Master Thesis

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The Downside of Democracy

Polarization through Choice Induced Attitude Change in a Political Context

Abstract: Polarization is becoming an increasingly visible and damaging phenomenon. Recent studies have suggested that one factor that increases polarization is the simple act of voting. This thesis builds on earlier research by examining this relationship in a controlled experiment. Participants voted in a hypothetical election and attitudes towards candidates were modulated by this act of voting. Consistent with dissonance theory and previous studies, this thesis shows that people taking a vote become more polarized than those that do not.

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1. Introduction

In recent years, polarization has become an increasingly visible problem in the world. Recent examples like the Brexit (Saltzman, 2016), the Trump versus Clinton presidential election in the United States of America (Harwood, 2016) or Austrian Van der Bellen versus Hofer presidential election (O'Sullivan, 2016) show that the effects can be grave both economically and socially. The origin of polarization and the factors causing it have been thoroughly studied from numerous angles (Baldassarri & Bearman, 2007). Recent studies shed some new light on this issue. The act of voting itself may cause the polarization of an electorate (Mullainathan & Washington, 2009). The notion that choice induced attitude change, based on the theory of cognitive dissonance (Festinger, 1957), might be an explanation for polarization, sparked a considerable amount of research on the matter. The conclusions vary widely amongst researchers. Nonetheless, the phenomenon has only been studied using historic data and never in a controlled laboratory setting. This thesis contributes to the existing research by examining whether the act of voting itself can lead to a more polarized electorate by running a controlled, web-based experiment. The research question of this thesis is to determine whether a relationship exists between voting and polarization. A website was built in order to have participants fulfill various tasks concerning a hypothetical election in the Netherlands. The information provided to the participants was conditional on their actions and dependent on their treatment group. Through the aforementioned data gathering experiment, this thesis establishes a causal relation between voting and polarization. In essence, participants' attitudes towards candidates were modulated by the act of voting, candidates voted for were assessed more favorably. Empirical evidence is consistent with the idea that cognitive dissonance reduction dissonance reduction can lead to attitudinal ramifications in the political domain. The remainder of this thesis is structured as follows. Firstly, we review the existing literature on the relevant fields and formulate our hypotheses. Secondly, we examine the design and procedure of the experiment. Lastly, we present the results after which a discussion of these results, the experiment, possible implications, and the conclusion follows.

2. Research question and hypotheses

This thesis combines existing literature on various subjects in order to establish the causal relation between the act of voting and polarization. Research from different scientific fields, such as applied economics, political science and social psychology, is used in order to formulate the hypotheses. Below a short review is given on the different research fields and their relation to this thesis is explained.

2.1 Cognitive dissonance

The theory of cognitive dissonance, one of the dominating research interests of social psychologists (Harmon-Jones & Harmon-Jones, 2007), was first formulated by Leon Festinger in his book "A theory of cognitive dissonance" (1957). Cognitive dissonance made a distinction between consonant cognitions and dissonant cognitions (Harmon-Jones & Mills, 1999). A cognition was the centerpiece of the newly developed cognitive psychology (Chomsky, 1959; Neisser, 1967; Anderson J. R., 2010) and Neisser (1967) defines it as "(…) all processes by which the sensory input is transformed, reduced, elaborated, stored, recovered, and used". Simply put, it ranges from what a person thinks and decides to what a person remembers and understands. For Festinger's dissonance theory, a set of cognitions is considered consonant if they follow from another, while a pair of cognitions is considered to be dissonant to one another when the first cognitions leads to the opposite of the other.

Since the existence of dissonance is uncomfortable to oneself (Harmon-Jones & Mills, 1999) a person will attempt to eliminate or reduce this cognitive dissonance (Brehm, 1956). Festinger himself compares this dissonance reduction to the reduction of hunger, stating that the presence of dissonance leads to actions to be undertaken in order to reduce the dissonance in the same way that the presence of hunger leads to the action of eating in order to reduce the hunger (Festinger, 1957). Dissonance reduction is summarized by Akerlof and Dickens (1982) as follows: "(…) persons who have made decisions tend to discard information that would suggest such decisions are in error because the cognition that the decision might be in error is in conflict with the cognition that ego is a smart person."

One paradigms from cognitive dissonance theory is the so-called free choice paradigm (Cooper, 2007). According to this paradigm, people who rate a set of objects, choose between two offered options, and then re-rate all objects, increase the rating for the chosen while reducing the rating for the unchosen (Brehm, 1956). Recently, Brehm's experiment was repeated on monkeys and children (Edgan, Bloom, & Santos, 2010) and the results were found to be similar to the original research.

However, the classical free choice paradigm (FCP) has come under some scrutiny. Recent research has stated that the increase of a rating for the chosen in the 'rate, choice, and re-rate' set-up of the FCP (Brehm, 1956), cannot be interpreted as evidence for dissonance reduction or choice induced attitude change (Chen & Risen, 2010). The authors argue that the methodology used by most research on the FCP is flawed and, as a result, self-selection and non-random treatment of participants in FCP experiments occurs. The null hypotheses in researches, like the monkey and children FCP experiment (Edgan, Bloom, & Santos, 2010), are often incorrectly stated and the difference in treatment based on choices, like the different measurements of spread and the exclusion of certain individuals from the analysis, create a measurement bias. This bias will subsequently give evidence for choice induced attitude change even though the attitudes do not change due to the choices made (Chen & Risen, 2010).

Fortunately, Chen and Risen offer four different methods that can solve the methodological problems arising from the FCP (Risen & Chen, 2010). One of these methods is what they call 'controlling for the information revealed by choice'. This means that instead of only allowing a choice to be made in the experimental condition (the rate, choice, re-rate condition or RCR) a choice is also offered to subjects in the control condition (the rate, re-rate, choice condition or RRC). Dissonance theory states that chosen spread occurs because of dissonance reduction. This entails that only people who have had to make a choice before re-rating, the RCR condition, would show a significant chosen spread. However, should spreading arise because of the information that is revealed by the choice made than a spread would occur for all subjects, both in the RRC and RCR conditions. The experiment, to be introduced in more detail later, will empoy this method to counter the methodological problems arriding from the FCP.

Ever since the conception of cognitive dissonance theory and its paradigms, it has been applied to numerous areas, such as health sciences (McMaster & Lee, 1991; Stellefson, Wang, & Klein, 2006) financial investor behavior (Goetzmann & Peles, 1997; Prast & Vor, 2005) and consumer satisfaction (Cohen & Houston, 1972; Anderson R. E., 1973). In this thesis, cognitive dissonance theory will serve as the underlying theoretical framework for the investigation on how the act of voting influences polarization. In the following section the concept of polarization will be discussed.

2.2 Polarization

Polarization has been an interesting field of study for scholars from a multitude of disciplines. From historians studying polarized Asante in 19th century Africa (Wilks, 1975) to social media analysts examining the possibly polarizing role of Twitter (Gruzd, 2014), polarization is a

vigorously studied phenomenon. Before statements concerning polarizations are made, a definition first has to be adopted. For this thesis, we adopt the definition provided in Esteban and Ray (1994). “Imagine a particular distribution of Y, which can be anything such as knowledge, wealth, or even ideas. A population can then be grouped into several groups that have a sizable degree of within-group homogeneity, while the comparison between groups display a considerable degree of heterogeneity.”

