinforcing an existing minority position.

Van Boven et al. (2018) found that affective polarization can also affect reactions to policy proposals. While a large majority of both Republicans and Democrats support climate policies they find that biased evaluations of policy proposals exist. Voters support the exact same policy more when it is proposed by their favoured party as opposed to when it is proposed by the opposing. Voters are also more likely to oppose policy they agree with when it is proposed by the opposing party. These psychological barriers form a great challenge to climate policy as partisan allegiance can override rational policy choice by voters. Claims from the opposing party are also met with more scepticism than claims from the preferred party.

Levendusky (2010) argues that (elite) polarization can also have positive effects. Elite polarization leads to increased opinion consistency of citizens through clearer cues sent by political elites. This effect is present even for citizens that do not have a strong affiliation with a party. This positive effect does however have important caveats: This consistency is linked to party power and cues, and thus vulnerable to manipulation by elites. In this way voters make choices that are better aligned with their opinions and attitudes but those opinions become more malleable by political elites.

2.4 Support for Climate related policy measures

2.4.1 Current support

Dechezleprêtre et al. (2022) find that across the world, and especially within OECD countries there is a large majority of the population that believes in climate change and that their respective government should join the fight against climate change. They do however find there is more doubt about, and resistance against specific climate policy measures. Lee et al. (2015) elaborates on this with the finding that climate change awareness is not evenly distributed across the world, with awareness being higher in the so called developed world (North America, Europe, and Japan) than in developing countries in the Global South. A striking observation here is that those in the developing world are however more likely to perceive climate change as a larger personal threat to their livelihood and safety than those in developed world are. This perception is not entirely based on nothing, as it is argued by Hickel and Slamersak (2022) that climate change, and the measures needed to mitigate it are currently perpetuating colonial power and legacies. They argue that those in the West who have the highest standard of living and emit the most greenhouse gasses are the least likely to suffer the direct environmental effects of global climate change, or the welfare effects of significantly reducing the emissions of the human race. Hammar and Jagers (2006) find strong evidence of general resistance to a carbon tax in Sweden, specifically a policy intervention that is supported by the general consensus of economists and environmental policy specialists. They do argue that the specific design of the tax could possibly influence public support on the issue. They caveat their findings by placing the opposition to a CO2 tax within the general opposition towards new taxes. When considered in this context the CO2 tax is one of the best performing and most popular proposed taxes. Carattini et al. (2019) also finds a population wide opposition to a carbon tax citing multiple examples of failed referendums or ballot initiatives. They do however argue that this opposition can quickly fade after the passing of carbon tax legislation as they are (sometimes) exposed to the positive effects of the policy.

2.4.2 Determinants of support

A large scale survey study by Lee et al. (2015) across 119 countries found the support of the population for climate related measures to be one of the major factors in determining the success of these measures. As such understanding what drives support and resistance to climate measures is of the utmost importance to policy makers and researchers. They further state that while some determinants are universal others are not, we should thus be vigilant in not propagating a one-size-fits-all approach in fostering support for climate measures and really tailoring every approach to the local situation. Dechezleprêtre et al. (2022) argue that the 3 most important factors determining support for specific climate measures are: the perceived effectiveness of the measure in reducing greenhouse gas emissions, the perceived distributional impacts on low-income households and the fairness of those impacts, and the perceived impact on their own household and finances. As expected they find that when people are provided with correct information about these 3 considerations they are more likely to support beneficial policies. Perhaps counter-intuitively they perceive no positive effect of higher concern about, or better general knowledge about climate change on support for specific policies.

Ziegler (2017) studied the specific determinants of support for the US, Germany, and China. They argue that political identification is one of the deciding factors with conservative non-green oriented citizens being found to have a significantly lower willingness to pay for publicly funded climate change mitigation measures. They do however note that this effect of political orientation cannot solely be regressed on a left-right political axis, with political self-identification being multidimensional and intricate. They also find a strong correlation between political orientation and environmental values. As demonstrated by Camp-

bell and Kay (2014), the design and implications of the considered policies are pivotal for some, they find that some of the aversion by Conservative Republican voters towards climate policy is the perception of a top down government initiative. They could perhaps be persuaded by initiatives perceived as more market friendly or market integrated. In the same vein Carattini et al. (2019) argue that support for a (global) carbon tax could be generated by redistributing the revenues of such a tax back to the population, as happened in Canada in 2008. General support for the measure can be increased by a gradual introduction of the measure and ensuring perceived societal fairness with those most able to pay the tax paying the most. This would place the United States of America and most of Europe in the position of paying the highest taxes in the case of a global tax on carbon. Influential economists Kotlikoff et al. (2021) however argue that the best way to introduce a carbon tax is to go one step further and not just ensure fairness in the here and now, but also ensure intergenerational fairness. In their proposal and their model both the citizens living today and those living in the far future can benefit by presenting current day citizens with net positive transfers in return for lowering carbon output. In return the citizens of the future would receive net negative transfers thus in effect paying the generations before them to lower output in such a way that they experience a less damaged climate and thus less of the economic damage associated with said climate damage.

Hammar and Jagers (2006) studied the effects of trust in general, and trust in politicians specifically for the nation of Sweden. For this they analyzed the effects of differing levels of trust on support for a CO2 tax, a policy generally agreed upon by economists. They find no significant effect of general trust on support while trust in politicians was found to be a statistically significant determinant of support for a CO2 tax. They speculate that trust in politicians translates directly in trust that those politicians are competent and produce efficient policies. Perhaps surprisingly the effect of car ownership on support is only significant for the low trust group. The effect of self-interest on support for the CO2 tax is thus quite limited. Dietz et al. (2007) agrees that trust is an important determinant of support for environmental policies, this time specifically trust in environmentalist activists and a lack of trust in industry. They further find evidence for positive effects on support of higher recognition of the consequences of climate change, higher income, and being black. Age was also significant in their regression, this however contradicts previous research into climate policy. They also argue in furtherance of Ziegler (2017), that political orientation is a strong determinant, they however contend that this determinant is indirect, seeing as the respondents political orientation is downstream from their values. Their findings must be caveated by mentioning the small size and possible unrepresentative nature of the sample. They conducted their study on 316 university students only selected across 2 U.S. states.

McCright and Dunlap (2011a) find evidence for a so called "conservative white male effect". This particular societal group is more likely than others to exhibit climate denying opinions. Perhaps surprising those of these group that self-report the highest level of comprehension about climate issues are the most likely to exhibit climate denial. Thus they argue that these denials are in essence a form of identity protective cognition. As they are well off within the current economic and societal system they are subconsciously driven to attempting to justify the current system under which we are living. McCright (2011) argues for a more general existence of this identity protective cognition and defence of the current system. He argues the tension between those that criticize the economic system and points out the dangers posed by climate change and those that defend the current system against criticisms has been an emerging trend that is aggravated by elite polarization and the fragmentation of the media landscape.

2.4.3 Nuclear phase-out

2.4.3.1 Politics of Nuclear Phase-Out

Corner et al. (2011) found the nuclear debate to be deeply divided in the United Kingdom, with only a small amount of citizens surveyed showing unconditional support for nuclear power given its potentially high risks, with the broader public having a wide range of opinions and worries about nuclear energy. They did find that those who were more environmentally conscious were less likely to support nuclear energy. Perhaps most important they found that even these environmentally conscious citizens would grant conditional support for nuclear reactors when the issue was presented through a "reluctance acceptance framing" This allowed them to voice their reluctance about supporting nuclear energy due to its risks but support it in the fight against climate change and for energy security when other options are not viable, seeing it as a "necessary evil". Perhaps unsurprising the work of Tanaka (2004) finds that when asked about the general concept of nuclear energy people consider both the risks and the benefits of this technology but when presented with the prospect of a new nuclear reactor in their area, the perceived risks dominate considerations. This is a confirmation of the NIMBY or "Not in my backyard" phenomenon. Whitfield et al. (2009) concurs that perceived risk is the main determinant in support for nuclear energy but adds that this risk is a function of personal values and beliefs, and trust in nuclear governance institutions. They further add that opinions about nuclear energy are "asymmetrically plastic" meaning that they are easily pushed towards opposition to and lacking trust in nuclear energy following negative events or accidents related to nuclear energy. Yet it is difficult to sway opinion to the pro nuclear energy side even over long periods. Their findings confirm the hypothesis that trust is fragile, once broken it becomes hard to restore to the same level. Keller et al. (2012) argue that affect and emotion are important factors in the formation of these risk perceptions. In their survey they find that respondents who were opposed to nuclear power plants mainly associated them with risks, negative feelings, catastrophes, and other negative associations while those that favored nuclear power plants mainly associated them with energy production, necessity, and other positive associations. They argue these feelings of dislike have important implications for the communication about nuclear power plants. Rinscheid and Wüstenhagen (2018) concur that voters rely on affective heuristics in forming opinions on nuclear divestment and add that political actors can alter and manipulate public affect through various strategies. They also find that other environmental solutions such as solar power are faced with generally positive emotions increasing the chances of success for their adoptions, and by proxy for a successful nuclear phase-out. This effect of emotion and the worldview of citizens is also confirmed by Peters and Slovic (1996), who find it to be one of the most important drivers of opinion on nuclear energy.

The influence of nuclear disasters such as the ones in Tsjernobyl and Fukushima cannot be understated. They were directly responsible for worsening perceptions of the nuclear sector and in the case of Fukushima directly causing the nuclear phase-outs of multiple countries as argued by Feldhoff (2014). This change drastically drove up the carbon output of energy generation in Japan as the lost nuclear capacity was replaced by conventional thermal power plants. This while Germany expanded their renewable energy production in an effort to replace the shuttered nuclear generation capacity. Sadly a significant part of the lost capacity was also replaced by coal-fired power plants primarily burning lignite (Feldhoff, 2014). Siegrist et al. (2014) studied the effect of the accident at Fukushima on personal attitudes of citizens concerning nuclear power generation. Using a repeated survey, with the first wave conducted 15 months before the accident and the second wave conducted 20 months after it, they found a large negative shift in the support for nuclear power plants. They argue that conversion of proponents to opponents was primarily due to shifts in benefit perception, potentially due to no person or organization being willing to advocate for the benefits of nuclear power following the accident. They propose a possible Spiral of Silence effect where those in support of nuclear power no longer perceived themselves to be in the majority and thus self-silenced their support for nuclear

energy.

Fuhrmann (2012) explains why nation states decide to rely on nuclear energy. They find economic growth and energy security to be the most decisive considerations in whether or not to build nuclear reactors. They also found that while major nuclear catastrophes such as those at Fukushima and Tsjernobyl have a negative effect on the building of nuclear reactors, smaller and less publicized accidents at nuclear power plants do not have these negative effects. Cho (2022) studied the differing cases of Germany and South-Korea: While Germany decided to phase out nuclear power directly following the disaster at Fukushima, South Korea continued expanding their program until 2017 before shifting over to a phase-out. They argue that the different political institutions of these nations meaningfully impact the adaptation of these policies. They further argue that the importance of economic considerations and public opinion can sometimes be sidestepped at important political junctures such as in Germany following the disaster at Fukushima where previously the government had supported nuclear power out of both economic and environmental considerations they swiftly reversed course in the face of a public backlash. These diverging effects of the same shock on 2 nations yet again confirm that there is no one-size-fits-all policy possible in environmental issues. Another important consideration in the choice for nuclear energy is as a way of lessening dependence on other states with regard to energy provision.

2.4.3.2 Abridged History of Nuclear Energy in Belgium:

The use of nuclear energy has long been a highly disputed issue in Belgium. Belgium was one of the most important players in the early development of nuclear technologies, with most of the uranium being used in experiments being imported from its former colony of Congo. It became the third European country to exploit a nuclear power plant. Even before the nuclear catastrophes of Three Mile Island and Tsjernobyl, starting in the 1970s, there were large scale protests against the use on nuclear energy and lack of environmental protections to deal with the waste generated by it. Following the heightened public awareness caused by the previously mentioned catastrophes the frequency and size of these protests grew heavily. ("Kernenergie: Sprookje of nachtmerrie van 1939 tot 2025", 2015)

Plans for new nuclear reactors were shelved and eventually in 2003 the government reached a compromise with the law on the nuclear phase-out. The law scheduled a gradual decline in the use of nuclear power plants with the last one closing in 2025. ("Wet van 31 januari 2003 houdende de geleidelijke uitstap uit kernenergie voor industriële elektriciteitsproductie", 2003) In the years following this decision there were multiple delays proposed and adopted for this plan as the security of the energy supply was not secured. (Pauwels, 2018) The last major change of these plans occurred only recently. In 2020 it was confirmed that the government would proceed as originally planned in 2003, however later on struggles in the government would lead to the reversal of these plans and the prolongation of several nuclear reactors after they were previously shut down for several months. The issue has been a point of contention within the federal government ever since, with the Greens and energy minister Tinne Van Der Straeten defending the nuclear phase-out against the other government parties and opposition parties. (Steel & Van De Velden, 2024) The nuclear exit has become one of the pivotal issues in the 2024 elections with parties in the current government, which still supports a nuclear exit, declaring their willingness to reverse more parts of the nuclear exit in the coming legislature. (MDK, 2024)

3 Methodology

In this chapter I will lay out the practical side of my research. I will start by offering a short overview of the methodologies I considered for testing my hypothesis. I will continue by elaborating on my research strategy and finish with the data collection process and a quick overview of the data.

3.1 Considered methodologies

3.1.1 Processing pre-existing datasets

In theory reusing an existing large dataset has a myriad of advantages: You don't have to expend unnecessary effort, it allows you to combine several sources into 1 review, preventing sampling issues such as biased sampling or sample size issues due to a limited outreach and network that could be faced by a student writing a Masters Thesis. A lot of high quality (survey) data is collected by the European Social Survey and Eurostat for the entirety of Europe. (ESS, n.d.) In every edition of the European Social Survey around 1800 to 2000 Belgians are surveyed. If we account for the fact that approximately 56,3 percent of Belgians are Flemish this would lead to approximately 1050 Flemish people being surveyed. This sample size would in essence be sufficient for analysis; it is however impossible to filter out the Flemish entries seeing as the ESS is registered on the country level. Because of the presence of the Walloons in the sample, and given that the political debate in Wallonia is conducted almost entirely separately from Flanders this would lead to any conclusions from our analysis being deeply flawed. Especially regarding the topic of perceived polarization this survey would seem to be lacking relevant questions. Another drawback that would come with this option is the lack of questions tailored specifically towards the research question of this thesis. Eurostat also does not offer any specific or detailed enough dataset to study the research question of this thesis. Especially given that I would like to focus on the Belgian nuclear exit, relevant datasets are scarce.

3.1.2 Sentiment Analysis

Several Natural Language Processing models have been developed for use within the Dutch language. One notable example is the RobBERT model developed by Delobelle et al. (2020) at the KULeuven which is in essence an adapted model of the BERT model developed by researchers at Google (Devlin et al., 2019). RobBERT was specifically trained on Dutch language data and as such generally outperforms language models with broader purpose on Dutch language processing tasks. One of the largest advantages of this approach is that in this way large samples of text can be processed without the need for tedious and repetitive work by researchers. The scale of the data being processed is also an advantage to using NLP models for research purposes as we could possibly work with a sample of real life social media data. This is however made more difficult by the changes in the API use policy at X (formerly Twitter). Several pitfalls and disadvantages are however connected to the use of LLM and NLP models. Ambiguities present in the considered texts can complicate the classification task of the model: the use of sarcasm, idioms, abbreviations, idiosyncratic references, and typing mistakes. (Birjali et al., 2021; Wankhade et al., 2022) The choice of keywords to consider in the process is also vulnerable to unintended influence by the researcher. (Rosenberg et al., 2023) The high learning curve associated with the implementation of a specific Sentiment Analysis task is prohibitive for the use in this thesis. The lack of a clear and interpretable result also contributes to this option being less appealing for use with my research question.