The causes of political polarization, which can lead to great social unrest or even revolts e.g. the French Revolution (McPhee, 1989) and Russian Revolution (Suny, 1983), have been found in endogenous factors such as gender (Hoel & Knutsen, 1989), race (Hass, Katz, Rizzo, Bailey, & Eisenstadt, 1991) and country of origin (Frye, 2002). Exogenous factors such as education (Ellis & Ura, 2011) and the size of government (Linquist & Östling, 2010) have also been identified. In this thesis, another possible cause is examined: the act of voting itself. A vote for a candidate leads to a more favorable attitude towards this candidate, while at the same time leading to a less favorable attitude of the opposing candidate, thus increasing polarization.

The measurement for polarization used for this thesis, based on the measurement by Duclos, Esteban, and Ray (Polarization: Concepts, Measurement, Estimation, 2004), can be described as a simple one. Suppose one is to evaluate a pair of political candidates by giving them a score between 0 and 100 (whether a 0 or 100 marks the maximum score is of no importance in this example). After the first rating, there is a likely difference between the scores given to the candidates. If one increases the score of one candidate and/or decreases the score of the other candidate in a subsequent rating ceteris paribus, then the difference between the two candidates increases, essentially polarizing the person rating the candidates. This simple measurement of political polarization is called the difference in evaluative distance and can be found in other literature investigating the choice induced attitude change in a political context (Mullainathan & Washington, 2009; Elinder, 2012; McGregor, 2013).

2.3 Hypothesis 1: The act of voting and polarization

This section combines the two research fields of the previous two sections in order to form and build my main hypothesis. Research on the act of voting, dissonance reduction, and polarization dates back as early as Frenkel and Doob (1976). The researchers approached people, who were about to vote in the 1971 provincial election of Ontario, Canada, just before or just after they had cast their vote in front of the polling station. Two 7-point Likert scale questions were asked, the first with regard to chances of their (to be) chosen candidate and the latter concerning the certainty of their choice. A difference was found between the people going to and the people

coming from the polling station. People who had just voted for a candidate scored their candidate higher on both questions, the earliest prove that voting could have a role in polarization.

More research on the matter followed examing the effect in both North America (Crosby & Taylor, 1983; Beasley & Joslyn, 2001) and Europe (Anderson, Mendes, & Tverdova, 2004). One important drawback of these researches is that they all focus on the differences in attitudes between voters and non-voters. These studies fail to take into account that voter turnout is likely to be correlated with voter attitudes (Mullainathan & Washington, 2009). The attitude changes found by these researchers is therefore misconstrued as evidence that choice induced attitude changes are at work. Due to the confounding factor of voter turnout one cannot conclude that the choices altered the attitudes.

The literature moved forward with the paper titled "Sticking with your Vote: Cognitive Dissonance and Voting" (Mullainathan & Washington, 2009). Their criticism on the previous literature, as mentioned above, focused on the endogenous nature of a person's voting decision. If two people like a candidate but one decided to vote for the candidate whilst the other did not vote at all, the fact that the voter likes a candidate more than the non-voter does can be explained using traditional choice theories (Bem, 1967). When trying to establish a causal inference between voting and polarization, by means of dissonance reduction, the authors thus examine a variable, which is exogenous of voting preferences but does influence the voting decision.

They find this variable in the age restriction on voting. They compare the attitudes of subjects in year *t*, which is a non-Presidential year, meaning the election took place 2 years earlier, in an age group ranging from 18 to 21 years old. This means that in the election year (*t-2*) about half of their sample was 16 to 17 years old and therefore ineligible to vote whilst the other half of their sample, aged 18 to 19 years old, was eligible. The results were clear, eligible voters were approximately twice as polarized as ineligible voters were. Having looked at several possibly confounding factors, such as age-induced polarization and information driven polarization instead of dissonance driven, they conclude that none of these have any effect. Therefore, the authors conclude that voting can lead to greater political polarization via cognitive dissonance.

Their conclusions are questioned (Elinder, 2012) three years later. Elinder concludes that there were several flaws in their research. Most notably, the shift of political attitudes does not persist until the subsequent election. Mullainathan and Washington (2009) only dedicate a small portion of interest to this phenomenon stating their results on this phenomenon are too imprecise and further research is needed. Elinder answers this call and in his paper (2012) examines the polarizing effect that voting has one month prior to elections. Furthermore, he extends the dataset

to include Swedish data as well, all the while staying close to the methodology used by Mullainathan and Washington. Based on his data and research Elinder finds no effect of voting on political attitudes via cognitive dissonance.

Elinder's conclusion (2012) is questioned with the use of Canadian data from three elections (McGregor, 2013). While most previous research study the relationship between voting and polarization in the United States of America, only a limited amount of research focuses on countries where a multi-party system is in place (Elinder, 2012; Bølstad, Dinas, & Riera, 2013). In a multi-party system, where party dynamics are less clear (Richardson, 1991) and the partisan attachment is low, meaning party ratings become more volatile (LeDuc, Clarke, Jenson, & Pammett, 1984), choice induced attitude changes are more likely to be observed (McGregor, 2013). The results are ambiguous and, one might even argue, inconclusive. While finding evidence for polarization through dissonance reduction, the effect does not hold for everyone during a prolonged period. In conclusion, the author admits that only a small portion of the respondents were interviewed in both 2004 and 2006 and, again, more research is required on the matter of long-term effects of dissonance reduction.

Even though much research has been done, researchers seem to disagree with each other on the correct methodology to employ and what conclusions to draw from the acquired results. One thing that all the papers concerning the question of polarization through voting have in common is that all of the papers look at data from the past. The data was taken from the American National Election Study (ANES) or other databases that gather information about political attitudes and voting behavior. My research contributes to the literature by running an experiment in which the choices and attitudes of respondents are carefully observed while keeping control over the information that respondents receive. Furthermore, as the design of the experiment will show in a later section, the experiment is set up in such a way that dissonance is expected to arise. An important condition for studying choice induced attitude change is that dissonance is actually experienced. This experiment is able to do exactly that. In doing so, the research is able to establish a causal relation between voting and polarization. Based on the research above the first hypothesis is formed which predicts the following:

H1: Voting will increase the polarization of the electorate.

2.4 Hypothesis 2 and 3: The role of information in polarization

The experimental design allows the examination of another factor that, as research shows, influences the political attitudes of individuals. Information, as this section will show, plays a role in both the attitude formation as well as dissonance reduction. The interest for information in this thesis is twofold. Firstly, it allows an additional hypothesis concerning the effect negative information has on attitude formation in the political domain. Secondly, information allows for an additional test of the effect of dissonance reduction. This section will start with a brief introduction of information into the domain of cognitive dissonance after which we discuss the relationship between information and political attitudes, concluding with the last two hypotheses.

Information plays a role in both the formation of political attitudes and within the framework of cognitive dissonance theory. Information, in the context of cognitive dissonance, can be either consonant or dissonant. Overall, the research on dissonant information seems contradictory on certain point such as the avoidance and seeking of both information types. Certain studies claim that subjects tend to avoid dissonant information once a choice is made (Mills, 1965; Frey, 1982) in order for them to not experience any (additional) dissonance. Other studies claim the exact opposite (Freedman, 1965; Sears & Freedman, 1967), stating that subjects who are confident prefer dissonant information so that they can refute the arguments of the information not in line with their own position. Accordingly, while the first researches predict that subjects might change their beliefs due to the additional dissonance, the other group of research claims that subjects who have received dissonant information actually increase the conviction of their prior beliefs.

Information also plays an important role in the field of politics and political decision-making (Bimber, 1991; Simon, 1985). Media and politicians, through information provision to the public, strongly influence the actions and attitudes of individuals in the political domain (Entman, 1989; Nadeau, Cloutier, & Guay, 1993). Because of this, information and its effect on the attitude formation as well as voting behavior, has been a well-studied phenomenon in political science. In particular, the effects of negative information concerning a certain policy issue or candidate have been thoroughly examined, mainly because of the effects it might have in political campaigns (Meffert, Chung, Joiner, Waks, & Garst, 2006).

In their research Meffert et al. (2006) found strong evidence for the negativity bias to be present in information processing, i.e. negative events or information in most situations are more dominant and effective than positive events or information (Rozin & Royzman, 2001). They also find support for the congruency bias, i.e. positive information about the chosen candidate and negative information about the non-chosen candidate is preferred over negative information

about the chosen candidate and positive information about the non-chosen candidate (Taber & Lodge, 2006). Lastly, they find support for the candidate bias, i.e. information about the chosen candidate is preferred over information about the non-chosen candidate (Taylor & Fiske, 1978). These biases affect the voter behavior in the information seeking, processing, and recall phases. Meffert et al. (2006) found that voters with a strong initial candidate preference showed an unusual amount of interest in negative information concerning their preferred candidate in the information selection and information processing phases. However, in the information recall phase and evaluation phases they had developed more positive attitudes towards their candidate of choice, suggesting that participants process the information in a counter arguing manner, similar to what Freedman (1965) states.

Klein and Ahluwalia (2005) show similar results for the negativity bias but add that it is mostly in cooperation with the candidate bias. After reviewing the ANES data for the presidential elections of 1992 and 1996, Klein and Ahluwalia conclude that the negativity bias is only significantly present when strong supporters of the opposing candidate evaluate the candidate. Research by Fridkin and Kenney (2004) also find support for this whilst also examining the effect negative information has depending on the source and tone of the information. For instance, an incumbent airing a negative campaign add about his or her challenger has a significantly negative effect on both his or her own ratings and those of his' or her' opponent's ratings. A similar effect is observable for negative ads aired by the challenger or if the campaign involves 'mudslinging', i.e. using (irrelevant) information about the other person, such as marital issues in the past. More importantly, Fridkin and Kenney (2004) find that negative information, provided by an objective news medium, has a significant negative effect on a candidate evaluation. Based on the research above the following hypothesis reads as follows:

> *H2: Negative information, provided by an objective and credible source, about a candidate, which has not been voted for, will result in the reduction of this candidate's rating.*

What the combined effect of voting and negative information will be on the ratings of the candidates is not as clear-cut. The research on voting and polarization predicts that voting will increase the chosen candidates' rating and lower the unchosen candidates' ratings (Frenkel & Doob, 1976; Beasley & Joslyn, 2001; Mullainathan & Washington, 2009). The research on negative information and polarization predicts that it will have a negative effect on the rating of a candidate (Fridkin & Kenney, 2004; Klein & Ahluwalia, 2005; Meffert, Chung, Joiner, Waks, & Garst, 2006). Based on the research we have formulated the hypothesis that negative information,

without a vote, will result in a lower rating for the candidate. We will note this reduction in the rating for this candidate as X. The first hypothesis formulated states that voting increases the polarization of the electorate by an increase of rating of the chosen candidate and a decrease of rating for the non-chosen candidate. We will note this increase in the rating for this candidate as Y. The combination of the two effects and their absolute effect on the candidate's rating, X+Y, is unknown a priori. However, a hypothesis is formulated about the effect of negative information has on a candidate's rating in the combined effect group compared to the effect of negative information on the candidate's rating, whence this is the only effect present.

Ergo, the third and final hypothesis reads as follows:

H3: Negative information, provided by an objective and credible source, about a candidate, which has been voted for, will result in a relatively smaller reduction of the ratings for this candidate compared to the reduction of a candidate's rating resulting from negative information, which has not been voted for.

3. Experimental design

For the experiment to be conducted a website was constructed. Further information on this website is given in the next section 'Experimental Procedure'. In this section, we discuss the various tasks, choices, and information that the participants encountered.

3.1 Candidate descriptions

Participants in the experiment partook in a hypothetical election occurring in The Netherlands. In this election, people face an election of a candidate to the office of mayor in their municipality and since mayors in The Netherlands are not democratically elected[1], the hypothetical nature of the election is guaranteed. For the election, we created three hypothetical candidates who made a number of statements, mainly concerning the economic policy that the candidate would implement, if elected. Sufficient evidence shows that the majority of people are capable of evaluating their political position and attitude on a specific policy field based on a unidimensional policy scale (Geser, 2008; Vries, Hakhverdian, & Lancee, 2013; Lo, Proksch, & Gschwend, 2014). The choice for statements on economic policy, being a comprehensive and personally interpretable policy domain (Kanbur, 2001), was made due to most individuals voting because of what a candidate can do for him or her economically speaking (Meltzer & Vellrath, 1975).

The statements the candidates made were scored using the RILE-scale. The RILE-scale is one of the most often used scales in the field of comparative political sciences to scale unbiasedly policy preferences (Gabel & Huber, 2000; Budge, 2013) and is used by the Manifesto Project, a project that has derived political party positions by coding over 1000 manifestos in over 50 countries (Manifesto Project, 2016). The RILE-scale was used to construct the three candidates in such a way that the 'left-wing' candidate was positioned as much left from the 'middle' candidate as the 'right-wing' was positioned right of the 'middle' candidate (see Appendix A for more on the candidate construction). After the candidates were constructed via the RILE-scale another test was run using 'Wordfish', a statistical program which is able to extract political positions based on a text document by looking at word frequencies (Slapin & Proksch, 2008). This test yielded similar results as the RILE-scale calculation concerning the political placement of the candidates. In the creation of the candidates, certain other aspects had to be taken into account. The candidates were not given a specific gender, eliminating the effect of gender stereotypes that exist (Rosenwasser & Seale, 1988; Huddy & Terkildsen, 1993). Other characteristics of candidates, which might lead the respondents to (subconsciously) stereotype, like race, age and experience

[1] Mayors in the Netherlands are appointed by royal decree (Article 131, Chapter 7, Dutch Constitution, 1815).

(McDermott, 1998; Windetta, Bandab, & Carseyb, 2013), were also not mentioned to ensure that the candidates base their evaluations solely on the candidates' statements.