3.1.3 Survey Experiment

A large amount of experiments have already been conducted in the research space surrounding polarization and its effects. These experiments range from measuring the effect of exposure to social media messages, to

the effect of traditional media coverage, to the effects of elite cues on voter consistency. (Banks et al., 2021; Levendusky, 2010; Levendusky & Malhotra, 2016; Overgaard, 2024) This approach offers many advantages compared to other approaches. One of the most important advantages of collecting your own data is that the questions can be phrased in the most efficient way to collect relevant answers to your research question. Experiments also offer large degrees of internal and external validity as they are precisely manipulated to only deliver relevant information to the participants. (Dafoe et al., 2018) Participants are then randomly assigned to treatment conditions, such as in an RCT, solving the issue of sample selection bias. This is the gold standard of causal inference. I am however not too naive to ignore the possible effects of sampling bias that could be caused by the limited circulation a survey could receive, controlling for characteristics and a sufficiently large sample size are thus needed for the validity of causal claims. (Acharya et al., 2018) Several pitfalls can however be identified in this approach. The researcher must make sure that the experimental conditions are correctly manipulated to ensure that measured effect is only due to the treatment. Precise wording is thus needed in drafting the questions and prompts used in such an experiment (Dafoe et al., 2018). Another potential drawback is non-compliance of participants due to the lack of direct control and oversight exerted by researchers in an online setting. Some participants might pay little attention to the experimental setup or the subtle wording of the questions. Because of this lack of attention to detail by participants causal inference of the effect of the treatment is potentially no longer valid. Harden et al. (2019) propose 2 possible solutions to mitigate non-compliance: recording vignette screen time latency and adding manipulation checks. The first solution entails recording the amount of time participants spend looking at the instructions provided by the researcher and specifying a minimum acceptable time spent. The second solution entails asking participants questions about the contents of the instructions provided by the researcher, those who cannot answer these questions correctly are non-compliant. The causal effect should then only be measured across participants that were found to be compliant in the experimental setup. The direct and clearly interpretable results of a survey experiment lend themselves best towards the goal set forth at the beginning of this thesis.

3.2 Research strategy

I was inspired by the experimental work of Banks et al. (2021) in which they test the direct effect of being exposed to a polarizing message on perceived opinion polarization. In their study, they look at the polarization between the two parties in the United States political system. Seeing as Belgium does not have a similar institutional setup, and because I would like to focus on environmental and energy issues, the dependent variable and subject of the survey will be adapted to this setting.

Concerning the choice of policy discussion to study, the nuclear phase-out appeared to be a uniquely polarized issue in the public consciousness. In the Flemish political debate most parties, and most voters, agree that man-made climate change exists and should be addressed. (*Eindrapport Klimaatenquête 2017*, 2017). Diverging opinions exist however concerning the policy choices needed to tackle this threat. One particularly salient debate in the public consciousness is that surrounding the Belgian nuclear exit. Nuclear energy, and a potential nuclear exit have been a hot topic for several decades with historical protests against the installation of nuclear reactors in Belgium and across Europe. Several political parties have made it a pivotal issue in their messaging and several parties have changed their position over the last few years. This topic can thus be useful in the study of the effect of social media posts on a range of polarization metrics.

For my goal of measuring the effect of social media posts I randomly spread the participants across 3 treatment conditions. The Pro-Phase-Out treatment condition was shown a tweet arguing for the nuclear phase-out. The Anti-Phase-Out treatment condition was shown a tweet arguing against the nuclear phase-

out. Finally, the Neutral treatment condition was shown an neutral informative tweet by the Flemish public broadcaster simply reporting on a meeting about the nuclear phase-out between ministers from the federal government. I also created a composite variable "Any Treatment" reflecting whether or not a person received either of the biased treatments.

3.2.1 Dependent Variables

When measuring Actual Opinion Polarization I regressed on the "Position" variable, this being the position participants take in the nuclear phase-out debate on a scale from 0 to 100, with 0 being equal to completely opposing it and 100 being equal to completely supporting it.

When measuring Perceived Opinion Polarization I chose to regress on 2 different dependent variables: "Opiniondivide", a measure of how polarized the participant perceives the debate to be on a scale from 0 to 100 with 0 being equal to perceiving no opinion polarization and 100 being equal to perceiving an extremely polarized debate. The "diffSpectrum" variable measures the difference between the perceived ideological alignment of those that support the nuclear phase-out and those that oppose the nuclear phase-out. I also conducted auxiliary regressions on the 2 factors that make up diffSpectrum to detect any asymmetrical effects.

When measuring Actual Intergroup Polarization I chose to regress on 3 different dependent variables: Those being "TrustSame", the level of trust the participant has for a person with the same opinion ,"TrustOpposing", the level of trust the participant has for a person with the opposing opinion, and "diffTrust", the difference between the level of trust the participant has for a person with the same opinion and the level of trust the participant has for a person with the opposing opinion.

When measuring Perceived Intergroup Polarization I once again chose to regress on 3 different dependent variables: "IntensSame", the level of emotional intensity the participant perceives for a person with the same opinion, "IntensOppo", the level of emotional intensity the participant perceives for a person with the opposing opinion, and "diffIntens", the difference between the level of intensity the participant perceives for a person with the opposing opinion and the intensity the participant perceives for a person with the opposing opinion.

For the Spiral of Silence regressions I regressed on 4 different variables representing the likelihood of the participant engaging in debate in several scenarios: In a group of like-minded people, in a group of people holding the opposing opinion, on social media, and in the workplace. Auxiliary regressions are included wherein the data is first limited to those support the phase-out (Position variable being higher than 60), than of those who oppose the phase-out, (Position variable being lower than 40) and lastly those who are neutral on the issue (Position variable being between 40 and 60). This should account for any asymmetrical effects.

Definitions of the dependent and explanatory variables used in my regression models can be found in Table 1 further in this section.

3.2.2 Control variables

Apart from the treatments mentioned above I chose to include several controls in the explanatory variables, these were the same for all considered models. These controls are Age, Further Education, a dummy variable equalling zero if your highest acquired diploma is a high-school diploma or lower and else equalling 1, and a male gender dummy equalling 1 when the participant identifies as male, otherwise equalling 0. In most

models Party is also present as a control variable. This is because of a theoretical consideration informed by intuition and confirmed to be important by Hammar and Jagers (2006) and Ziegler (2017) among others. The intuition being that parties perpetuate different discourses about the phase-out. Participants could be primed to recognize and react discourses they connect with their favoured party or others, for Intergroup Polarization this could come with spillover effects from general hostility between parties, for opinion polarization inter-issue correlation as described by M. P. Fiorina and Abrams (2008) would likely affect the results of the analysis. The inclusion of the Party terms was tested using the Likelihood Ratio test and was shown to be significant in the models where they were included. For the Spiral of Silence regressions I chose not to include Party as one of the explanatory variables, the Likelihood Ratio test again confirms this choice.

3.2.3 Testing OLS Assumptions

3.2.3.1 Multicollinearity

In order to measure the extent of multicollinearity in the data I calculated the Variance Inflating Factor for all basic models used in all regressions conducted in the Results section. None of the VIF's returned problematic values, with all VIF's being lower than 2 leading me to believe multicollinearity is not problematic in these models.

3.2.3.2 Heteroscedasticity of the Error terms

After first estimating every considered model using OLS estimation I performed White's test for heteroscedasticity for all models in the Results section. The results varied. Models that failed the White test for heteroscedasticity were re-estimated using EGLS to remedy the heteroscedasticity in the error terms. This implies that the estimators are slightly biased but consistent and asymptotically efficient

3.2.3.3 Autocorrelation

I further tested every considered model using the Durbin-Watson test for autocorrelation. Again the results varied widely. Models that failed the Durbin-Watson test were re-estimated using EGLS to remedy the autocorrelation in the error terms. This implies that the estimators are slightly biased but consistent and asymptotically efficient

3.3 Data

3.3.1 Data Collection

The survey (which can be found in Appendix A) was conducted from the 10th to the 16th of May. The survey was conducted through Qualtrics and was distributed through my personal social media accounts on Facebook, Instagram and X (formerly Twitter). The post was reposted by several personal acquaintances on both Facebook and Instagram. On X (formerly Twitter) the survey was reposted by 37 people with diverse follower demographics, leading to a more representative sample of social media users across all ages and convictions. The aim of spreading it across social media was to attempt to receive a wider and more random sample, ofcourse being mindful of the fact that the userbase of such platforms skews younger. The survey was started by 315 users, 218 of which replied to the entire survey. 16 of these answers failed to answer correctly on at least one of the 3 attention control questions. To insure data quality these entries were not considered in the analysis leaving us with 202 complete answers to analyse.

The sample collected is not representative for the full population of voting age adults, with a disproportionate gender distribution with men being over-represented. As expected due to the distribution through my own

social media channels the distribution skews younger than average, with the average age in the sample being equal to 36.05 while the average in the population is 42. Sadly due to random chance none of the 11 participants that indicated themselves to be best aligned with the PVDA received the Anti phase-out treatment.

Given the large amount of variables involved in the processes of opinion and perception formation I believe it to be improbable that all relevant explanatory variables are present in the models and thus most of the models considered will suffer from (limited) omitted variable bias.

3.3.2 Descriptive statistics

The definitions of all relevant variables in the following regressions can be found in Table 1. Further the summary statistics of important numerical variables can be found in Table 2 with the summary statistics of important factor variables being available in Table 3.

The distribution of sample population characteristics is different than those of the full population. Concerning gender the sample contains disproportionately more men than women, and the non-binary community is slightly underrepresented. When discussing level of education the sample is more highly schooled than the general population. ("Bevolking naar onderwijsniveau (scholingsgraad)", 2024) Whereas in the general population 45.4 percent of citizens hold a higher education diploma, in the sample 70.3 percent of citizens hold a higher education diploma. The spread of party preference in the wider population is not entirely measurable, thus no strong conclusions can be drawn from the distribution of Party. I would however like to note that the proportions of Vlaams Belang and Groen seem very unlikely to have been drawn from a random sample of the population.

When studying the kernel density figures in figure 1 we see that most of these variables are skewed. The distribution of age, as discussed before, skews younger with a large peak at the 20's. The distribution of Position is also skewed, suggesting that most of the participants hold a negative opinion on the nuclear phase-out. This is surprising given that the distribution of Perceived Support for the Phaseout is less extreme with an average of approximately 36. In general we can deduce the participants view the debate to be very polarized due to the distribution of Opiniondivide.

On average there is a noticeable difference between the trust given to those holding the same opinion and those holding the opposing opinion on the nuclear phase-out debate. Participants on average also perceive those holding the opposing opinion to be more emotionally intense in holding that opinion with the distribution of diffIntens clearly skewing positive.

There is also a large perceived ideology gap, with those supporting the nuclear phase-out estimated to be more left-wing that those who oppose it. This follows from the distributions of Perceived Ideology Pro, Perceived Ideology Anti, and diffSpectrum which differences the former 2 variables.

Variable	Definition
Age	Age of the participant.
Gender	Self declared gender of the participants: Male, Female, Non-Binary, or Do not wish to say
gender_m	Male gender dummy equal to 1 if Gender equals "Male" else equal to 0 az.
Education	Highest acquired diploma.
FurtherEducation	Dummy variable of Highest acquired diploma. Equal to 0 if the highest acquired diploma of the participants is High-School level or lower, else equal to 1.
PolSpectrum	Self declared placement on the simplified ideological spectrum, with 1 being equal to "Far Left" and 7 being equal to "Far Right"
Party	Self declared party with which the participant is best aligned. Participants were also given a "None of the above" choice.
TrustSame	Amount of trust in another citizen with the same opinion about the Nuclear Phase-out. On a scale from 0 to 100 with 0 equalling "Entirely No trust", 50 equalling "Neutral", and 100 equalling "Full Trust"
TrustOpposing	Amount of trust in another citizen with an opposing opinion about the Nuclear Phase-out. On a scale from 0 to 100 with 0 equalling "Entirely No trust", 50 equalling "Neutral", and 100 equalling "Full Trust"
diffTrust	The difference between TrustSame and TrustOpposing.
IntensSame	Perceived relative emotional level of intensity the participant perceives for a person with the same opinion. Measured on a scale of 1 to 5 with 1 equal to "A lot less extreme" and 5 equal to "A lot more extreme".
IntensOppo	Perceived relative emotional level of intensity the participant perceives for a person with the opposing opinion. Measured on a scale of 1 to 5 with 1 equal to "A lot less extreme" and 5 equal to "A lot more extreme".
diffIntens	The difference between IntensOppo and IntensSame.
Position	Personal position in the Phase-out debate: With 0 = "Completely oppose" and 100 = "Completely support".
PolSpectrumParty	Clustering of the parties into ideological blocks with N-VA and Vlaams Belang being equal to "Right-Wing", Groen, Vooruit and PVDA being equal to "Left-Wing", and CD&V and Open VLD being equal to "Center". Those who did not declare a preference were classified as "Undeclared"
Perceived Support Phaseout	Perceptions of how much support there is for Nuclear Phaseout within the population. On a scale of 0 to 100 with 0 = "No support" and 100 = "Full support"
Opiniondivide	Direct measure of how divided the public debate is perceived to be by participants. With 0 = "No perceived polarization" and 100 = "Total perceived polarization".

diffSpectrum	The Perceived ideological distance between those in favour and those in opposition of the nuclear phase-out. Measured as the Absolute distance between perceived positions. Both perceived ideological placements were rendered onto a 0 to 100 scale with 0 equalling "Extreem Links", 50 equalling "Centrum", and 100 equalling "Extreem Rechts".
SameOpinion	Self-reported likeliness of participant engaging in a discussion about the nuclear debate with a person of the same opinion. Measured on a scale of 1 to 5 with 1 equal to "Very unlikely" and 5 equal to "Highly likely".
OpposingOpinion	Self-reported likeliness of participant engaging in a discussion about the nuclear debate with a person of the opposing opinion. Measured on a scale of 1 to 5 with 1 equal to "Very unlikely" and 5 equal to "Highly likely".
SocialMedia	Self-reported likeliness of participant engaging in a discussion about the nuclear debate on social media. Measured on a scale of 1 to 5 with 1 equal to "Very unlikely" and 5 equal to "Highly likely".
Work	Self-reported likeliness of participant engaging in a discussion about the nuclear debate in the workplace. Measured on a scale of 1 to 5 with 1 equal to "Very unlikely" and 5 equal to "Highly likely".
Perceived Majority	Question about whether or not the participant thinks their opinion is the majority opinion in the nuclear phase-out debate. Possible answers: "Yes", "No", "Unsure".