3.2 Candidate ratings

Once the participants had read the descriptions of the candidates, they needed to rate the candidates using a thermometer scale. The thermometer scale ranges from 0 to 100 where ratings between 50 degrees and 100 degrees mean a participant feels favorable toward the candidate's opinions. Ratings between 0 degrees and 50 degrees mean a participant does not feel favorable toward the candidate's opinions. The thermometer scale, used by the American National Election Survey (Weisberg & Miller, 1979), is the most commonly used measure for candidate evaluations in the field of comparative political science (Lijphart, 1971; Bar-Anan & Nosek, 2014).

3.3 Election

When participants have to fill in the ballot for the election, they are first notified that the candidate that they rated as most favorable in the first rating has decided to withdraw from the election. No specific reason is given because the specific conditions or reasons of withdrawal may influence voters and their attitudes (Rodríguez-Álvarez, 2006) e.g. the recent withdrawal of Bernie Sanders in the American presidential primary election (Stokols, 2016). The ballot thus included only two candidates, the second-most favorable and least favorable candidate from the first rating. This compromising choice is defended on several grounds. Firstly, a compromising choice will lead to the creation of dissonance (Bølstad, Dinas, & Riera, 2013), essential if one is to study the effects dissonance has on polarization. Secondly, it is important to note that even though respondents are forced to make a compromising, some might even say sacrificing choice, it is still a choice made out of free will. Lastly, it is a way to establish if the candidate evaluations given in the first rating adhere to choice dominance (McKelvey, 1986; Tversky & Kahneman, 1986). Due to this dominance, an additional check of robustness can be performed using the evaluations given in the second rating.

3.4 Demographic and political questions

Besides choices and ratings, participants were also asked for some information regarding themselves, their interest in politics and their own placement on the political spectrum. Demographic questions were asked with respect to gender, age, educational attainment, nationality and native tongue. Besides serving a purpose as filler task, something that will be discussed in the procedural section, the question served as control variable gathering. None of the variables however should have an impact on choice induced attitudes as none of the literature suggests this. Questions were also asked about the interest people display in politics. These four

questions included the participants' eligibility to vote, whether or not they did vote the last time they could, whether or not they are interested in politics and whether or not they are a member of a political party or platform. These questions provide us with additional control measures and could influence the polarization, as the research by Mullainathan and Washington (2009) as well as Bølstad et al. (2013) suggest that party preference and party membership might have an effect on dissonance experienced.

Lastly, participants answered political placement questions. The political 'Left' and 'Right' were explained and they were told that, in general, politicians on the economic left want to have a government that plays an active role in the economy whilst politicians on the economic right want to reduce the role the government plays in the economy. Participants were asked to place the three candidates on a scale with a 0 indicating the candidate is far-left and a 10 indicating a candidate was far-right. This 11-point scale is one of the most frequently used scales to establish the position of candidates (World Values Survey Association, 2015; Bakker, et al., 2012). Having established the positions of the candidates, the respondents were asked how they would place their own political views, generally speaking, on this scale. The purpose of the placement questions was once again twofold. Firstly it allowed for the creation of another variable to measure the political sophistication of the respondents (Luksin, 1987), namely if the candidates are placed in the correct order from left to right. Secondly, it allowed a check to see if the respondents place themselves closer to the candidate voted for in case dissonance was created.

3.5 Dissonant news

In order for the second and third hypotheses to be tested, certain participants were presented with a dissonant news flash. The Federal Election Commission released a press statement stating that, after a thorough investigation, the Federal Election Commission had concluded that candidate … (depending on the respondent's evaluations) has been committing campaign fraud. The candidate has been taking illegal campaign contributions from companies and individuals and promising in return to implement favorable policy measures whence elected. The dissonant news flash concerned the second most favorable candidate in the negative information group only (group three) and the candidate that was chosen in the combined voting and negative information treatment group. These groups will be discussed in the next section.

Campaign fraud was chosen because of the overall negative effect it has on candidate evaluations (McCan & Dominguez, 1998; Baghdasaryan, Iannantuoni, & Maggian, 2015) and the fact that it can be established and made public by a credible and objective organization, a condition which needed to be fulfilled for the news to have a negative effect on ratings (Fridkin & Kenney, 2004).

4. Experimental procedure

In this section, we discuss the procedure used in the experiment. We examine the different treatment groups and their flow through the experiment. In addition to that, the creation and design of the website together with the sample are reviewed.

4.1 Procedure

All the tasks, questions and choices discussed in the previous section were the same for all the participants, with the exception of dissonant news. The difference between the groups was the order in which different treatment groups encountered these tasks as well as the order of presentation of the candidates. While all the participants start the experiment at the same starting page, i.e. the Welcome page, they are randomly assigned to one of six different versions of the experiment. The presentation of the candidate names were randomized in these versions to minimize the influence of labeling and alphabetical salience effects.

After seeing the candidate descriptions for the first time, the participants are once again randomly distributed amongst one of four different groups. The next page however, was the same for all groups seeing as all of the participants first completed their first rating of the candidates. After the first rating the four groups moved through the experiment in different ways. The first group, also known as the control group, continued to the set of demographic questions, used to gather control variables but also to engage the participants in a filler task, after which they were asked to re-rate the candidates in the second rating. Participants received explicit instructions from the website to complete this second rating task in accordance to what they were feeling at that moment and were notified that it was not a memory exercise. Having completed the second rating task the candidates moved to the voting page, after which the two pages on political interest and placement questions were filled in. Lastly, the participants were thanked for their cooperation.

The second group, the voting only treatment group used to test the first hypothesis, moved through the experiment in a near similar way with the exception that their voting page came before the demographic questions instead of after the second rating. The third group, the negative information only group used to test the second hypothesis, moved through the experiment similarly to the control group but for this group an extra page was added, the dissonant news page. The dissonant news page was shown to contain the news, as mentioned in the previous section, on the second most favorable rated candidate in the first rating. The fourth group, the combined voting and negative information treatment group which will test hypothesis three, was a combination of the paths of groups two and three and were asked to vote after they had completed

their first ratings. Following the vote they were immediately presented the dissonant news on the candidate that they had just chosen. The participants then moved on to the demographic questions and completed the experiment in the same path as group three had done. Below a table (*Table 1*) can be found which illustrates the differing paths for the groups.

Several participants were asked to record the time it took to complete the survey. Depending on the group that the participant was assigned to, the survey took an average of 10 minutes (group 1) to 15 minutes (group 4).

Group 1 (Control)	*Group 2*	*Group 3*	*Group 4*
Welcome*			
Candidates description**			
Rating 1			
Demographic	Voting***	Dissonant news****	Voting***
Rating 2	Demographic		Dissonant news
Voting***	Rating 2		Demographic
Political interest	Political interest	Voting***	Rating 2
Political placement	Political placement	Political interest	Political interest
		Political placement	Political placement
Thank you			

Table 1 - Experimental flow per group

* After the Welcome page, respondents are randomly distributed among 6 different versions of the survey, each of which presented the 3 candidates in a different order.

** After the Candidate description page, respondents are randomly distributed among the 4 different treatment groups

*** The ballot that participants were shown on the Voting page was always conditional on the ratings given in the first rating, irrespective of the place of voting within the flow of the group

**** The Dissonant news page in group three was shown conditional on the first ratings instead of the vote since no vote had been cast at that moment.

4.2 Website

The experiment was conducted using an online survey. Since conventional online survey programs, offered by e.g. Qualetrics and SurveyMonkey, did not allow the conditionality and randomization required in the experiment without an expensive premium account, a website was built. Using the program Notepad++, a free open source code editor, the website was coded using various coding languages e.g. HTML, PHP, CSS, SQL and Javascript. A web space was acquired via webgo Webspace Admin and the coded pages were uploaded. On the final page of the survey,

all the variables, which had been inserted by the participants, were stored and sent to a database via phpMyAdmin. In Appendix B, screenshots of the website are shown[2].

4.3 Sample

Below, we discuss the sample. Firstly, the exclusion of certain data points from analysis. Following the exclusion a brief summary of the data will be given.

4.3.1 Data exclusion

After the data was downloaded from the database, it had to be cleaned. This implied that certain data points had to be excluded before anything else could be done. The raw data consisted of 212 observations, with 46 observations of group one, 56 observations of group two, 47 observations of group three, 56 observations of group four and 7 observations of group zero. This group zero was a group of data points that had zeros as the values for all variables. A data point such as this was created when a participant did not follow the instructions given at the beginning i.e. the participant did not finish the experiment, reloaded a page or pressed the 'back' button. These seven observations were thus deleted from the sample. Furthermore, there were five observations that had a placement score for one of the candidates or themselves above the 10, even though the instructions dictated that the number should be between 0 and 10 and the code should have prevented people from entering numbers above 10. The code was corrected and because data gathering had already started, the sample was not cleared. These five observations were therefore excluded from the data. Lastly, two participants rated the candidates in the first rating between 0 and 10 while using the 0 to 100 scale in the second rating. These two data points were also excluded for they would exhibit a large amount of spread even though the participants did not mean to.

4.3.2 Descriptive statistics

The final sample consisted of 198 observations, 45 of which in group one, 55 in group two, 45 in group three and 53 in group 4. 43.9% of the sample consisted of females and the average age of the sample was 33.9 years old. The group was highly educated with only 6.0 % having completed lower school as their highest educational attainment, 12.6% completed middle school, 3.0% completed MBO or lower vocational training, 18.7% completed HBO or higher vocational training, 16.7% attained their bachelors, 40.9% attained their masters and 2% attained their PhD. The

[2] The code used to create the website is available from either the author of this thesis, Youri Rijkhoff (yourisebasrijkhoff@hotmail.com), or his supervisor, Georg Granić (granic@ese.eur.nl).

sample consisted mainly of Dutch nationals, 87.9%, and only a small amount of the sample spoke English as a first language, 7.6%.

The clear majority of the sample was eligible to vote, 94.0%, but only 58.6% of the people voted the last time they could. 63.1% of the people said that they were interested in politics and 22.7% of the people were a member of a political movement or party. Furthermore, a majority of the participants, 76.7 %, was able to evaluate the political positions of the candidates correctly, placing the candidates in the order ABC from most left to most right. Concerning those who did not place the candidates in the correct order, 12.6% of the people placed candidate A more towards the right than candidate B while 13.6% placed candidate C more towards the left than candidate B. 4.5% of the people considered candidate A more right than candidate C.

Overall, in the placement question, where 0 indicated a far-left politician and 10 a far-right, candidate A received an average of 2.4, candidate B an average of 5.1 and candidate C an average of 7.7. On average participants placed themselves at 5.3 in this scale and 28.8% of the people placed themselves within 1 point of the candidate that had received their vote. Overall B was the most preferred candidate receiving an average rating of 61.7 and 61.0, in its first and second rating respectively. For candidates A, these ratings were 55.2 and 54.2, for the first and second rating, while C attained a 54.2 and 53.7. A full descriptive table, for the whole sample as well as all the groups separately, is found in the Appendix C.1.

5. Results

In this section, we will discuss the results of the analysis[3]. To test the hypotheses, we use two variables, spread and difference news. The variable spread is calculated by taking the difference between the ratings of the unchosen candidate and the chosen candidate in the second rating task and subtracting from this difference the same difference between the chosen and unchosen in the first rating task. A positive spread thus means that a candidate has increased the rating for the chosen or decreased the rating for the unchosen in the second rating compared to the first rating. The name of the other variable, difference news, was given because the first factor of interest for this variable was hypothesis two in which news was given. Nevertheless, the calculation of this variable, rating two minus rating one of the second most favorable candidate so that a positive difference news denotes a reduction in the rating of the candidate, is the same irrespective of the treatment group.

5.1 Spread

In this first boxplot (figure 1), the spread of each group can be seen. One immediately notices the near absence of a boxplot and whiskers for group one. Group one, the control group, shows almost no spread (*M = 0.289, S.E. = 1.001, S.D. = 6.744*) and the 95% confidence interval is narrow (*-1.737, 2.315*). This is in line with expectations since the control group was simply asked to rate the candidates twice with some (filler) demographic questions in between. The second boxplot of interest is the one for group two, the group in which participants had to vote before rating the candidates for the second time. This boxplot is situated largely above the zero spread reference line (*M = 7.636, S.E. = 1.363, S.D. = 10.109*) with a 95% confidence interval above the same reference line (*4.903, 10.369*). This was in line with the expectation, since people in group two are expected to experience a choice induced attitude change and therefore a larger spread. The boxplots for group three, the group in which participants were shown negative information before rating the candidates for the second time, and group four, the group with the combination of voting and negative news before the second rating, are not as outspoken as the previous two and

[3] All the tests and regression models were also run and estimated using the standardized ratings. The standardized ratings are calculated by taking the rating for candidate X in rating one and then subtracting from it the mean rating in rating 1 after which the whole is divided by the standard deviation of ratings in rating one. Standardized spread and standardized difference news were calculated the same way as their non-standardized counterparts. The standardized values were examined in order to check whether no regression to the mean effects are present. The results for the standardized spread and standardized difference news are similar to their non-standardized counterparts and portray an even larger significance.