Table 1: Variable Definitions

Variable	**n**	**Min**	$\mathbf{q_1}$	$\widetilde{\mathbf{x}}$	$\bar{\mathbf{x}}$	$\mathbf{q_3}$	**Max**	**#NA**
Age	202	0	23	30.5	36.0495	50	75	0
Position	202	0	1	28	31.67822	54	100	0
Perceived Support Phaseout	202	0	25	33.5	36.98515	50	84	0
TrustSame	202	29	50	63	65.18812	76	100	0
TrustOpposing	202	0	30	48	41.93069	50	87	0
diffTrust	202	-25	0	15	23.25743	38.75	100	0
IntensOppo	202	1	3	4	3.915842	5	5	0
diffIntens	202	-2	0	1	0.9108911	2	4	0
Perceived Ideology Pro	202	0	20	30	37.74257	59.75	100	0
Perceived Ideology Anti	202	0	30.25	56.5	52.13366	73	100	0
Opiniondivide	202	8	49.25	64	60.43069	75	100	0
diffSpectrum	202	0	35	47.5	45.77723	57	100	0
SameOpinion	202	1	4	4	4.029703	5	5	0
OpposingOpinion	202	1	3	4	3.717822	4	5	0
SocialMedia	202	1	1	2	2.524752	4	5	0
Work	202	1	3	4	3.480198	4	5	0

Table 2: Summary Statistics Selected Numeric variables

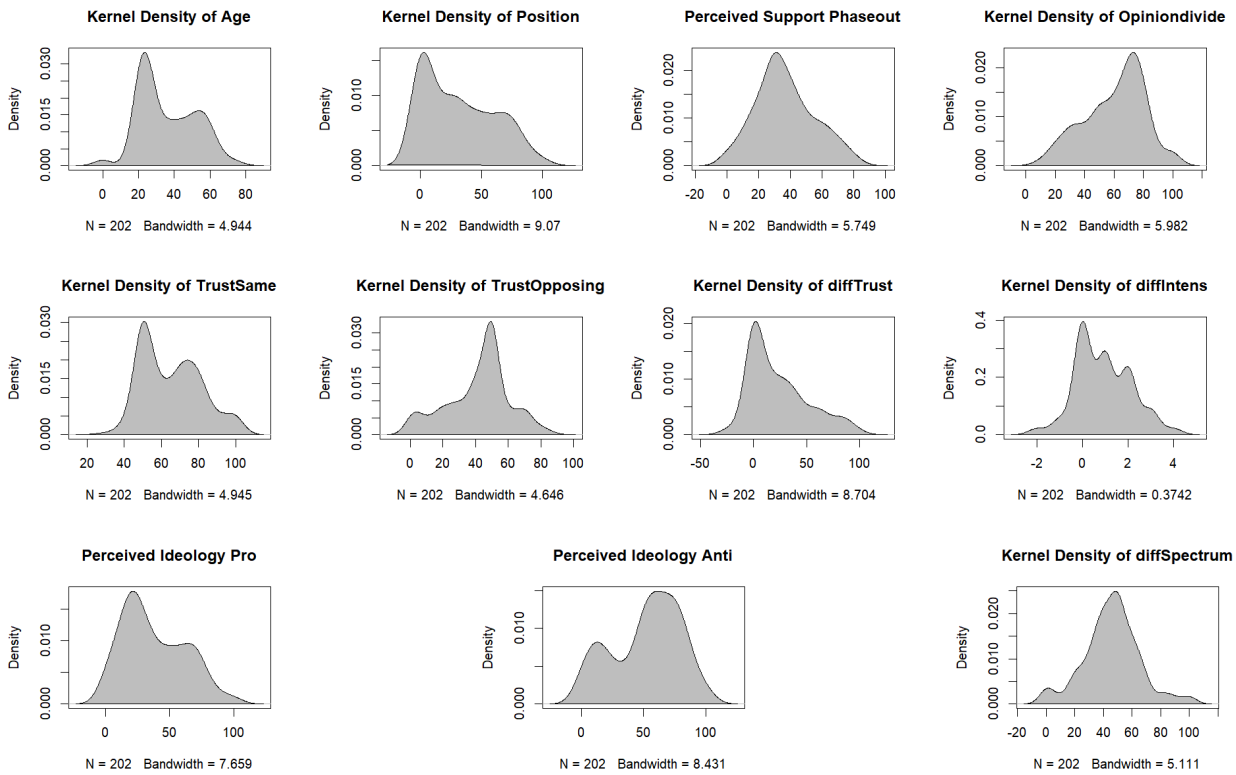


Figure 1: Kernel density of numeric variables

Variable	**Levels**	**n**	%	∑%
Gender	Man	116	57.4	57.4
	Non-Binair	2	1.0	58.4
	Vrouw	81	40.1	98.5
	Wens ik niet te delen	3	1.5	100.0
	all	202	100.0	
Education	Bachelor	63	31.2	31.2
	Doctoraat	5	2.5	33.7
	Geen	3	1.5	35.2
	Master	74	36.6	71.8
	Middelbare school	57	28.2	100.0
	all	202	100.0	
PolSpectrum	Centrum	28	13.9	13.9
	Centrum Links	43	21.3	35.1
	Centrum Rechts	48	23.8	58.9
	Extreem Links	6	3.0	61.9
	Extreem Rechts	3	1.5	63.4
	Links	49	24.3	87.6
	Rechts	25	12.4	100.0
	all	202	100.0	
Party	CD&V	17	8.4	8.4
	Geen van de bovenstaande	41	20.3	28.7
	Groen	37	18.3	47.0
	N-VA	40	19.8	66.8
	Open VLD	16	7.9	74.8
	PVDA	11	5.4	80.2
	Vlaams Belang	9	4.5	84.7
	Vooruit	31	15.3	100.0
	all	202	100.0	
Treatment	AntiTreatment	63	31.2	31.2
	Notreatment	68	33.7	64.8
	TreatmentPro	71	35.1	100.0
	all	202	100.0	
Perceived Majority	Ja	89	44.1	44.1
	Nee	48	23.8	67.8
	Onzeker	65	32.2	100.0
	all	202	100.0	

Table 3: Summary Statistics Selected Factor Variables

4 Results

To study the phenomenon of polarization I chose to run a wide variety of regressions across all types of polarization previously defined. All models were tested using accepted techniques in the field to determine the inclusion of parameters and the estimation technique needed as specified in the previous section. Significance is at all times determined at the 5 percent threshold. The effects of the pro-nuclear phase-out and anti-nuclear phase-out treatments were included in all regressions except the Spiral of Silence regressions. The Any treatment variable was only included where deemed relevant. Additional regressions identifying differential effects of the treatment based on interaction terms with the Party variable were conducted and discussed in this section and can be found in Appendix B. These regression tables were not included in this section for readability.

The regressions included in this chapter were performed within the RStudio environment using the lm and gls functions. The lay-out of the regression tables in this chapter was created using the *stargazer* package in R (Hlavac, 2018), and implemented using the *tabu* and *lscape* packages in LaTex. The equation set boxes were created using the *tcolorbox* package in LaTeX.

4.1 Actual Opinion Polarization

Equation set .1: Actual Opinion Polarization Equations

$$Position = Pro\ Treatment\ dummy + Further\ Education\ dummy + Male\ Gender\ dummy + Age + Party \quad (1)$$

$$Position = Anti\ Treatment\ dummy + Further\ Education\ dummy + Male\ Gender\ dummy + Age + Party \quad (2)$$

How do polarized social media posts about the nuclear phase-out affect the positions held by citizens. In this section I study this question within the nuclear exit debate. The dependent variable Position is a measure of the participants' support for the nuclear phase-out on a scale of 0 to 100 with 0 being equal to complete opposition to the phase-out and 100 being equal to complete support for the phase-out. Across both regressions it is clear that the treatments are not a significant determinant of the position of participants in the debate, seeing as all direct and interaction effects are not statistically significant. Counter-intuitively being confronted with the pro phase-out treatment on average makes you less supportive of the phase-out while the anti phase-out treatment on average makes you more more supportive of the phase-out.

The position of participants is significantly determined by self-identification with several parties. Participants identifying with the Groen party on average being more supportive of the nuclear exit than our base case (CD&V) across all regressions, those identifying with the N-VA party on average being less supportive of the nuclear exit than our base case across all regressions. Given that these 2 parties are the main opponents setting the conversation in the nuclear exit debate this result is not surprising. In general participants identifying with left wing parties (PVDA, Vooruit, Groen) are more likely to support the nuclear phase-out, participants identifying with (center) right wing parties (OpenVLD, N-VA, Vlaams Belang) on the other hand are on average more likely to oppose the nuclear exit. These results align with the declared positions of these parties in the debate (with the possible exception of Vooruit). The results of the regression with interaction terms reveal no significant coefficients, thus we can not conclude that the treatments had diverging effects.

The limited effects of the treatment are possibly also due to the short exposure and limited amount of content participants were treated with.

The effect of further education on support for the phase-out, while not being significant at the 5 percent level seems to be positive. The effect of the male gender dummy on support for the phase-out however is significantly and highly negative across all regressions. The Age variable is not significant but has a limited negative effect across both regressions. The regression models below each account for approximately 35 percent of the variation in the Position variable when estimated using the OLS estimator. Though there is potential endogeneity with Position having an effect on Party choice I do not believe this is a strong causal effect given that party choice is mostly driven by other debates and personal values, the added effect of the position in the nuclear exit debate on party choice is likely to be marginal. The "inter-issue correlation" stipulated by M. P. Fiorina and Abrams (2008) is likely to account for most of the party effects.

Table 4: Actual Opinion Polarization Regressions

	Dependent variable:	
	Position	
	(1)	(2)
treat_pro	−0.029 (3.651)	
treat_anti		3.966 (3.927)
furthereducation	5.283 (3.831)	5.737 (3.838)
gender_m	−13.303*** (3.639)	−13.577*** (3.638)
Age	−0.035 (0.117)	−0.026 (0.117)
PartyGeen van de bovenstaande	−5.681 (7.153)	−6.282 (7.147)
PartyGroen	23.002*** (7.169)	23.513*** (7.168)
PartyN-VA	−17.988** (7.276)	−18.216** (7.229)
PartyOpen VLD	−14.322* (8.537)	−14.479* (8.502)
PartyPVDA	2.584 (9.464)	3.629 (9.490)
PartyVlaams Belang	−18.882* (10.340)	−19.619* (10.324)
PartyVooruit	6.487 (7.422)	5.499 (7.434)
Constant	38.228*** (7.852)	36.701*** (7.885)
Observations	202	202
Log Likelihood	−899.301	−898.717
Akaike Inf. Crit.	1,824.601	1,823.433
Bayesian Inf. Crit.	1,866.813	1,865.644
Note:		*p<0.1; **p<0.05; ***p<0.01

4.2 Perceived Opinion Polarization

Equation set .2: Perceived Opinion Polarization Equations

$$Opiniondivide = Pro\ Treatment\ dummy + Further\ Education\ dummy + Male\ Gender\ dummy + Age + Party \quad (3)$$

$$Opiniondivide = Anti\ Treatment\ dummy + Further\ Education\ dummy + Male\ Gender\ dummy + Age + Party \quad (4)$$

$$diffSpectrum = Pro\ Treatment\ dummy + Further\ Education\ dummy + Male\ Gender\ dummy + Age + Party \quad (5)$$

$$diffSpectrum = Anti\ Treatment\ dummy + Further\ Education\ dummy + Male\ Gender\ dummy + Age + Party \quad (6)$$

To make sure all effects on Perceived Opinion Polarization are captured I decided to run all regressions on 2 different explanatory variables. The first one (Opiniondivide) being a direct measure of how polarized participants perceive the debate to be, with the second (diffSpectrum) being the difference between the perceived ideological leaning of a person who supports the nuclear phase-out and a person who opposes the nuclear phase-out. What is directly and abundantly clear is that none of the treatment effects are statistically significant in any of the regressions. The treatments are thus not instrumental in driving Perceived Opinion Polarization. Also important to note is the exceedingly low R^2 value for the diffSpectrum models. There are however different effects depending on the treatment. The pro phase-out treatment on average increased the perceived level of polarization for the direct measure, whilst decreasing it for the indirect measure. The anti phase-out treatment had the opposite effect.

For the Opiniondivide regressions, (Table 5, Equations 3 and 4) Party identification again plays a significant role with several parties, and especially Groen, perceiving a larger division within society on the topic than our base case. The N-VA however on average perceives less division within society on the topic. This is somewhat surprising but might be explained by N-VA self-identifiers believing everyone but the Groen party self-identifiers to be in opposition to the phase-out. The results of the regression with interaction terms reveal no significant coefficients, thus we can not conclude that the treatments had diverging effects.

When considering the diffSpectrum regressions, (Table 5, Equations 5 and 6) the Party variable is not significant and the likelihood ratio test rejected its inclusion in the model. Given that the dependent variable is made up of the difference between 2 other variables I ran 6 auxiliary regressions for the Perceived Ideology Pro and Perceived Ideology Anti variables to discover any asymmetrical effects. These regressions can be found in table 6. While in the full regression the pro phase-out treatment has a negative effect and the anti phase-out treatment has a positive effect, the partial effects show a slightly different picture. Both treatment effects negatively affect the perceived ideological stance of a person who supports the phase-out, thus generally estimating these persons to be more left leaning. None of the controls were found to be significant. For the perceived ideological stance of a person who opposes the phase-out however, both treatment effects have a positive coefficient, thus generally estimating these persons to be more right leaning. For the Perceived Ideology Anti regressions, the male gender dummy is significant and has a larger negative effect than in the diffSpectrum regressions

Next to party identification only the male gender dummy seems to broadly influence the amount of Perceived Opinion Polarization, being statistically significant on the 10 percent level in all of the regressions. On average men view

the public debate to be approximately 5.5 percentage points less polarized than women and non-binary people do. This might possibly confirm the "conservative white male effect" laid out by McCright and Dunlap (2011a) with this demographic wanting the debate to be less divided, allowing business to continue as usual. Here of course the debate is not clear cut on what would constitute business as usual.

Another explanatory variable that is sometimes statistically significant, and other times hovering around the cut-off is Age. The effects of Age on Opiniondivide are consistently negative. This result should however be taken with a grain of salt given that while all Opiniondivide regressions returned negative coefficients for Age, the diffSpectrum regressions, the indirect measure, all returned positive coefficients with none of these effects being statistically significant at the 5 percent level. These results would seem to contradict each other. The coefficient of the Further Education dummy is positive for all regressions, and thus has a consistent effect across all regressions.

Table 5: Perceived Opinion Polarization Regressions

	Dependent variable:			
	Opiniondivide		diffSpectrum	
	(3)	(4)	(5)	(6)
treat_pro	3.987 (2.956)		−0.127 (2.864)	
treat_anti		−2.030 (3.199)		0.776 (2.974)
furthereducation	0.371 (3.101)	0.428 (3.127)	0.977 (2.989)	1.049 (2.998)
gender_m	−5.748* (2.946)	−5.706* (2.964)	−5.367* (2.782)	−5.447* (2.798)
Age	−0.124 (0.095)	−0.118 (0.095)	0.131 (0.087)	0.132 (0.087)
PartyGeen van de bovenstaande	7.256 (5.790)	7.101 (5.822)		
PartyGroen	12.073** (5.803)	11.850** (5.839)		
PartyN-VA	−1.171 (5.890)	−1.792 (5.889)		
PartyOpen VLD	1.177 (6.911)	0.733 (6.927)		
PartyPVDA	8.329 (7.661)	7.461 (7.731)		
PartyVlaams Belang	11.516 (8.370)	11.301 (8.411)		
PartyVooruit	10.418* (6.008)	10.163* (6.057)		
Constant	60.439*** (6.356)	62.512*** (6.424)	43.505*** (4.110)	43.169*** (4.210)
Observations	202	202	202	202
Log Likelihood	−859.141	−859.770	−876.687	−876.616
Akaike Inf. Crit.	1,744.282	1,745.540	1,765.374	1,765.233
Bayesian Inf. Crit.	1,786.493	1,787.751	1,785.074	1,784.932

Note: *p<0.1; **p<0.05; ***p<0.01

Table 6: Perceived Opinion Polarization Regressions: Partial effects

	Dependent variable:					
	‘Perceived Ideology Pro‘			‘Perceived Ideology Anti‘		
	(A)	(B)	(C)	(D)	(F)	(G)
anytreat	-9.551^{***} (3.644)			6.338 (3.985)		
treat_pro		−5.955 (3.656)			2.985 (3.976)	
treat_anti			−3.732 (3.814)			3.520 (4.128)
furthereducation	−0.804 (3.769)	−0.063 (3.816)	−0.887 (3.844)	−2.806 (4.122)	−3.227 (4.150)	−2.641 (4.161)
gender_m	0.436 (3.518)	−0.453 (3.552)	0.253 (3.588)	-8.845^{**} (3.847)	-8.303^{**} (3.863)	-8.840^{**} (3.884)
Age	0.057 (0.110)	0.068 (0.111)	0.049 (0.111)	−0.121 (0.120)	−0.126 (0.121)	−0.113 (0.121)
Constant	42.325^{***} (5.626)	37.671^{***} (5.248)	37.628^{***} (5.399)	59.332^{***} (6.152)	62.665^{***} (5.707)	62.040^{***} (5.843)
Observations	202	202	202	202	202	202
R^2	0.035	0.015	0.006	0.048	0.038	0.039
Adjusted R^2	0.015	−0.005	−0.014	0.028	0.019	0.020
Residual Std. Error (df = 197)	24.413	24.669	24.775	26.694	26.827	26.816
F Statistic (df = 4; 197)	1.786	0.730	0.306	2.473^{**}	1.964	2.006^{*}

Note: *p<0.1; **p<0.05; ***p<0.01

4.3 Actual Intergroup Polarization

Equation set .3: Actual Intergroup Polarization Equations

$$TrustSame = Pro\ Treatment\ dummy + Further\ Education\ dummy + Male\ Gender\ dummy + Age + Party \quad (7)$$

$$TrustSame = Anti\ Treatment\ dummy\ Party + Further\ Education\ dummy + Male\ Gender\ dummy + Age + Party \quad (8)$$

$$TrustOpposing = Pro\ Treatment\ dummy + Further\ Education\ dummy + Male\ Gender\ dummy + Age + Party \quad (9)$$

$$TrustOpposing = Anti\ Treatment\ dummy + Further\ Education\ dummy + Male\ Gender\ dummy + Age + Party \quad (10)$$

$$diffTrust = Pro\ Treatment\ dummy + Further\ Education\ dummy + Male\ Gender\ dummy + Age + Party \quad (11)$$

$$diffTrust = Anti\ Treatment\ dummy + Further\ Education\ dummy + Male\ Gender\ dummy + Age + Party \quad (12)$$

For a wider understanding of the effects of social media on Actual Intergroup Polarization all regressions were conducted with 3 different dependent variables. One (TrustSame) measures the direct effect of the social media post on trust in a person with the same opinion, the second (TrustOpposing) measures the direct effect of the social media post on trust in a person with the opposing opinion while the third (diffTrust) variable takes into account both effects. When discussing these regressions it should be made clear that the baseline for the Party factor variable is equal to a choice for CD&V, all party effects are thus to be considered relative to CD&V.