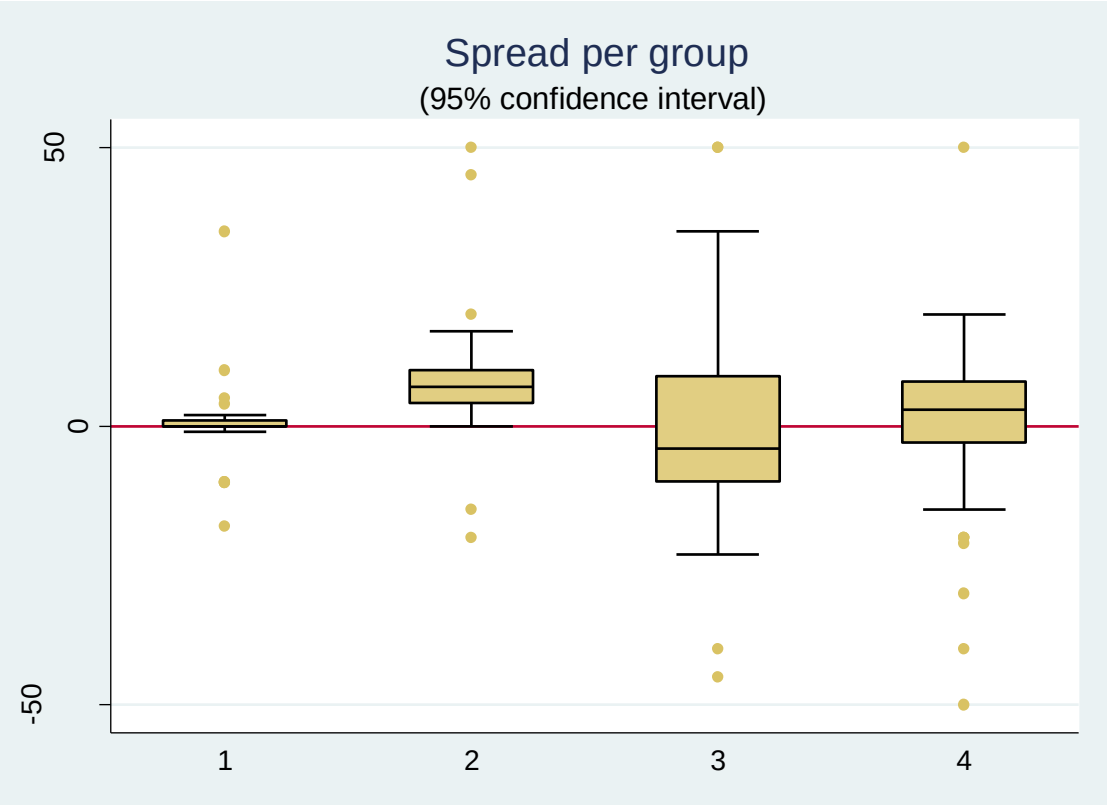

Figure 1 - Boxplot Spread per group

an examination of the data shows why. Even though on average participant in group three showed a negative spread (*M = -0.644, S.E. = 2.814, S.D. = 10.109*) the 95% confidence interval falls both above and below the zero spread reference line (*-6.315, 5.026*). The same goes for group four which showed an average spread slightly above the reference line (*M = 0.689, S.E. = 2.128, S.D. = 15.495*) and a 95% confidence interval both below and above the zero spread reference line(*-3.573, 4.969*).

5.1.1 Parametric and non-parametric tests

To gain further insight several one-sample t-tests were run to determine if the spread of a specific group was significantly different from zero (the output tables of these tests are found in the Appendix C.2). The results are in line with both the expectations and the boxplot seen above. The test show that we cannot reject the null hypothesis that the mean of spread for group one is significantly different from zero, $t(44) = .287$, $p = .775$. The same goes for group three, $t(44) = -.229$, $p = .820$, and group four, $t(52) = .328$, $p = .628$. The one-sample t-test for group two showed that the mean spread was significantly different from zero, $t(54) = 5.602$, $p < 0.001$, providing the first clue that choice induced attitude changes are present.

Two-sample t-tests are used to compare the spreads found in the different groups. The results confirm the earlier findings and state that participants in group two have significantly higher spread than participants in group one, $t(94.4) = -4.338$, $p < .001$, group three, $t(64.2) = 2.649$, $p = .010$, and group 4, $t(89) = 2.745$, $p = .007$. The two-sample t-test is a parametric test and can be conducted only if certain assumptions hold. Although the independence of observations and the interval scale of our variable spread are not a problem the normal distribution of the population and equal variance for both samples might be a problem. Therefore the t-tests were run using an unequal variance of the data. However, the non-parametric Wilcoxon-Mann-Whitney test was also run to test if the means of spread between groups were significantly different. The tests confirmed the findings of the two-sample t-test that participants in group two show significantly higher spreads than group one, $z = -6.33$, $p < 0.001$, group three, $z = 3.82$, $p < 0.001$, and group four, $z = 2.76$, $p = 0.006$.

All in all, the results concerning the spread of participants is clear. Group two shows a significantly higher spread than all other groups. Although extra robustness checks will be run using a regression analysis, these results point towards accepting the first hypothesis since we have been able to polarize the electorate simply by allowing them to vote.

5.2 Difference news

In our second boxplot (figure 2), we examine the difference news variable. Similar to examining the boxplot of spread, we can see that the boxplot for group one, the control group, is virtually nonexistent. Group one's (*M = 0.778, S.E. = 0.592, S.D. = 3.994*) 95% confidence interval is even smaller (-0.422, 1.978) than in it was while examining spread. The boxplot for group four, the combined negative information and voting group, (*M = -0.321, S.E. = 1.609, S.D. = 11.711*) shows a similar boxplot as it did in spread with a 95% confidence interval both above and below the zero spread reference line (-3.549, 2.907) and its whiskers coming both above and below that reference line.

The two remaining boxplots, for group two and group three, show a similar boxplot only the reference line acts as mirror. Group two, the experimental group with only voting, (*M = -3.873, S.E. = 0.922, S.D. = 6.84*), on average, shows a negative score for difference news with a relatively small 95% confidence interval (-5.722, -2.024). This is also appears in line with expectations, given the results of the previous section. Group three, the experimental group with only negative news, (*M = 11.044, S.E. = 0.922, S.D. = 11.384*) shows a high average score with a relatively large 95% confidence interval above zero (7.624, 14.464). This data also appears to be in line with the second hypothesis but further tests are necessary.

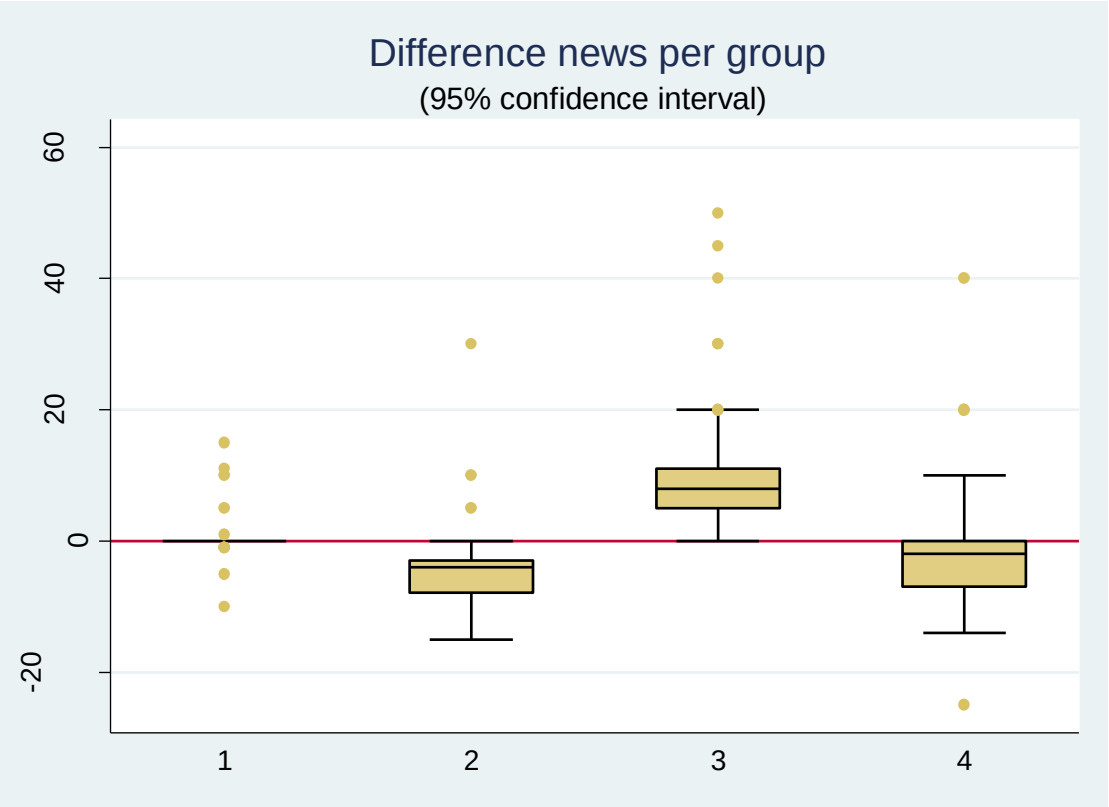

Figure 2 - Boxplot Difference News per group

5.2.1 Parametric and non-parametric tests

The one-sample t-tests are used on all the groups with difference news as variable (the output tables of the tests can be found in the Appendix C.2) to determine if the mean is significantly different from zero. The results confirm the image given by the figure 2. Group one, $t(44) = 1.306$, $p = 0.198$, and group four, $t(52) = -0.199$, $p = 0.843$, both show means insignificantly different from zero. On the other hand, group two, $t(54) = -4.199$, $p < 0.001$, and group three, $t(44) = 6.508$, $p < 0.001$, both exhibit means that are significantly different from zero.

Two-sample t-tests determined if the means of groups two and three were significantly different from the means of the other groups. The results were all significant. Group two shows a significantly lower average difference news than group one, $t(89.3) = 4.237$, $p < 0.001$, group three, $t(68.9) = -7.723$, $p < 0.001$, and group four, $t(83.2) = -1.916$, $p = 0.059$, though the significance at group four only occurs at a 10% significance level. As suspected group three shows a significantly larger difference news than group one, $t(54.7) = -5.709$, $p < 0.001$, and group four, $t(94.2) = 4.861$, $p < 0.001$. The Wilcoxon-Mann-Whitney tests again confirmed the results of the two-sample t-tests. Group two shows a significantly lower difference news than group one, z =

5.60, $p < 0.001$, group three, $z = -7.61$, $p < 0.001$, and group four, $z = -1.81$, $p = 0.071$, although once again the significance for group four only occurs at a 10% significance level. For group three the results also confirm the t-tests. Group three displays a significantly higher difference news than group one, $z = -6.59$, $p < 0.001$, and group two, $z = 5.73$, $p < 0.001$.

The results are clear for group two, group three and group four. The finding that the difference news variable is significantly negative in group two is consistent with the concept of increased polarization in this group. We also find strong evidence pointing towards the acceptance of our second hypothesis. Participants in group three who were not asked to take a vote, but did receive negative information on the candidate that they rated second most favorable in the first rating task. Afterwards their rating for this candidate reduced significantly in the second rating task. Furthermore, we also find evidence for the third hypothesis stating that reduction in rating if negative news is shown for candidates that have been voted for will not be as large as in the condition where only negative news is shown. The mean of the difference news variable in group four is not significantly different than zero. On the other hand, we conclude that mean difference news for group three is significantly higher than the mean of group four.

5.3 Regression

Several regression models[4] were estimated in order to check the significance of the results found in the previous section. This allowed for a check of the robustness of the effect using the many control variables gathered in the experiment.

5.3.1 Spread

In the first regression models, spread was used as the dependent variable. As can be seen in the table (*Table 2*), the results are in line with the expectations from the earlier tests, irrespective of the model used. The first model was a simple regression model using only the treatment groups as independent variables for spread. In the second and third model we add either our demographic control variables e.g. gender, age, educational attainment, or our political control variables e.g. eligibility and membership. In the last model all control variables are added.

[4] After conducting a Breusch-Pagan/Cook-Weisberg test, for both the spread and difference news models, to test if the variances of variables were equal or homoscedastic, the tests concluded that both models suffered from heteroskedasticity. The models were estimated again using the White-Huber standard errors to tackle the issue of heteroskedasticity.

Overall the variable Group 3, indicating a participant was in the experimental treatment group with only negative information, shows a negative coefficient implying a reduced polarization for this group. However, the coefficients of all models are insignificant at a 10 percent significance level. The variable Group 4, indicating a participant was in the treatment group that combined the negative information and voting, shows a positive coefficient with the exception of the coefficient in model 3. However, this variable is also insignificant at a 10 percent significance level.

Dependent variable	Spread			
Independent variables	Model 1	Model 2	Model 3	Model 4
Group 2	7.347***	7.552***	7.385***	7.562***
	(1.694)	(1.877)	(1.748)	(1.871)
Group 3	-0.933	-0.746	-1.670	-1.383
	(2.985)	(3.165)	(3.047)	(3.174)
Group 4	0.409	0.553	-0.233	0.115
	(2.355)	(2.628)	(2.522)	(2.740)
Demographic control variables	No	Yes	No	Yes
Political control variables	No	No	Yes	Yes
Constant	0.289	0.908	2.314	2.775
	(1.004)	(4.432)	(4.053)	(6.153)
Observations	198	198	198	198
F-score	(3, 194)	(9, 188)	(10, 187)	(16, 181)
	6.99***	3.62***	3.69***	3.17***
R-squared	0.060	0.077	0.089	0.106

Table 2 - Regression models spread

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

The only variable that shows significant coefficients in all four models is Group 2, the variable indicating that participants were in the treatment that voted before re-rating the candidates. These significantly positive coefficients can be interpreted as follows. A participant that was randomly assigned to treatment group two showed on average an increase of 7 points in their spread on the thermometer scale between rating 1 and rating 2 compared to participants in the control group, ceteris paribus. This increase of 7 points was significant across all models at a 1 percent significance level.

Most of the control variables, both demographic and political, do not obtain any statistically significant results and the full models can be found in Appendix C.5.

5.3.2 Difference news

In the second set of regression models the difference news variable, rating 2 minus rating 1 of the second most favorable candidate, was the dependent variable. The models represent the same control variables added as in the first set of models with spread as dependent variable. The results can be seen in the table (*Table 3*).

The variable Group 2 shows negative coefficients in all four models that are significant at a 1 percent significance level. This negative difference news is interpreted as follows. Participants that voted in between rating 1 and rating 2, increased their rating for their chosen candidate with an average of 4 points compared to the control group, ceteris paribus.

Dependent variable	Difference news			
Independent variables	Model 1	Model 2	Model 3	Model 4
Group 2	-4.651***	-4.079***	-4.678***	-4.107***
	(1.098)	(1.162)	(1.096)	(1.161)
Group 3	10.27***	10.91***	10.94***	11.37***
	(1.797)	(1.890)	(1.901)	(1.984)
Group 4	-1.099	-0.271	-0.933	-0.334
	(1.716)	(1.785)	(1.809)	(1.844)
Demographic control variables	No	Yes	No	Yes
Political control variables	No	No	Yes	Yes
Constant	0.778	3.866	-0.786	5.514
	(0.595)	(3.103)	(2.712)	(3.881)
Observations	198	198	198	198
F-score	(3, 194)	(9, 188)	(10, 187)	(16, 181)
	20.46***	9.28***	11.32***	7.52***
R-squared	0.268	0.305	0.308	0.331

Table 3 - Regression models difference news

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

The second variable that portrays highly significant positive coefficients in all four models is Group 3. These positive coefficients should be interpreted as follows. Someone receiving negative news about the candidate they rated second most favorable in the first rating, will on average reduce their rating for this candidate with an average of 10 points in the second rating, compared to the control group, ceteris paribus.