Within the TrustSame regressions, (Table 7, Equations 7 and 8) the pro phase-out treatment generally raises the level of trust for a person holding the same opinion, while the anti phase-out treatment on average lowers the level of trust for a person holding the same opinion. Having a higher education diploma lowers the trust in those holding the same opinion compared to the base case. While the Party coefficients are not significant all are positive, with the exception of the PVDA. The results of the regression with interaction terms indicate that identifying with Groen, N-VA and Open VLD decreases the effect of the pro phase-out treatment, with Open VLD and N-VA identification also decreasing the effects of the anti phase-out treatment.

Within the TrustOpposing regressions, (Table 7, Equations 9 and 10) the pro phase-out treatment generally lowered the amount of trust for a person holding the opposing opinion, while the anti phase-out treatment on average increased the level of trust for a person holding the opposing opinion. These coefficients contrast with those of the TrustSame regressions. Both the N-VA and Geen van de bovenstaande alignments are significant across both regression and represent the biggest negative effects on trust in those holding the opposing opinion. While this could possibly be expected given that the N-VA is one of the parties most focused on the issue it is however remarkable that the other party most focused on the issue, Groen, on average has more trust in those on the opposing side than the base case. As was also the case in the TrustSame regressions, the PVDA coefficient again bucks the trend, generally

leading to a higher level of trust in those holding the opposing opinion than the base case. The results of the regression with interaction terms indicate that identifying with Vlaams Belang lowers the effectiveness of the treatment.

When considering the diffTrust regressions, (Table 8, Equations 11 and 12) for the full effect of the treatment we see that the pro phase-out treatment generally increases the difference in trust, while the anti phase-out treatment on average decreases the difference in trust. As shown before this measure is thus both driven by changes in the trust for those holding the same and the opposing opinion. for the full effect again both the N-VA and Geen van de bovenstaande alignments are significant (or near significant) across both regression and represent the biggest positive effects on the gap in trust. Perhaps not surprisingly given the effects mentioned above the PVDA party alignment is the only alignment for which the difference in trust coefficients are negative when compared to the base case. The results of the regression with interaction terms indicate that identifying with Groen, N-VA, Vlaams Belang, and Vooruit decreases the effect of the pro phase-out treatment, identifying with N-VA en Vlaams Belang also decreases the effectiveness of the anti phase-out treatment.

Across all regressions the pro nuclear phase-out treatment seems to increase the average amount of Intergroup Polarization while the anti nuclear phase-out treatment seems to have had the opposite effect, lowering the average amount of Intergroup Polarization. This effect is quite surprising given that the treatment also contains a highly biased social media post.

Table 7: Actual Intergroup Polarization Regressions: Direct measures

	Dependent variable:			
	TrustSame		TrustOpposing	
	(7)	(8)	(9)	(10)
treat_pro	4.906** (2.381)		−0.485 (2.720)	
treat_anti		−0.516 (2.596)		2.079 (2.929)
furthereducation	−0.723 (2.499)	−0.426 (2.538)	1.062 (2.853)	1.265 (2.863)
gender_m	0.702 (2.373)	0.615 (2.406)	0.414 (2.711)	0.282 (2.714)
Age	−0.022 (0.076)	−0.010 (0.077)	−0.037 (0.087)	−0.033 (0.087)
PartyGeen van de bovenstaande	4.235 (4.665)	3.741 (4.725)	−11.108** (5.328)	−11.368** (5.331)
PartyGroen	1.970 (4.676)	1.950 (4.739)	1.535 (5.340)	1.799 (5.346)
PartyN-VA	5.887 (4.746)	5.007 (4.779)	−16.264*** (5.420)	−16.297*** (5.392)
PartyOpen VLD	2.848 (5.568)	2.221 (5.621)	−4.503 (6.359)	−4.524 (6.342)
PartyPVDA	−7.107 (6.172)	−7.654 (6.274)	7.101 (7.049)	7.688 (7.079)
PartyVlaams Belang	5.682 (6.744)	5.047 (6.826)	−2.747 (7.702)	−3.063 (7.701)
PartyVooruit	0.650 (4.840)	−0.160 (4.915)	−1.378 (5.528)	−1.806 (5.545)
Constant	61.798*** (5.121)	63.591*** (5.213)	47.939*** (5.848)	46.986*** (5.881)
Observations	202	202	202	202
Log Likelihood	−818.090	−820.094	−843.324	−843.013
Akaike Inf. Crit.	1,662.180	1,666.188	1,712.648	1,712.026
Bayesian Inf. Crit.	1,704.392	1,708.399	1,754.860	1,754.237

Note: *p<0.1; **p<0.05; ***p<0.01

Table 8: Actual Intergroup Polarization Regressions: Indirect measure

	Dependent variable:	
	diffTrust	
	(11)	(12)
treat_pro	5.391 (4.023)	
treat_anti		−2.595 (4.354)
furthereducation	−1.785 (4.221)	−1.691 (4.256)
gender_m	0.288 (4.009)	0.333 (4.034)
Age	0.014 (0.129)	0.023 (0.129)
PartyGeen van de bovenstaande	15.342* (7.881)	15.110* (7.924)
PartyGroen	0.435 (7.898)	0.152 (7.948)
PartyN-VA	22.151*** (8.016)	21.304*** (8.016)
PartyOpen VLD	7.351 (9.406)	6.744 (9.428)
PartyPVDA	−14.209 (10.427)	−15.342 (10.523)
PartyVlaams Belang	8.429 (11.392)	8.110 (11.448)
PartyVooruit	2.028 (8.177)	1.646 (8.244)
Constant	13.859 (8.650)	16.605* (8.743)
Observations	202	202
Log Likelihood	−917.703	−918.344
Akaike Inf. Crit.	1,861.407	1,862.689
Bayesian Inf. Crit.	1,903.618	1,904.900
Note:		*p<0.1; **p<0.05; ***p<0.01

4.4 Perceived Intergroup Polarization

Equation set .4: Perceived Intergroup Polarization Equations

$$IntensSame = Pro\ Treatment\ dummy + Further\ Education\ dummy + Male\ Gender\ dummy + Age + Party \quad (13)$$

$$IntensSame = Anti\ Treatment\ dummy\ Party + Further\ Education\ dummy + Male\ Gender\ dummy + Age + Party \quad (14)$$

$$IntensOppo = Pro\ Treatment\ dummy + Further\ Education\ dummy + Male\ Gender\ dummy + Age + Party \quad (15)$$

$$IntensOppo = Anti\ Treatment\ dummy + Further\ Education\ dummy + Male\ Gender\ dummy + Age + Party \quad (16)$$

$$diffIntens = Pro\ Treatment\ dummy + Further\ Education\ dummy + Male\ Gender\ dummy + Age + Party \quad (17)$$

$$diffIntens = Anti\ Treatment\ dummy + Further\ Education\ dummy + Male\ Gender\ dummy + Age + Party \quad (18)$$

For a wider understanding of the effects of social media on Perceived Intergroup Polarization all regressions were again conducted with 3 different dependent variables. IntensSame measures the perceived emotional intensity of a person holding the same opinion in the debate while IntensOppo measures the perceived emotional intensity of a person holding the opposing opinion in the debate. diffIntens measures the indirect effect on perceived emotional intensity, differencing the variables above. When discussing these regressions it should be made clear that the baseline for the Party factor variable is equal to a choice for CD&V, all party effects are thus to be considered relative to CD&V.

For the IntensSame regressions, (Table 9, Equations 13 and 14) both treatments positively affect the perceived emotional intensity of a person holding the same opinion as the participant. Party variables are again significant with all coefficients being positive, except for Open VLD. Effects are largest and most significant for Groen and Vlaams Belang. Having completed further education on average lowers the perception of emotional intensity, while the male gender effects are small and inconsistent. Age on average has a significant small negative effect. The results of the regression with interaction terms reveal no significant coefficients, thus we can not conclude that the treatments had diverging effects.

For the IntensOppo regressions, (Table 9, Equations 15 and 16) both treatments positively affect the perceived emotional intensity of a person holding the opposing opinion to the participant. The Party variable is not significant and the likelihood ratio test rejected its inclusion in the model. Further education now has a consistent and almost statistically significant positive effect on the perception of emotional intensity, while the male gender effects are consistently positive. Age on average has a small negative effect. The results of the regression with interaction terms reveal no significant coefficients, thus we can not conclude that the treatments had diverging effects.

For the diffTrust regressions, (Table 9, Equations 17 and 18) the treatments have diverging effects on the difference of perceived emotional intensity between those with the opposing opinion and the same opinion. As for the IntensSame regressions the coefficients for the Groen and Vlaams Belang alignments are significant, negative, and the largest coefficients. All other party coefficients, with the exception of Open VLD, are also negative, with the PVDA and N-VA coefficients nearing significance. Age, the male gender dummy, and the further education dummy all on average increase the difference in perceived intensities, though none of the coefficients are statistically significant. The results of the regression with interaction terms reveal no significant coefficients, thus we can not conclude that the treatments had diverging effects.

Table 9: Perceived Intergroup Polarization Regressions

	Dependent variable:					
	IntensSame		IntensOppo		diffIntens	
	(13)	(14)	(15)	(16)	(17)	(18)
treat_pro	0.051 (0.127)		0.065 (0.136)		0.016 (0.174)	
treat_anti		0.198 (0.136)		0.083 (0.142)		−0.154 (0.187)
furthereducation	−0.052 (0.133)	−0.025 (0.133)	0.237* (0.142)	0.251* (0.143)	0.271 (0.182)	0.255 (0.183)
gender_m	0.010 (0.127)	−0.005 (0.126)	0.074 (0.133)	0.062 (0.133)	0.081 (0.173)	0.091 (0.173)
Age	−0.012*** (0.004)	−0.011*** (0.004)	−0.006 (0.004)	−0.006 (0.004)	0.007 (0.006)	0.007 (0.006)
PartyGeen van de bovenstaande	0.312 (0.249)	0.276 (0.248)			−0.381 (0.340)	−0.359 (0.340)
PartyGroen	0.788*** (0.249)	0.814*** (0.249)			−0.991*** (0.341)	−1.010*** (0.341)
PartyN-VA	0.284 (0.253)	0.263 (0.251)			−0.583* (0.346)	−0.577* (0.344)
PartyOpen VLD	−0.261 (0.297)	−0.276 (0.295)			0.212 (0.406)	0.216 (0.405)
PartyPVDA	0.582* (0.329)	0.629* (0.329)			−0.865* (0.450)	−0.907** (0.452)
PartyVlaams Belang	0.854** (0.360)	0.809** (0.358)			−1.241** (0.492)	−1.214** (0.491)
PartyVooruit	0.314 (0.258)	0.254 (0.258)			−0.273 (0.353)	−0.237 (0.354)
Constant	3.073*** (0.273)	3.014*** (0.274)	3.910*** (0.196)	3.894*** (0.201)	0.904** (0.373)	0.968** (0.375)
Observations	202	202	202	202	202	202
R^2	0.155	0.164	0.026	0.027	0.125	0.128
Adjusted R^2	0.106	0.115	0.007	0.007	0.074	0.077
Residual Std. Error	0.846 (df = 190)	0.842 (df = 190)	0.921 (df = 197)	0.921 (df = 197)	1.157 (df = 190)	1.155 (df = 190)
F Statistic	3.170*** (df = 11; 190)	3.380*** (df = 11; 190)	1.329 (df = 4; 197)	1.358 (df = 4; 197)	2.457*** (df = 11; 190)	2.527*** (df = 11; 190)

Note: *p<0.1; **p<0.05; ***p<0.01

4.5 Spiral of Silence

Equation set .5: Spiral of Silences Equations Equations

$$SameOpinion = Perceived\ Majority + Further\ Education\ dummy + Male\ Gender\ dummy + Age \quad (19)$$

$$OpposingOpinion = Perceived\ Majority + Further\ Education\ dummy + Male\ Gender\ dummy + Age \quad (20)$$

$$SocialMedia = Perceived\ Majority + Further\ Education\ dummy + Male\ Gender\ dummy + Age \quad (21)$$

$$Work = Perceived\ Majority + Further\ Education\ dummy + Male\ Gender\ dummy + Age \quad (22)$$

What is the effect of perceiving yourself to not be in the majority on an issue on the likeliness that you will engage in debate? In this section I studied this effect across multiple scenarios and discovered several significant determinants of the likelihood of engaging in debate. The scales of the dependent variables were all defined from 1 through 5, presenting 5 levels of likelihood. I will thus be interpreting these coefficients as changes in the level of likelihood of engaging in debate. The 4 dependent variables respectively represent the likelihood of the participant engaging in debate in several scenarios: In a group of like-minded people, in a group of people holding the opposing opinion, on social media, and in the workplace. The baseline for these regressions is a person that perceives themselves to be in the societal majority on this issue. I have thus always compared the results to this baseline. The effects discussed here were calculated on the full sample. Discussion of the different effects depending on the participants opinion on the nuclear phase-out debate can be found at the end of this subsection and the results of these auxiliary regressions can be found in tables 11, 12, and 13. The effect of the treatments was also estimated, but proved to be non-significant, these results are omitted for the sake of brevity.

When placed in a situation where they are sure they are among those with the same opinion participants are still on average approximately half a likelihood level (-0.516) less likely to engage in debate if they are unsure of whether their opinion is the societal majority. No significant effect is found if the participant is sure their opinion is in the minority. This model explains approximately 15 percent of the variation in likelihood of engaging in debate.

When placed in the opposite situation, where they are sure they are among those with an opposing opinion participants are on average only slightly more likely to self censor than in the previous situation if they are unsure of whether their opinion is the societal majority (-0.530). Again no significant effect is found if the participant is sure their opinion is in the minority. This model explains approximately 14 percent of the variation in likelihood of engaging in debate.

On social media both being unsure of whether their opinion is the societal majority, and being sure their opinion is in the minority on average respectively lower the likelihood of engaging in a debate on the topic by 0.871 and 1.001 likelihood levels respectively. These effects are noticeably larger than those present in the various real life scenarios. This is the only model in which the level of education plays a significant role with those that have received a higher education degree being on average approximately half a likelihood level (0.518) more likely to engage in an online debate on the topic. Perhaps surprisingly age does not play a significant role in determining the likelihood of engaging in an online debate, whereas this might have been expected given lower digital literacy rates among the

older segment of the population. This lack of an effect might be due to the methods used in distributing the survey, which were mostly social media channels, thus attracting a more digitally literate subset of the population. This model explains approximately 25 percent of the variation in likelihood of engaging in debate.

In the workplace neither being unsure of whether their opinion is the societal majority or being sure their opinion is in the minority has a significant effect on the likelihood of engaging in debate on the topic. This lack of effect might be due to possible personal bonds between colleagues leading to a lowered perceived chance of not being respected or being perceived as incompetent as laid out in Geiger and Swim (2016). This model explains approximately 11 percent of the variation in likelihood of engaging in debate.

Across all regressions the male gender dummy is highly significant, male participants are on average approximately 0.6 to 0.65 (0.557, 0.620, 0.655, 0.651) likelihood levels more likely to engage in debate on the topic than women and non-binary people. This is most likely due to societal gender norms.

Table 10: Spiral of Silence Regressions for the full sample

	Dependent variable:			
	SameOpinion	OpposingOpinion	SocialMedia	Work
	(19)	(20)	(21)	(22)
'Perceived Majority'Nee	−0.246 (0.170)	−0.129 (0.178)	−0.871*** (0.249)	−0.055 (0.223)
'Perceived Majority'Onzeker	−0.516*** (0.157)	−0.530*** (0.165)	−1.001*** (0.231)	−0.385* (0.206)
furthereducation	−0.004 (0.140)	0.038 (0.148)	0.518** (0.206)	0.283 (0.184)
gender_m	0.557*** (0.133)	0.620*** (0.140)	0.655*** (0.195)	0.651*** (0.174)
Age	−0.007* (0.004)	−0.001 (0.004)	0.010 (0.006)	−0.003 (0.006)
Constant	4.205*** (0.238)	3.589*** (0.250)	1.965*** (0.350)	3.136*** (0.312)
Observations	202	202	202	202
R^2	0.151	0.163	0.248	0.111
Adjusted R^2	0.129	0.142	0.228	0.089
Residual Std. Error (df = 196)	0.907	0.953	1.332	1.190
F Statistic (df = 5; 196)	6.953***	7.653***	12.905***	4.918***
Note:				*p<0.1; **p<0.05; ***p<0.01

When regressing only on the data of those in favour of the nuclear phase-out we see that within this group, which is the actual minority in both the sample and the wider population, the results differ greatly compared to the full sample. Being sure one is in the minority within this group on average leads them be more likely to engage in debate, except on social media. This effect is most present for the work related scenario. Not being sure of whether one is in the majority or minority within this group on average leads participants to be less likely to engage in debate, which is consistent with the effects in the full sample, albeit with smaller coefficients across the board. Within this group holding a higher education diploma on average increases the likelihood of engaging in debate, especially so within the work related scenario. Gender is however not significant within this group but does on average raise the likelihood of engaging in debate, except for the workplace scenario.

When regressing only on the data of those in opposition to the nuclear phase-out we see that within this group, which is the actual majority in both the sample and the wider population, the results are mostly in line with those of the full sample. Both the effects of being unsure of whether they are in the majority or minority, and being sure they are in the minority are negative across the board, with a small exception for those who are sure of being in the minority for the workplace scenario. Gender is again highly significant and positive in this group, with comparable coefficient to the full sample regression. Further education again increases the likelihood of engaging in debate, especially within the social media scenario.

Finally for the subsection of the sample of those who remain neutral in the debate, both the effects of being unsure of whether they are in the majority or minority, and being sure they are in the minority are negative for the

Table 11: Spiral of Silence Regressions for those who support the Phase-out

	Dependent variable:			
	SameOpinion	OpposingOpinion	SocialMedia	Work
	(1)	(2)	(3)	(4)
'Perceived Majority'Nee	0.458 (0.363)	0.656 (0.388)	−0.088 (0.561)	1.000** (0.431)
'Perceived Majority'Onzeker	−0.255 (0.382)	−0.195 (0.409)	−0.400 (0.591)	−0.180 (0.455)
furthereducation	0.046 (0.327)	0.255 (0.350)	0.310 (0.506)	1.615*** (0.389)
gender_m	0.287 (0.273)	0.275 (0.292)	0.175 (0.422)	−0.123 (0.324)
Age	−0.023** (0.010)	−0.014 (0.010)	−0.009 (0.015)	−0.030** (0.011)
Constant	4.463*** (0.504)	3.494*** (0.539)	2.060** (0.779)	2.721*** (0.599)
Observations	41	41	41	41
R^2	0.261	0.238	0.043	0.471
Adjusted R^2	0.155	0.129	−0.093	0.396
Residual Std. Error (df = 35)	0.847	0.907	1.310	1.008
F Statistic (df = 5; 35)	2.467*	2.181*	0.317	6.236***
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 12: Spiral of Silence Regressions for those who oppose the Phase-out

	Dependent variable:			
	SameOpinion	OpposingOpinion	SocialMedia	Work
	(1)	(2)	(3)	(4)
'Perceived Majority'Nee	−0.236 (0.249)	−0.068 (0.264)	−0.460 (0.398)	0.047 (0.329)
'Perceived Majority'Onzeker	−0.335* (0.202)	−0.326 (0.214)	−0.948*** (0.323)	−0.204 (0.267)
furthereducation	0.080 (0.169)	0.096 (0.179)	0.979*** (0.270)	0.258 (0.224)
gender_m	0.269 (0.173)	0.501*** (0.183)	0.474* (0.275)	0.535** (0.228)
Age	−0.005 (0.005)	0.0004 (0.005)	0.011 (0.008)	−0.001 (0.007)
Constant	4.290*** (0.303)	3.594*** (0.321)	1.923*** (0.484)	3.292*** (0.401)
Observations	123	123	123	123
R^2	0.054	0.095	0.246	0.067
Adjusted R^2	0.014	0.056	0.214	0.027
Residual Std. Error (df = 117)	0.873	0.924	1.393	1.153
F Statistic (df = 5; 117)	1.334	2.450**	7.633***	1.688
Note:				*p<0.1; **p<0.05; ***p<0.01

first 2 scenarios, and positive for the final 2 scenarios. This is not entirely in line with the results of the full sample, where the effects in all scenarios were negative. The male gender dummy is again mostly significant, with the effect being positive for all scenarios.

Table 13: Spiral of Silence Regressions for those who are neutral in the debate

	Dependent variable:			
	SameOpinion	OpposingOpinion	SocialMedia	Work
	(1)	(2)	(3)	(4)
'Perceived Majority'Nee	−1.007 (0.824)	−1.496* (0.728)	0.070 (0.352)	0.116 (0.873)
'Perceived Majority'Onzeker	−0.321 (0.769)	−1.386* (0.680)	0.082 (0.328)	0.794 (0.815)
furthereducation	−0.155 (0.545)	−0.158 (0.482)	−0.179 (0.233)	0.090 (0.578)
gender_m	1.719** (0.668)	1.468** (0.590)	0.463 (0.285)	1.421* (0.708)
Age	−0.030 (0.021)	−0.011 (0.018)	0.013 (0.009)	−0.026 (0.022)
Constant	4.225*** (1.001)	4.374*** (0.884)	0.919** (0.427)	2.606** (1.061)
Observations	22	22	22	22
R^2	0.357	0.463	0.288	0.232
Adjusted R^2	0.156	0.296	0.065	−0.008
Residual Std. Error (df = 16)	1.115	0.985	0.476	1.182
F Statistic (df = 5; 16)	1.776	2.764*	1.294	0.965
Note:				*p<0.1; **p<0.05; ***p<0.01

5 Conclusion

5.1 Discussion

Much research has been conducted on the effect of social media and the internet on societal polarization. In this work I have broken down polarization into four categories: Actual Opinion Polarization, Perceived Opinion Polarization, Actual Intergroup Polarization, and Perceived Intergroup Polarization.

When discussing Actual Opinion Polarization the general consensus in the literature is that it has been rather limited until now but shows a growing trend in the last few decades. The effect of social media on Actual Opinion Polarization remains disputed. In my analysis potentially polarizing social media posts were found to have a non-significant effect on opinion polarization. Partisan sorting and alignment seems a more plausible explanation given the large significance of the effect of party identification on the opinion held in the nuclear exit debate. This would align with the literature (Dietz et al., 2007; M. P. Fiorina & Abrams, 2008; Ziegler, 2017). Special mention should be made of the consistently highly significant negative effect of the male gender dummy on the position held in the nuclear phase-out debate.

Perceived Opinion Polarization is generally agreed to be larger than Actual Opinion Polarization, with these misconceptions feeding back into actual polarization. (Ahler, 2014; Enders & Armaly, 2019) The effect of social media on perceived opinion polarization in the literature depends on the treatment. For the pro phase-out treatment the effects on the direct measure are positive while those on the indirect measure are negative. For the anti phase-out treatment the opposite it true. The results of my analysis finds no significant effect of the potentially polarizing social media post on Perceived Opinion Polarization, this does not align with the literature, but could possibly be explained by the small sample size of my study or the strength of the signal produced by the treatment. Interesting to note is that in general left-wing parties view the divide in opinion to be larger than center and right-wing parties with the largest effects for the Groen Party. Identifying as male on average has a negative effect on Perceived Opinion Polarization.

When discussing Actual Intergroup Polarization the general consensus in the literature is that is relatively large and that social media play a significant role in its formation, along with elite polarization and traditional media.

In my analysis of the survey data I found the treatments to have the most significant effects of all on this measure of polarization, but also found them to have diverging effects, with the pro nuclear exit treatment increasing the amount of polarization, while the anti nuclear exit treatment on average decreases the amount of polarization across all 3 dependent variables. Self-identifying with the N-VA party, the party most present in the debate on the anti phase-out side, on average led to a 20 percentage point increase in the difference in trust for those of the same and the opposing opinion. This was the only type of polarization for which there were large differences in the effect of the treatment, depending on the party of the participant. Self-identifying with the Groen, N-VA, and Open VLD parties on average lowered the effectiveness of the treatments compared to the base case.

Perceived Intergroup Polarization is accepted to be rather large in the public debate. (Druckman et al., 2022). Perceived Intergroup Polarization is theoretically also highly affected by social media. The results of my survey experiment on the effect of the treatment on perceived intergroup polarization are on the other hand inconclusive and the coefficients insignificant. Self-identifying with the Groen party, the party most present in the debate on the pro phase-out side, on average lowers the difference in perceived emotional intensity between those of the same and the opposing opinion. This effect is also present for the Vlaams Belang Party.

Social media has long been assumed to be a strong driver in the rise of polarization in society, the literature on polarization however identifies multiple other significant drivers, with the effect of social media remaining inconclusive. Social media has different effects on polarization depending what aspect of polarization you research. In general the results of my analysis confirm social media is not the only potential driver of societal polarization and potentially not even the most important. Elite Polarization and partisan alignment also play significant roles in shaping polarization.

The Spiral of Silence as laid out by Noelle-Neumann (1974) has not been tested specifically within the nuclear exit debate but was found to be significant in general. In my analysis the effect of being unsure of whether or not you hold the majority opinion was the strongest determinant of self-silencing within the debate, being significant or near significant for all regressions. The effects were however largest for the social media debate nearly doubling the effect compared to other real life situations. This setting was also the only one in which Further education significantly increased the likelihood of engaging in debate on the topic. Being sure you are in the minority only significantly affected the likelihood of self censoring on social media, but has no significant effect in the real life scenarios. Identifying as male on the other hand significantly raises the likelihood of engaging in debate across all scenarios. This self-silencing effect can be a terrible roadblock in debates and discussions surrounding not only nuclear, but also climate policies. Diverging effects exist depending on the position of the participant within the debate. Those who support the phase-out (the societal minority) were found to be more likely to engage in debate if they knew their opinion was that of the minority. For the sample of who oppose the phase-out (the societal majority) the effects were in line with the general results.

5.2 Policy recommendations

Sparkman et al. (2022) find actual opinion polarization to be grossly overestimated in climate issues, with Geiger and Swim (2016) confirming this leads to self-silencing in the debate. Policymakers should thus communicate clearly about the actual opinion distribution and create greater awareness about the level of concern and the broad political support for action against climate change. The work of Van Boven et al. (2018) suggests that climate policy should be passed with as wide a majority as possible to prevent biased policy evaluations. This is crucial given that the chance of a succcesful implementation of these policies is partly determined by the support they receive in wider society. As argued by Carattini et al. (2019) and Kotlikoff et al. (2021) the benefits of climate policy should be equally distributed across the world and across time, with the burdens being born by those with the strongest shoulders. In this way climate policy can become a win-win instead of a zero-sum game. If the government does wish to continue exploiting nuclear energy (an issue on which I will issue no value judgement) it is of the utmost importance to create trust within the population. One of the possible pathways to achieving this is strengthening nuclear governance and oversight organizations.

5.3 Further research

An obvious avenue for further research would be to repeat the work of this dissertation with a larger and more representative sample of the Flemish population. This would create more clarity about the true size and significance of the coefficients. Another potential addition to the research setup would be to introduce an extra treatment condition in which participants are shown both the pro- and anti phase-out messages, this could possible be more effective in perceived polarization regressions. As stated by Tucker et al. (2018) audiovisual content is more likely to be persuasive and to impact perceptions, an adaptation of this dissertation's setup using audiovisual instead of textual clues could thus potentially produce interesting results because of this heightened persuasion. Other polarized climate policy debates are also possible avenues for study concerning the effects of social media on polarization and support for climate measures. A reproduction of the work of Iyengar and Hahn (2009) in the Flemish media environment could lay bare potential media echo chambers in Flanders. A closer investigation of the range of framing devices used within traditional media coverage of the nuclear debate and the larger climate debate within Flanders could prove vital in reducing polarization on these topics. Inspiration for this can be found in the work of Nisbet (2009).

References

Abramowitz, A. I., & Saunders, K. L. (1998). Ideological Realignment in the U.S. Electorate. *The Journal of Politics*, *60*(3), 634–652. https://doi.org/10.2307/2647642

Acharya, A., Blackwell, M., & Sen, M. (2018). Analyzing Causal Mechanisms in Survey Experiments. *Political Analysis*, *26*(4), 357–378. https://doi.org/10.1017/pan.2018.19

Ahler, D. (2014). Self-Fulfilling Misperceptions of Public Polarization. *The Journal of Politics*, *76*, 607–620. https://doi.org/10.1017/S0022381614000085

Babutsidze, Z., Blankenberg, A.-K., & Chai, A. (2023). The effect of traditional media consumption and internet use on environmental attitudes in Europe. *Journal of Evolutionary Economics*, *33*(2), 309–340. https://doi.org/10.1007/s00191-023-00810-0

Bakshy, E., Messing, S., & Adamic, L. (2015). Political science. Exposure to ideologically diverse news and opinion on Facebook. *Science (New York, N.Y.)*, *348*. https://doi.org/10.1126/science.aaa1160

Banda, K. K., & Cluverius, J. (2018). Elite polarization, party extremity, and affective polarization. *Electoral Studies*, *56*, 90–101. https://doi.org/10.1016/j.electstud.2018.09.009

Banks, A., Calvo, E., Karol, D., & Telhami, S. (2021). #PolarizedFeeds: Three Experiments on Polarization, Framing, and Social Media. *The International Journal of Press/Politics*, *26*(3), 609–634. https://doi.org/10.1177/1940161220940964

Barberá, P., Jost, J. T., Nagler, J., Tucker, J. A., & Bonneau, R. (2015). Tweeting From Left to Right: Is Online Political Communication More Than an Echo Chamber? *Psychological Science*, *26*(10), 1531–1542. https://doi.org/10.1177/0956797615594620

Baum, M. A., & Groeling, T. (2008). New Media and the Polarization of American Political Discourse. *Political Communication*, *25*(4), 345–365. https://doi.org/10.1080/10584600802426965

Bevolking naar onderwijsniveau (scholingsgraad). (2024, May). Retrieved May 26, 2024, from https://www.vlaanderen.be/statistiek-vlaanderen/onderwijs-en-vorming/bevolking-naar-onderwijsniveau-scholingsgraad

Birjali, M., Kasri, M., & Beni-Hssane, A. (2021). A comprehensive survey on sentiment analysis: Approaches, challenges and trends. *Knowledge-Based Systems*, *226*, 107134. https://doi.org/10.1016/j.knosys.2021.107134

Boxell, L., Gentzkow, M., & Shapiro, J. M. (2024). Cross-Country Trends in Affective Polarization. *The Review of Economics and Statistics*, *106*(2), 557–565. https://doi.org/10.1162/rest_a_01160

Boxell, L., Gentzkow, M., & Shapiro, J. M. (2017). Greater Internet use is not associated with faster growth in political polarization among US demographic groups. *Proceedings of the National Academy of*

Sciences of the United States of America, *114*(40), 10612–10617. https://doi.org/10.1073/pnas.1706588114

Brewer, P. R. (2012). Polarisation in the USA: Climate Change, Party Politics, and Public Opinion in the Obama Era. *European Political Science*, *11*(1), 7–17. https://doi.org/10.1057/eps.2011.10

Brulle, R., Carmichael, J., & Jenkins, J. (2012). Shifting public opinion on climate change: An empirical assessment of factors influencing concern over climate change in the U.S., 2002-2010. *Climatic Change*, *114*. https://doi.org/10.1007/s10584-012-0403-y

Campbell, T. H., & Kay, A. C. (2014). Solution aversion: On the relation between ideology and motivated disbelief. *Journal of Personality and Social Psychology*, *107*(5), 809–824. https://doi.org/10.1037/a0037963

Carattini, S., Kallbekken, S., & Orlov, A. (2019). How to win public support for a global carbon tax. *Nature*, *565*(7739), 289–291. https://doi.org/10.1038/d41586-019-00124-x

Chen, T. H. Y., Salloum, A., Gronow, A., Ylä-Anttila, T., & Kivelä, M. (2021). Polarization of climate politics results from partisan sorting: Evidence from Finnish Twittersphere. *Global Environmental Change*, *71*, 102348. https://doi.org/10.1016/j.gloenvcha.2021.102348

Cho, I. H. (2022). To escape or embrace reactors? the politics of nuclear phase-out in Germany and South Korea. *The Pacific Review*, *35*(1), 32–58. https://doi.org/10.1080/09512748.2020.1806341

Coffey, D. J., & Joseph, P. H. (2013). A Polarized Environment: The Effect of Partisanship and Ideological Values on Individual Recycling and Conservation Behavior. *American Behavioral Scientist*, *57*(1), 116–139. https://doi.org/10.1177/0002764212463362

Corner, A., Venables, D., Spence, A., Poortinga, W., Demski, C., & Pidgeon, N. (2011). Nuclear power, climate change and energy security: Exploring British public attitudes. *Energy Policy*, *39*(9), 4823–4833. https://doi.org/10.1016/j.enpol.2011.06.037

Corner, A., Whitmarsh, L., & Xenias, D. (2012). Uncertainty, scepticism and attitudes towards climate change: Biased assimilation and attitude polarisation. *Climatic Change*, *114*(3), 463–478. https://doi.org/10.1007/s10584-012-0424-6

Dafoe, A., Zhang, B., & Caughey, D. (2018). Information Equivalence in Survey Experiments. *Political Analysis*, *26*(4), 399–416. https://doi.org/10.1017/pan.2018.9

Davis, N. T., & Dunaway, J. L. (2016). Party Polarization, Media Choice, and Mass Partisan-Ideological Sorting. *Public Opinion Quarterly*, *80*(S1), 272–297. https://doi.org/10.1093/poq/nfw002

Dechezleprêtre, A., Fabre, A., Kruse, T., Planterose, B., Chico, A. S., & Stantcheva, S. (2022, July). *Fighting climate change: International attitudes toward climate policies* (tech. rep.). OECD. Paris. Retrieved December 6, 2023, from https://www.oecd-ilibrary.org/economics/fighting-climate-change-international-attitudes-toward-climate-policies_3406f29a-en

Delobelle, P., Winters, T., & Berendt, B. (2020). RobBERT: A Dutch RoBERTa-based Language Model. https://doi.org/10.48550/arXiv.2001.06286

Devlin, J., Chang, M.-W., Lee, K., & Toutanova, K. (2019, May). BERT: Pre-training of Deep Bidirectional Transformers for Language Understanding [arXiv:1810.04805 [cs]]. https://doi.org/10.48550/arXiv.1810.04805

Dietz, T., Dan, A., & Shwom, R. (2007). Support for Climate Change Policy: Social Psychological and Social Structural Influences*. *Rural Sociology*, *72*(2), 185–214. https://doi.org/10.1526/003601107781170026

Druckman, J. N., Klar, S., Krupnikov, Y., Levendusky, M., & Ryan, J. B. (2022). (Mis)estimating Affective Polarization. *JOURNAL OF POLITICS*, *84*(2), 1106–1117. https://doi.org/10.1086/715603

Eindrapport Klimaatenquête 2017 (tech. rep.). (2017). Federale overheidsdienst (FOD) Volksgezondheid, Veiligheid van de Voedselketen en Leefmilieu.

Enders, A. M., & Armaly, M. T. (2019). The Differential Effects of Actual and Perceived Polarization. *Political Behavior*, *41*(3), 815–839. https://doi.org/10.1007/s11109-018-9476-2

ESS. (n.d.). ESS Data Portal. Retrieved April 30, 2024, from https://ess.sikt.no/en/?tab=overview

Evans, J. H. (2003). Have Americans' Attitudes Become More Polarized?—An Update*. *Social Science Quarterly*, *84*(1), 71–90. https://doi.org/10.1111/1540-6237.8401005

Feldhoff, T. (2014). Post-Fukushima energy paths: Japan and Germany compared. *Bulletin of the Atomic Scientists*, *70*(6), 87–96. https://doi.org/10.1177/0096340214555108

Fiorina, M., Abrams, S., & Pope, J. (2008). Polarization in the American Public: Misconceptions and Misreadings. *The Journal of Politics*, *70*, 556–560. https://doi.org/10.1017/S002238160808050X

Fiorina, M. P., & Abrams, S. J. (2008). Political Polarization in the American Public. *Annual Review of Political Science*, *11*(Volume 11, 2008), 563–588. https://doi.org/10.1146/annurev.polisci.11.053106.153836

Flamino, J., Galeazzi, A., Feldman, S., Macy, M. W., Cross, B., Zhou, Z., Serafino, M., Bovet, A., Makse, H. A., & Szymanski, B. K. (2023). Political polarization of news media and influencers on Twitter in the 2016 and 2020 US presidential elections. *Nature Human Behaviour*, *7*(6), 904–916. https://doi.org/10.1038/s41562-023-01550-8

Fuhrmann, M. (2012). Splitting Atoms: Why Do Countries Build Nuclear Power Plants? *International Interactions*, *38*(1), 29–57. https://doi.org/10.1080/03050629.2012.640209

Gabel, M., & Scheve, K. (2007). Estimating the Effect of Elite Communications on Public Opinion Using Instrumental Variables. *American Journal of Political Science*, *51*(4), 1013–1028. https://doi.org/10.1111/j.1540-5907.2007.00294.x

Geiger, N., & Swim, J. K. (2016). Climate of silence: Pluralistic ignorance as a barrier to climate change discussion. *Journal of Environmental Psychology*, *47*, 79–90. https://doi.org/10.1016/j.jenvp.2016.05.002

Hammar, H., & Jagers, S. C. (2006). Can trust in politicians explain individuals' support for climate policy? The case of CO2 tax. *Climate Policy*, *5*(6), 613–625. https://doi.org/10.1080/14693062.2006.9685582

Harden, J. J., Sokhey, A. E., & Runge, K. L. (2019). Accounting for Noncompliance in Survey Experiments. *Journal of Experimental Political Science*, *6*(3), 199–202. https://doi.org/10.1017/XPS.2019.13

Hickel, J., & Slamersak, A. (2022). Existing climate mitigation scenarios perpetuate colonial inequalities. *The Lancet Planetary Health*, *6*(7), e628–e631. https://doi.org/10.1016/S2542-5196(22)00092-4

Hlavac, M. (2018). *Stargazer: Well-Formatted Regression and Summary Statistics Tables* (tech. rep.). Central European Labour Studies Institute (CELSI). https://CRAN.R-project.org/package=stargazer

Iyengar, S., & Hahn, K. S. (2009). Red Media, Blue Media: Evidence of Ideological Selectivity in Media Use. *Journal of Communication*, *59*(1), 19–39. https://doi.org/10.1111/j.1460-2466.2008.01402.x

Iyengar, S., Lelkes, Y., Levendusky, M., Malhotra, N., & Westwood, S. J. (2019). The Origins and Consequences of Affective Polarization in the United States. *Annual Review of Political Science*, *22*(1), 129–146. https://doi.org/10.1146/annurev-polisci-051117-073034

Iyengar, S., Sood, G., & Lelkes, Y. (2012). Affect, Not Ideology: A Social Identity Perspective on Polarization. *Public Opinion Quarterly*, *76*(3), 405–431. https://doi.org/10.1093/poq/nfs038

Judge, M., Kashima, Y., Steg, L., & Dietz, T. (2023). Environmental Decision-Making in Times of Polarization. *Annual Review of Environment and Resources*, *48*(1), 477–503. https://doi.org/10.1146/annurev-environ-112321-115339

Keller, C., Visschers, V., & Siegrist, M. (2012). Affective Imagery and Acceptance of Replacing Nuclear Power Plants. *Risk Analysis*, *32*(3), 464–477. https://doi.org/10.1111/j.1539-6924.2011.01691.x

Kernenergie: Sprookje of nachtmerrie van 1939 tot 2025. (2015). *De Morgen*. Retrieved May 9, 2024, from https://www.demorgen.be/nieuws/kernenergie-sprookje-of-nachtmerrie-van-1939-tot-2025~b6ff2185/

Kotlikoff, L., Kubler, F., Polbin, A., Sachs, J., & Scheidegger, S. (2021). Making Carbon Taxation a Generational Win Win. *International Economic Review*, *62*(1), 3–46. https://doi.org/10.1111/iere.12483

Koudenburg, N., Kiers, H. A. L., & Kashima, Y. (2021). A New Opinion Polarization Index Developed by Integrating Expert Judgments. *Frontiers in Psychology*, *12*. https://doi.org/10.3389/fpsyg.2021.738258

Layman, G. C., & Carsey, T. M. (2002). Party Polarization and "Conflict Extension" in the American Electorate. *American Journal of Political Science*, *46*(4), 786–802. https://doi.org/10.2307/3088434

Lee, T. M., Markowitz, E. M., Howe, P. D., Ko, C.-Y., & Leiserowitz, A. A. (2015). Predictors of public climate change awareness and risk perception around the world. *Nature Climate Change*, *5*(11), 1014–1020. https://doi.org/10.1038/nclimate2728

Lelkes, Y., Sood, G., & Iyengar, S. (2017). The Hostile Audience: The Effect of Access to Broadband Internet on Partisan Affect. *American Journal of Political Science*, *61*(1), 5–20. https://doi.org/10.1111/ajps.12237

Levendusky, M. (2010). Clearer Cues, More Consistent Voters: A Benefit of Elite Polarization. *Political Behavior*, *32*(1), 111–131. https://doi.org/10.1007/s11109-009-9094-0

Levendusky, M., & Malhotra, N. (2016). Does Media Coverage of Partisan Polarization Affect Political Attitudes? *Political Communication*, *33*(2), 283–301. https://doi.org/10.1080/10584609.2015.1038455

Levendusky, M., & Malhotra, N. A. (2013). The Effect of "False" Polarization: Are Perceptions of Political Polarization Self-Fulfilling Prophecies? *The Washington Post*.

Linde, S. (2020). The Politicization of Risk: Party Cues, Polarization, and Public Perceptions of Climate Change Risk. *Risk Analysis*, *40*(10), 2002–2018. https://doi.org/10.1111/risa.13530

Mason, L. (2015). "I Disrespectfully Agree": The Differential Effects of Partisan Sorting on Social and Issue Polarization. *American Journal of Political Science*, *59*(1), 128–145. https://doi.org/10.1111/ajps.12089

Matei, S. A., Kulzick, R., Sinclair-Chapman, V., & Potts, L. (2021). Setting the agenda in environmental crisis: Relationships between tweets, Google search trends, and newspaper coverage during the California drought. *PLOS ONE*, *16*(12), e0259494. https://doi.org/10.1371/journal.pone.0259494

McCright, A. M. (2011). Political orientation moderates Americans' beliefs and concern about climate change. *Climatic Change*, *104*(2), 243–253. https://doi.org/10.1007/s10584-010-9946-y

McCright, A. M., & Dunlap, R. E. (2011a). Cool dudes: The denial of climate change among conservative white males in the United States. *Global Environmental Change*, *21*(4), 1163–1172. https://doi.org/10.1016/j.gloenvcha.2011.06.003

McCright, A. M., & Dunlap, R. E. (2011b). The Politicization of Climate Change and Polarization in the American Public's Views of Global Warming, 2001-2010. *The Sociological Quarterly*, *52*(2), 155–194. Retrieved April 10, 2024, from https://www.jstor.org/stable/23027550

McCright, A. M., Dunlap, R. E., & Marquart-Pyatt, S. T. (2016). Political ideology and views about climate change in the European Union. *Environmental Politics*, *25*(2), 338–358. https://doi.org/10.1080/09644016.2015.1090371

MDK. (2024). Vooruit wil N-VA-voorstel rond wet op kernuitstap na verkiezingen steunen [Section: Binnenland]. *hln.be*. Retrieved May 14, 2024, from https://www.hln.be/binnenland/vooruit-wil-n-va-voorstel-rond-wet-op-kernuitstap-na-verkiezingen-steunen~abe52807/

Melki, M., & Pickering, A. (2014). Ideological polarization and the media. *Economics Letters*, *125*(1), 36–39. https://doi.org/10.1016/j.econlet.2014.08.008

Merkley, E., & Stecula, D. A. (2021). Party Cues in the News: Democratic Elites, Republican Backlash, and the Dynamics of Climate Skepticism. *British Journal of Political Science*, *51*(4), 1439–1456. https://doi.org/10.1017/S0007123420000113

Merkley, E., & Stecula, D. A. (2018). Party Elites or Manufactured Doubt? The Informational Context of Climate Change Polarization. *Science Communication*, *40*(2), 258–274. https://doi.org/10.1177/1075547018760334

Nisbet, M. C. (2009). Communicating Climate Change: Why Frames Matter for Public Engagement. *Environment: Science and Policy for Sustainable Development*, *51*(2), 12–23. https://doi.org/10.3200/ENVT.51.2.12-23

Noelle-Neumann, E. (1974). The Spiral of Silence a Theory of Public Opinion. *Journal of Communication*, *24*(2), 43–51. https://doi.org/10.1111/j.1460-2466.1974.tb00367.x

NVA. (2024). Energie — Nieuw-Vlaamse Alliantie (N-VA). Retrieved April 30, 2024, from https://n-va.be/standpunten/energie

Overgaard, C. S. B. (2024). Perceiving Affective Polarization in the United States: How Social Media Shape Meta-Perceptions and Affective Polarization [Publisher: SAGE Publications Ltd]. *Social Media + Society*, *10*(1), 20563051241232662. https://doi.org/10.1177/20563051241232662

Pauwels, L. (2018, January). België: Een nucleaire grootmacht. Retrieved May 9, 2024, from https://www.vrt.be/vrtnws/nl/2018/05/01/belgie--een-nucleaire-grootmacht/

Peters, E., & Slovic, P. (1996). The Role of Affect and Worldviews as Orienting Dispositions in the Perception and Acceptance of Nuclear Power. *Journal of Applied Social Psychology*, *26*(16), 1427–1453. https://doi.org/10.1111/j.1559-1816.1996.tb00079.x

Prior, M. (2007). *Post-Broadcast Democracy: How Media Choice Increases Inequality in Political Involvement and Polarizes Elections*. Cambridge University Press. Retrieved March 20, 2024, from https://www.cambridge.org/core/books/postbroadcast-democracy/A0D17A3CD156A0D1BB4318EE5DBCC60B

Reiljan, A. (2020). 'Fear and loathing across party lines' (also) in Europe: Affective polarisation in European party systems. *European Journal of Political Research*, *59*(2), 376–396. https://doi.org/10.1111/1475-6765.12351

Rinscheid, A., & Wüstenhagen, R. (2018). Divesting, Fast and Slow: Affective and Cognitive Drivers of Fading Voter Support for a Nuclear Phase-Out. *Ecological Economics*, *152*, 51–61. https://doi.org/10.1016/j.ecolecon.2018.05.015

Rosenberg, E., Tarazona, C., Mallor, F., Eivazi, H., Pastor-Escuredo, D., Fuso-Nerini, F., & Vinuesa, R. (2023). Sentiment analysis on Twitter data towards climate action. *RESULTS IN ENGINEERING*, *19*, 101287. https://doi.org/10.1016/j.rineng.2023.101287

Ross Arguedas, A., Robertson, C., Fletcher, R., & Nielsen, R. (2022). *Echo chambers, filter bubbles, and polarisation: A literature review*. Reuters Institute for the Study of Journalism. Retrieved April 7, 2024, from https://ora.ox.ac.uk/objects/uuid:6e357e97-7b16-450a-a827-a92c93729a08

Schedler, A. (2023). Rethinking Political Polarization. *POLITICAL SCIENCE QUARTERLY*. https://doi.org/10.1093/psquar/qqad038

Siegrist, M., Sütterlin, B., & Keller, C. (2014). Why have some people changed their attitudes toward nuclear power after the accident in Fukushima? *Energy Policy*, *69*, 356–363. https://doi.org/10.1016/j.enpol.2014.02.026

Sohlberg, J. (2017). The Effect of Elite Polarization: A Comparative Perspective on How Party Elites Influence Attitudes and Behavior on Climate Change in the European Union. *Sustainability*, *9*(1), 39. https://doi.org/10.3390/su9010039

Sparkman, G., Geiger, N., & Weber, E. U. (2022). Americans experience a false social reality by underestimating popular climate policy support by nearly half. *Nature Communications*, *13*(1), 4779. https://doi.org/10.1038/s41467-022-32412-y

Steel, T., & Van De Velden, W. (2024, January). Reconstructie van een mislukte kernuitstap — Hoe Tinne Van der Straeten dacht dat de buit binnen was [Section: Politiek & Economie]. Retrieved May 9,

2024, from https://www.tijd.be/politiek-economie/belgie/federaal/reconstructie-van-een-mislukte-kernuitstap-hoe-tinne-van-der-straeten-dacht-dat-de-buit-binnen-was/10440350.html

Struys, J. (2024, February). Wisselmeerderheid voor advies over kernuitstap: "Kunnen niet blijven wachten op Van der Straeten" [Section: Wetstraat]. Retrieved April 30, 2024, from https://www.standaard.be/cnt/dmf20240227_94334032

Tanaka, Y. (2004). Major Psychological Factors Determining Public Acceptance of the Siting of Nuclear Facilities. *Journal of Applied Social Psychology*, *34*(6), 1147–1165. https://doi.org/10.1111/j.1559-1816.2004.tb02000.x

Tucker, J., Guess, A., Barbera, P., Vaccari, C., Siegel, A., Sanovich, S., Stukal, D., & Nyhan, B. (2018). Social Media, Political Polarization, and Political Disinformation: A Review of the Scientific Literature. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3144139

Van Boven, L., Ehret, P. J., & Sherman, D. K. (2018). Psychological Barriers to Bipartisan Public Support for Climate Policy. *Perspectives on Psychological Science*, *13*(4), 492–507. https://doi.org/10.1177/1745691617748966

van der Veen, O. (2023). Political polarisation compared: Creating the comparative political polarisation index. *EUROPEAN POLITICAL SCIENCE*, *22*(2), 260–280. https://doi.org/10.1057/s41304-022-00400-x

Wankhade, M., Rao, A. C. S., & Kulkarni, C. (2022). A survey on sentiment analysis methods, applications, and challenges. *Artificial Intelligence Review*, *55*(7), 5731–5780. https://doi.org/10.1007/s10462-022-10144-1

Wet van 31 januari 2003 houdende de geleidelijke uitstap uit kernenergie voor industriële elektriciteitsproductie. (2003, February). Retrieved May 9, 2024, from https://www.ejustice.just.fgov.be/cgi_loi/change_lg.pl?language=nl&la=N&cn=2003013138&table_name=wet

Whitfield, S. C., Rosa, E. A., Dan, A., & Dietz, T. (2009). The Future of Nuclear Power: Value Orientations and Risk Perception. *Risk Analysis*, *29*(3), 425–437. https://doi.org/10.1111/j.1539-6924.2008.01155.x

Ziegler, A. (2017). Political orientation, environmental values, and climate change beliefs and attitudes: An empirical cross country analysis. *Energy Economics*, *63*, 144–153. https://doi.org/10.1016/j.eneco.2017.01.022

A Survey Questionnaire

Consent

Beste Deelnemer,

Ik ben een Masterstudent Economische Wetenschappen aan de faculteit Economie en Bedrijfskunde van de Universiteit Gent. Als deel van mijn Masterproef voer ik onderzoek naar meningen van burgers zoals u over de klimaatproblematiek, en specifieker over de kernuitstap.

Het invullen van de vragenlijst duurt ongeveer 5 minuten en gebeurt volledig anoniem. Alle verzamelde informatie blijft vertrouwelijk en zal uitsluitend gebruikt worden voor onderzoeksdoeleinden.

Alvast bedankt voor je deelname, dit wordt enorm gewaardeerd,
Mathijs Vansieleghem

Bij vragen over dit onderzoek kan u mij steeds contacteren op het email-adres: mathijs.vansieleghem@ugent.be
Door op de onderstaande vraag 'akkoord' te klikken, bevestigt u akkoord te gaan dat:
- U 18 jaar of ouder bent - U de bovenstaande informatie hebt doorgenomen.
- U beseft deel te nemen aan een wetenschappelijk onderzoek, waarbij uw resultaten op een anonieme manier verwerkt zullen worden.
- U toestemming geeft aan de onderzoekers om de resultaten op anonieme wijze te bewaren, te verwerken en te rapporteren.
- U op de hoogte bent van de mogelijkheid om de deelname aan het onderzoek op ieder moment stop te zetten en deze eventueel later te hervatten zonder gevolgen.
-U het doel van de vragenlijst begrijpt.

Answers: "Akkoord", "Niet Akkoord"

Personal data and controls

- Wat is uw leeftijd? Indien u dit niet wenst te delen, antwoord dan '0'

Answers: Integers with a max of 100

- Wat is uw geslacht?

Answers: "Man", "Vrouw", "Non-Binair", "Wens ik niet te delen"

- Wat is uw hoogst behaalde diploma?

Answers: "Geen", "Middelbare School", "Bachelor", "Master", "Doctoraat"

- Waar zou u zichzelf plaatsen op het klassieke politieke links-rechts spectrum?

Answers: "Extreem Links", "Links", "Centrum Links", "Centrum", "Centrum Rechts", "Rechts", "Extreem Rechts"

- Met welke van volgende partijen identificeert u zich het meest?

Answers: "Vlaams Belang", "N-VA", "CD&V", "Open VLD", "Vooruit", "Groen", "PVDA", "Geen van de bovenstaande"

- Hoe vaak gebruikt u onderstaande bronnen en/of platformen om u te informeren?
  - Televisie
  - X (Twitter)
  - Instagram

- Facebook
- Radio
- Papieren krant
- Online krant

Answers: "Nooit", "Zelden", "Soms", "Veel", "Heel veel"

Personal Energy and consumption related data

- Hoeveel euro spendeert u ongeveer per maand aan energiekosten voor uw woning? (Verwarming, licht, etc.)

Answers: "Minder dan 100 euro", "Tussen de 100 en 200 euro", "Tussen de 200 en 300 euro", "Tussen de 300 en 400 euro", "Meer dan 400", "Weet ik niet", "Ik betaal deze kosten niet persoonlijk", "Wens ik niet te beantwoorden"

- Hoeveel euro spendeert u ongeveer per maand aan energiekosten voor verplaatsing met de auto? (Benzine, diesel, electriciteit voor een electrische auto)

Answers: "Minder dan 50 euro", "Tussen de 50 en 100 euro", "Tussen de 100 en 150 euro", "Tussen de 150 en 200 euro", "Meer dan 200 euro", "Weet ik niet", "Ik heb geen auto", "Wens ik niet te beantwoorden"

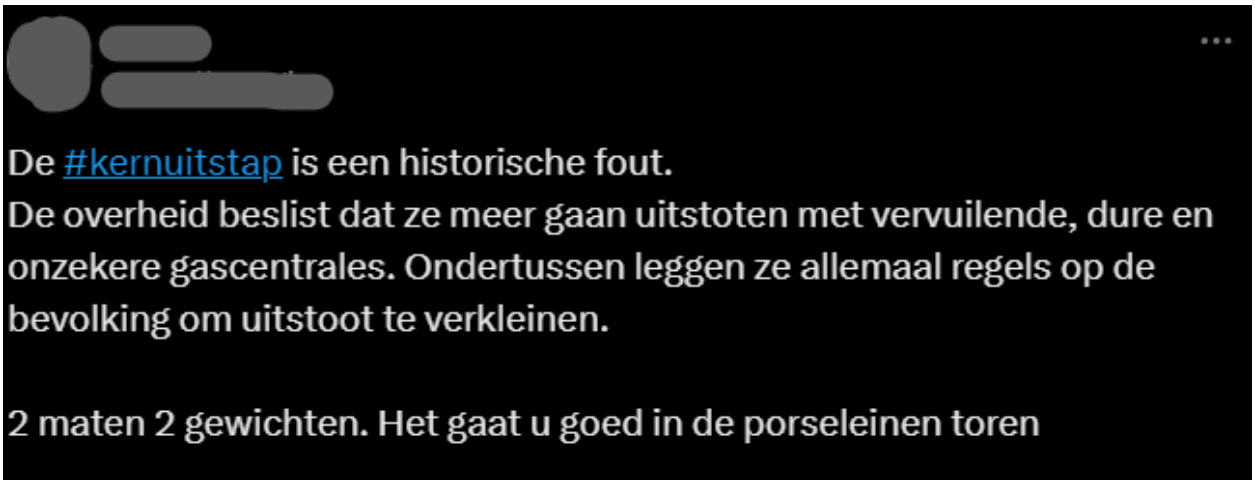
- Heeft uw huishouden op een moment in de laatste 12 maanden moeilijkheden gehad met het betalen van de gewoontelijke kosten (voeding, verwarming, ...)?

Answers: "Ja", "Nee", "Weet ik niet"

- Hoe vaak heeft u of uw huishouden in de laatste maand moeilijkheden gehad met het betalen van de gewoontelijke kosten (voeding, verwarming, ...)?

Answers: "Nooit", "Soms", "Vaak", "Weet ik niet"

Treatments



Nuclear phase out related opinion questions

- Wat is uw positie binnen het debat rond de kernuitstap?

Answers: Sliding scale from 0 to 100 with 0 equalling "Volledig niet akkoord", 50 equalling "Neutraal", and 100 equalling "Volledig Akkoord"

- Gelooft u dat men het sluiten van de Belgische kerncentrales kan opvangen door het gebruik van hernieuwbare energie (zonnepanelen, windmolens, ...) en de nieuwe gascentrales?

Answers: "Volledig niet akkoordd", "Niet akkoord", "Neutraal/Geen mening", "Akkoord", "Volledig akkoord"

- Denkt u dat de meerderheid van de bevolking uw mening over de kernuitstap deelt?

Answers: "Ja", "Nee", "Onzeker"

- Duid hier 'Akkoord' aan

Answers: "Akkoord", "Niet akkoord", "Geen mening"

- In welke mate denkt u dat de bevolking van Vlaanderen een Belgische kernuitstap steunt. 0 indiceert een totaal gebrek aan steun voor de kernuitstap, 100 indiceert volledige steun van de bevolking voor de kernuitstap.

Answers: Sliding scale from 0 to 100 with 0 equalling "Volledig tegen", 50 equalling "Neutraal", and 100 equalling "Volledig voor"

- In welke mate denkt u dat de meningen over de kernuitstap verdeeld zijn binnen het debat. 0 indiceert geen verdeeldheid van de meningen, 100 indiceert totale verdeeldheid van de meningen in het debat.

Answers: Sliding scale from 0 to 100 with 0 equalling "Totaal geen verdeeldheid", 50 equalling "Neutraal", and 100 equalling "Heel veel verdeeldheid"

- Hoe waarschijnlijk is het dat u uw mening geeft in een gesprek omtrent de kernuitstap binnen de volgende situaties?
  - Met mensen waarvan u verwacht dat zij uw mening delen
  - Met mensen waarvan u verwacht dat ze uw mening niet delen
  - Op sociale media zoals Instagram en X
  - Bij een discussie op uw werk

Answers: "Zeer onwaarschijnlijk", "Onwaarschijnlijk", "Neutraal", "Waarschijnlijk", "Zeer waarschijnlijk"

Affective polarization questions

- Hoeveel vertrouwen heeft u jegens de volgende groepen? 0 indiceert volledig geen vertrouwen in deze groep, 100 staat indiceert volledig vertrouwen in deze groep.
  - Mensen met dezelfde mening als u over de kernuitstap
  - Mensen met de tegenovergestelde mening als u over de kernuitstap
  - Mensen zonder uitgesproken mening over de kernuitstap
  - Politici met dezelfde mening als u over de kernuitstap
  - Politici met de tegenovergestelde mening als u over de kernuitstap
  - Politici zonder uitgesproken mening over de kernuitstap
  - Journalisten met dezelfde mening als u over de kernuitstap
  - Journalisten met de tegenovergestelde mening als u over de kernuitstap
  - Journalisten zonder uitgesproken mening over de kernuitstap

Answers: Sliding scale from 0 to 100 with 0 equalling "Volledig geen vertrouwen", 50 equalling "Neutraal", and 100 equalling "Volledig vertrouwen"

- Hoeveel waarde hecht u aan de mening van volgende groepen over onderwerpen verschillend van de kernuitstap? 0 indiceert volledig geen waarde aan hun mening toekennen, 100 staat indiceert enorm veel waarde aan hun mening toekennen.
  - Mensen met dezelfde mening als u over de kernuitstap
  - Mensen met de tegenovergestelde mening als u over de kernuitstap
  - Mensen zonder uitgesproken mening over de kernuitstap
  - Politici met dezelfde mening als u over de kernuitstap
  - Duid hier 50 aan (control question)
  - Politici met de tegenovergestelde mening als u over de kernuitstap
  - Politici zonder uitgesproken mening over de kernuitstap
  - Journalisten met dezelfde mening als u over de kernuitstap
  - Journalisten met de tegenovergestelde mening als u over de kernuitstap
  - Journalisten zonder uitgesproken mening over de kernuitstap

Answers: Sliding scale from 0 to 100 with 0 equalling "Volledig geen waarde", 50 equalling "Neutraal", and 100 equalling "Enorm veel waarde"

- Vergeleken met uw positie, hoe schat u de intensiteit van de mening van volgende groepen over de kernuitstap in.
  - Mensen met dezelfde mening als u over de kernuitstap
  - Mensen met de tegenovergestelde mening als u over de kernuitstap
  - Mensen zonder uitgesproken mening over de kernuitstap

Answers: "Veel minder extreem", "Licht minder extreem", "Even extreem", "Licht meer extreem", "Veel meer extreem"

- Waar op het ideologische links-rechts spectrum zou u de gemiddelde persoon van de volgende groepen plaatsen? De schaal loopt van 0 (extreem links) tot 100 (extreem rechts)
  - Een persoon die voor de kernuitstap is
  - Een persoon die tegen de kernuitstap is
  - Een persoon die geen uitgesproken mening heeft over de kernuitstap
  - Duid hier 50 aan (Control question)

Answers:Sliding scale from 0 to 100 with 0 equalling "Extreem Links", 50 equalling "Centrum", and 100 equalling "Extreem Rechts"

- Wilt u nog iets kwijt over dit onderzoek of de vragen die u moest beantwoorden?

Answers: Open textfield

B Interaction effect regressions

Table 14: Interaction Effects Actual Opinion Polarization

	Dependent variable:	
	Position	
	(1)	(2)
treat_pro	8.685 (12.053)	
treat_anti		−4.264 (14.085)
PartyGeen van de bovenstaande	−1.500 (9.610)	−10.289 (8.563)
PartyGroen	26.729*** (9.954)	22.480*** (8.090)
PartyN-VA	−15.219 (9.509)	−21.035** (8.439)
PartyOpen VLD	−5.277 (11.139)	−19.111* (10.036)
PartyPVDA	7.700 (12.450)	1.698 (10.049)
PartyVlaams Belang	−12.772 (13.142)	−23.374* (13.179)
PartyVooruit	10.841 (9.775)	7.721 (9.299)
furthereducation	5.164 (3.899)	5.813 (3.968)
gender_m	−13.338*** (3.716)	−13.695*** (3.713)
Age	−0.033 (0.123)	−0.026 (0.119)
treat_pro:PartyGeen van de bovenstaande	−8.898 (14.817)	
treat_pro:PartyGroen	−7.897 (14.523)	
treat_pro:PartyN-VA	−4.281 (14.874)	
treat_pro:PartyOpen VLD	−24.544 (17.903)	
treat_pro:PartyPVDA	−11.568 (19.556)	
treat_pro:PartyVlaams Belang	−14.911 (21.403)	
treat_pro:PartyVooruit	−9.687 (15.748)	
treat_anti:PartyGeen van de bovenstaande		13.319 (16.107)
treat_anti:PartyGroen		1.697 (18.507)
treat_anti:PartyN-VA		11.336 (16.587)
treat_anti:PartyOpen VLD		16.940 (19.373)
treat_anti:PartyPVDA		
treat_anti:PartyVlaams Belang		12.472 (21.823)
treat_anti:PartyVooruit		0.221 (16.704)
Constant	34.161*** (10.122)	38.633*** (8.341)
Observations	202	202
R^2	0.350	0.354
Adjusted R^2	0.286	0.294
Residual Std. Error	24.625 (df = 183)	24.484 (df = 184)
F Statistic	5.468*** (df = 18; 183)	5.922*** (df = 17; 184)
Note:		*p<0.1; **p<0.05; ***p<0.01

Table 15: Interaction Effects Perceived Opinion Polarization

	Dependent variable:			
	Opiniondivide		diffSpectrum	
	(1)	(2)	(3)	(4)
treat_pro	6.305 (9.727)		10.035 (9.409)	
treat_anti		−1.087 (11.466)		7.122 (11.174)
PartyGeen van de bovenstaande	8.308 (7.756)	6.898 (6.971)	0.466 (7.502)	1.193 (6.794)
PartyGroen	17.077** (8.033)	12.051* (6.586)	4.338 (7.770)	−3.140 (6.419)
PartyN-VA	−0.918 (7.674)	−2.642 (6.870)	12.901* (7.423)	7.291 (6.695)
PartyOpen VLD	2.538 (8.990)	5.980 (8.170)	8.962 (8.695)	4.617 (7.962)
PartyPVDA	5.565 (10.048)	7.730 (8.181)	2.983 (9.719)	−3.542 (7.973)
PartyVlaams Belang	8.265 (10.606)	13.194 (10.729)	0.879 (10.259)	−3.126 (10.456)
PartyVooruit	11.717 (7.889)	8.509 (7.570)	−2.861 (7.631)	−2.096 (7.378)
furthereducation	0.213 (3.146)	0.601 (3.230)	0.305 (3.043)	0.933 (3.148)
gender_m	−5.765* (2.999)	−5.355* (3.023)	−6.409** (2.901)	−6.146** (2.946)
Age	−0.126 (0.100)	−0.124 (0.097)	0.051 (0.096)	0.057 (0.095)
treat_pro:PartyGeen van de bovenstaande	−2.187 (11.958)		−3.639 (11.567)	
treat_pro:PartyGroen	−10.877 (11.721)		−16.416 (11.337)	
treat_pro:PartyN-VA	0.561 (12.004)		−14.616 (11.611)	
treat_pro:PartyOpen VLD	−3.274 (14.449)		−22.347 (13.976)	
treat_pro:PartyPVDA	8.165 (15.783)		−20.099 (15.266)	
treat_pro:PartyVlaams Belang	10.664 (17.273)		−6.392 (16.708)	
treat_pro:PartyVooruit	−3.195 (12.709)		2.241 (12.293)	
treat_anti:PartyGeen van de bovenstaande		−0.250 (13.112)		−11.176 (12.778)
treat_anti:PartyGroen		−1.186 (15.065)		4.316 (14.682)
treat_anti:PartyN-VA		2.323 (13.502)		−3.712 (13.159)
treat_anti:PartyOpen VLD		−17.190 (15.770)		−15.032 (15.369)
treat_anti:PartyPVDA				
treat_anti:PartyVlaams Belang		−4.630 (17.765)		−2.190 (17.313)
treat_anti:PartyVooruit		2.568 (13.598)		−8.300 (13.253)
Constant	59.546*** (8.169)	62.234*** (6.790)	43.423*** (7.902)	45.667*** (6.617)
Observations	202	202	202	202
R^2	0.138	0.129	0.105	0.081
Adjusted R^2	0.054	0.048	0.017	−0.004
Residual Std. Error	19.874 (df = 183)	19.931 (df = 184)	19.223 (df = 183)	19.424 (df = 184)
F Statistic	1.632* (df = 18; 183)	1.597* (df = 17; 184)	1.194 (df = 18; 183)	0.957 (df = 17; 184)
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 16: Interaction Effects Actual Intergroup Polarization: Direct measures

	Dependent variable:			
	TrustSame		TrustOpposing	
	(1)	(2)	(3)	(4)
treat_pro	18.682** (7.743)		−11.092 (8.769)	
treat_anti		−17.244* (9.167)		3.625 (10.300)
PartyGeen van de bovenstaande	10.198 (6.174)	−0.376 (5.573)	−13.109* (6.992)	−16.416*** (6.262)
PartyGroen	10.100 (6.395)	−1.121 (5.265)	−3.087 (7.242)	2.896 (5.916)
PartyN-VA	13.911** (6.109)	−0.422 (5.492)	−23.371*** (6.918)	−12.877** (6.171)
PartyOpen VLD	11.573 (7.156)	−3.210 (6.532)	−7.090 (8.104)	−5.850 (7.339)
PartyPVDA	−5.964 (7.998)	−11.373* (6.540)	−2.352 (9.058)	7.756 (7.349)
PartyVlaams Belang	14.145* (8.443)	−7.419 (8.577)	−16.406* (9.561)	2.165 (9.638)
PartyVooruit	7.317 (6.280)	−2.599 (6.052)	−7.914 (7.111)	−0.253 (6.800)
furthereducation	−0.279 (2.505)	0.453 (2.583)	0.311 (2.836)	−0.372 (2.902)
gender_m	0.712 (2.387)	0.810 (2.417)	0.735 (2.703)	0.116 (2.715)
Age	0.013 (0.079)	−0.008 (0.078)	−0.040 (0.090)	−0.011 (0.087)
treat_pro:PartyGeen van de bovenstaande	−12.103 (9.519)		1.535 (10.780)	
treat_pro:PartyGroen	−16.974* (9.330)		9.534 (10.566)	
treat_pro:PartyN-VA	−19.970** (9.555)		17.362 (10.821)	
treat_pro:PartyOpen VLD	−20.263* (11.501)		2.375 (13.025)	
treat_pro:PartyPVDA	1.503 (12.563)		22.463 (14.227)	
treat_pro:PartyVlaams Belang	−20.945 (13.749)		35.752** (15.571)	
treat_pro:PartyVooruit	−13.824 (10.117)		16.083 (11.457)	
treat_anti:PartyGeen van de bovenstaande		16.977 (10.483)		11.806 (11.779)
treat_anti:PartyGroen		10.791 (12.045)		−7.224 (13.534)
treat_anti:PartyN-VA		21.342** (10.795)		−12.115 (12.130)
treat_anti:PartyOpen VLD		21.847* (12.608)		3.524 (14.167)
treat_anti:PartyPVDA				
treat_anti:PartyVlaams Belang		36.326** (14.203)		−14.348 (15.959)
treat_anti:PartyVooruit		13.933 (10.872)		−3.906 (12.216)
Constant	53.713*** (6.503)	66.694*** (5.429)	53.517*** (7.364)	47.123*** (6.100)
Observations	202	202	202	202
R^2	0.097	0.079	0.197	0.193
Adjusted R^2	0.008	−0.006	0.118	0.119
Residual Std. Error	15.819 (df = 183)	15.935 (df = 184)	17.915 (df = 183)	17.905 (df = 184)
F Statistic	1.093 (df = 18; 183)	0.927 (df = 17; 184)	2.487*** (df = 18; 183)	2.590*** (df = 17; 184)
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 17: Interaction Effects Actual Intergroup Polarization: Indirect measure

	Dependent variable:	
	diffTrust	
	(1)	(2)
treat_pro	29.774** (13.008)	
treat_anti		−20.870 (15.336)
PartyGeen van de bovenstaande	23.307** (10.372)	16.040* (9.324)
PartyGroen	13.187 (10.742)	−4.017 (8.809)
PartyN-VA	37.283*** (10.262)	12.455 (9.188)
PartyOpen VLD	18.663 (12.021)	2.640 (10.927)
PartyPVDA	−3.612 (13.437)	−19.129* (10.942)
PartyVlaams Belang	30.551** (14.183)	−9.583 (14.350)
PartyVooruit	15.231 (10.549)	−2.345 (10.125)
furthereducation	−0.590 (4.207)	0.826 (4.321)
gender_m	−0.023 (4.010)	0.693 (4.043)
Age	0.053 (0.133)	0.003 (0.130)
treat_pro:PartyGeen van de bovenstaande	−13.637 (15.991)	
treat_pro:PartyGroen	−26.509* (15.674)	
treat_pro:PartyN-VA	−37.332** (16.052)	
treat_pro:PartyOpen VLD	−22.638 (19.321)	
treat_pro:PartyPVDA	−20.960 (21.105)	
treat_pro:PartyVlaams Belang	−56.697** (23.098)	
treat_pro:PartyVooruit	−29.907* (16.995)	
treat_anti:PartyGeen van de bovenstaande		5.171 (17.537)
treat_anti:PartyGroen		18.015 (20.150)
treat_anti:PartyN-VA		33.457* (18.060)
treat_anti:PartyOpen VLD		18.324 (21.094)
treat_anti:PartyPVDA		
treat_anti:PartyVlaams Belang		50.675** (23.762)
treat_anti:PartyVooruit		17.839 (18.188)
Constant	0.195 (10.924)	19.571** (9.082)
Observations	202	202
R^2	0.178	0.168
Adjusted R^2	0.097	0.091
Residual Std. Error	26.575 (df = 183)	26.658 (df = 184)
F Statistic	2.195*** (df = 18; 183)	2.184*** (df = 17; 184)
Note:		*p<0.1; **p<0.05; ***p<0.01

Table 18: Interaction Effects Perceived Intergroup Polarization: Direct measures

	Dependent variable:			
	IntensSame		IntensOppo	
	(1)	(2)	(3)	(4)
treat_pro	0.084 (0.418)		−0.382 (0.450)	
treat_anti		0.211 (0.490)		0.187 (0.536)
PartyGeen van de bovenstaande	0.393 (0.333)	0.322 (0.298)	−0.440 (0.359)	0.003 (0.326)
PartyGroen	0.945*** (0.345)	0.766*** (0.281)	−0.339 (0.372)	−0.190 (0.308)
PartyN-VA	0.237 (0.329)	0.236 (0.294)	−0.327 (0.355)	−0.433 (0.321)
PartyOpen VLD	−0.384 (0.386)	−0.173 (0.349)	−0.149 (0.416)	0.096 (0.382)
PartyPVDA	0.413 (0.431)	0.637* (0.350)	−0.747 (0.465)	−0.240 (0.382)
PartyVlaams Belang	0.810* (0.455)	0.788* (0.459)	−0.771 (0.491)	−0.123 (0.501)
PartyVooruit	0.334 (0.339)	0.273 (0.324)	−0.249 (0.365)	0.186 (0.354)
furthereducation	−0.054 (0.135)	−0.004 (0.138)	0.233 (0.146)	0.266* (0.151)
gender_m	0.021 (0.129)	0.009 (0.129)	0.066 (0.139)	0.086 (0.141)
Age	−0.011** (0.004)	−0.011*** (0.004)	−0.005 (0.005)	−0.005 (0.005)
treat_pro:PartyGeen van de bovenstaande	−0.233 (0.513)		0.939* (0.554)	
treat_pro:PartyGroen	−0.337 (0.503)		0.289 (0.543)	
treat_pro:PartyN-VA	0.138 (0.515)		−0.104 (0.556)	
treat_pro:PartyOpen VLD	0.416 (0.620)		0.095 (0.669)	
treat_pro:PartyPVDA	0.482 (0.678)		1.136 (0.731)	
treat_pro:PartyVlaams Belang	0.094 (0.742)		1.047 (0.800)	
treat_pro:PartyVooruit	−0.051 (0.546)		0.758 (0.589)	
treat_anti:PartyGeen van de bovenstaande		−0.132 (0.560)		−0.277 (0.612)
treat_anti:PartyGroen		0.358 (0.644)		0.052 (0.704)
treat_anti:PartyN-VA		0.079 (0.577)		0.403 (0.631)
treat_anti:PartyOpen VLD		−0.332 (0.674)		−0.534 (0.737)
treat_anti:PartyPVDA				
treat_anti:PartyVlaams Belang		0.061 (0.759)		−0.631 (0.830)
treat_anti:PartyVooruit		−0.047 (0.581)		−0.409 (0.635)
Constant	3.027*** (0.351)	3.003*** (0.290)	4.221*** (0.378)	3.966*** (0.317)
Observations	202	202	202	202
R^2	0.173	0.171	0.097	0.071
Adjusted R^2	0.091	0.094	0.008	−0.015
Residual Std. Error	0.853 (df = 183)	0.852 (df = 184)	0.920 (df = 183)	0.931 (df = 184)
F Statistic	2.122*** (df = 18; 183)	2.229*** (df = 17; 184)	1.087 (df = 18; 183)	0.823 (df = 17; 184)
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 19: Interaction Effects Perceived Intergroup Polarization: Indirect measures

	Dependent variable:	
	diffIntens	
	(1)	(2)
treat_pro	−0.466 (0.562)	
treat_anti		−0.024 (0.671)
PartyGeen van de bovenstaande	−0.833* (0.448)	−0.319 (0.408)
PartyGroen	−1.285*** (0.464)	−0.956** (0.385)
PartyN-VA	−0.564 (0.443)	−0.670* (0.402)
PartyOpen VLD	0.236 (0.519)	0.269 (0.478)
PartyPVDA	−1.159** (0.580)	−0.877* (0.479)
PartyVlaams Belang	−1.581** (0.613)	−0.911 (0.628)
PartyVooruit	−0.583 (0.456)	−0.087 (0.443)
furthereducation	0.287 (0.182)	0.269 (0.189)
gender_m	0.044 (0.173)	0.077 (0.177)
Age	0.006 (0.006)	0.006 (0.006)
treat_pro:PartyGeen van de bovenstaande	1.171* (0.691)	
treat_pro:PartyGroen	0.627 (0.677)	
treat_pro:PartyN-VA	−0.241 (0.693)	
treat_pro:PartyOpen VLD	−0.321 (0.835)	
treat_pro:PartyPVDA	0.654 (0.912)	
treat_pro:PartyVlaams Belang	0.953 (0.998)	
treat_pro:PartyVooruit	0.809 (0.734)	
treat_anti:PartyGeen van de bovenstaande		−0.145 (0.767)
treat_anti:PartyGroen		−0.307 (0.882)
treat_anti:PartyN-VA		0.324 (0.790)
treat_anti:PartyOpen VLD		−0.202 (0.923)
treat_anti:PartyPVDA		
treat_anti:PartyVlaams Belang		−0.692 (1.040)
treat_anti:PartyVooruit		−0.361 (0.796)
Constant	1.193** (0.472)	0.963** (0.397)
Observations	202	202
R^2	0.170	0.138
Adjusted R^2	0.088	0.058
Residual Std. Error	1.148 (df = 183)	1.166 (df = 184)
F Statistic	2.078*** (df = 18; 183)	1.732** (df = 17; 184)
Note:		*p<0.1; **p<0.05; ***p<0.01