Our last variable of interest is Group 4, receiving a combination of the information and voting treatment. Though the coefficients are negative across all four models, indicating that participants increased their rating for the chosen candidate, these coefficients are not significant at a 10 percent significance level.

Once again, most of the control variables, both demographic and political, do not obtain any statistically significant results and the full models can be found in Appendix C.5.

5.4 Hypotheses

Having performed the various tests and analyses the hypotheses can now be revisited. The first hypothesis stated that '*voting will increase the polarization of the electorate*'. The parametric and non-parametric tests as well as the regression analysis both accept this hypothesis. It was shown that voting increases the spread by an average of 7 points on a 100 point scale, ceteris paribus. What was interesting was that the second regression analysis allowed a deeper look into these 7 points. In the second regression, it was shown that a person that had taken a vote rated the candidate that they had voted for an average of 4 points higher, ceteris paribus.

The second hypothesis was also accepted after reviewing the data. The second hypothesis, which stated that '*Negative information, provided by an objective and credible source, about a candidate, which has not been voted for, will result in the reduction of this candidate's rating.*', was accepted with a large significance. People that received news on the second most favorable rated candidate prior to the second rating stage reduced their rating of this candidate on average by 11 points, ceteris paribus.

The third and final hypothesis dealt with the combination of both voting and dissonant news. It stated that '*Negative information, provided by an objective and credible source, about a candidate, which has been voted for, will result in a relatively smaller reduction of the ratings for this candidate compared to the reduction of a candidate's rating resulting from negative information, which has not been voted for.'* The participants in group four did not experience a choice induced attitude change i.e. a polarization through voting, as can be seen be the insignificant results in table 2. They also did not reduce the rating of the candidate they had

chosen even though they did receive dissonant information concerning this candidate. Their reduction in the candidates rating was insignificant thus accepting our third hypothesis that their reduction was relatively smaller than the reduction in ratings of the candidates in group three.

6. Discussion and conclusion

The research question of this thesis was to examine the causal relationship between voting and polarization. In doing so, it combined research and insights from various fields in order to create an online survey in which participants were faced with a hypothetical election. The results are in line with the hypotheses formulated in this thesis. The electorate can be polarized by the simple act of voting itself. The findings in the results section point towards a significant spreading between two rating stages if a participant is asked to take a vote. Furthermore, the effect is the same regardless of one's gender, age or education. Although we can see that negative information has a negative effect on the rating of candidates, this effect is reduced by asking the participants to take a vote.

While this thesis contributes to the literature on the relationship between polarization, voting, negative information and dissonance reduction, it is not without flaws. The experiment in this thesis was not performed in a controlled environment but could be performed sitting behind a computer at home or on the road. The website that was used to perform the experiment only provided semi-control i.e. the pages shown to participants were programmed in advance and their responses were analyzed in real time to provide them with new information. Control, as can be obtained through the five precepts of control in experimental economics (Smith, 1982), was not present, simply because there was no monetary incentive. People are intrinsically motivated to reveal their true political positions, especially if their answers cannot influence the outcome of policies based on the polls or surveys (Morgan & Stocken, 2008).

If people are intrinsically motivated to answer truthfully, then the monetary incentive should only be paid for the effort exerted by the participants. Even in that case the author would like to side with Ariel Rubinstein and state he does not comprehend how a minor monetary incentive might motivate people to participate in the experiment with more focus (Rubinstein, 2016). Furthermore, it is worth noting that political processes including the act of voting simply cannot be explained using standard public choice theory (Downs, 1957). Why any rational, self-interested individual would engage in voting, the benefits of voting not coming close to the costs, puzzles economists and political scientists alike and is called the paradox of voting. This adds to the idea that individuals are somehow intrinsically motivated to express their true political preferences. However, performing the experiment in a laboratory setting with monetary incentives can lead to greater levels of control. On the other hand, the author would once more like to quote Rubinstein who states "do researchers know whether the subject in a laboratory setting is thinking about the experiment or about his troubled love life?" (Rubinstein, 2016).

Having said that, there are aspects of the experiment that, should more time and money be available, could be improved. The sample used in this thesis was not of a representative nature. Especially the variables gender, 43.9% females instead of 50.5% (Centraal Bureau voor de Statistiek, 2015), educational attainment, 78.3% having attained an education of HBO or higher instead of 26.8% (Centraal Bureau voor de Statistiek, 2016), and member, 22.7% is a member of a political party instead of 1.7% (Documentatiecentrum Nederlandse Politieke Partijen, 2016), suffered from being unrepresentative of the population. To add to that, another question, "Did you vote the last time you could?" suffered from the fact that the most recent Dutch election was a referendum on the association agreement of the European Union with Ukraine, an election that had a below-average turnout of only 32.3% (Kiesraad, 2016). If the author was not faced with a time constrained more effort could have been exerted to ensure the representativeness of the population.

Another major concern of the author were the candidate descriptions. Distilling a candidate's entire economic policy into five sentences, which have to conform to certain coding principles of the RILE scale, was a challenge. The research supports the notion that people are able to evaluate their position on a single policy domain on a unidimensional scale e.g. right or left. The results stating that, on average, A received the lowest place, B the middle and C the highest in the placement question and more than three quarters of the participants correctly placed these candidates in an order ABC, are in accordance with the literature. However, the author does hold certain reservations towards a five sentence description of an entire economic policy. Future research should improve these descriptions to include more statements and therefore more nuance or move away from statements all together and present the positions of the candidates and their ideas in a completely different fashion.

Apart from the description of the candidates the number of the candidates might also a problem. In the Netherlands there are currently 16 parties in the Second Chamber (Tweede Kamer der Staten Generaal, 2015), the Dutch parliament, and if you count the local parties on a provincial or municipal level then that number increases dramatically. Whereas American people might be equipped to think in a two party system, a manner of thinking which is asked of participants when they come to the Voting page, Dutch people are more used to seeing a ballot filled with candidates from all different kinds of parties. The presentation of only three candidates and the subsequent ballot with only two candidates might therefore have influenced the results.

Another problem with the experiment is the small passage of time in between ratings. In the control group the only thing that separated the two rating tasks from each other were the four

demographic questions. Although the participants were reminded at the second rating task that it was not a memory exercise, the small time between rating tasks may have meant that some people subconsciously did treat it as a memory task. In future research it should be ensured that the participants are truly occupied with a filler task, which takes their minds of the candidates for a while.

A final flaw of this thesis is its inability to tell what participants will do over a longer period. Previous studies have demonstrated the existence of polarizations through dissonance reduction (Mullainathan & Washington, 2009) but others have found that this effect does not persist until the next election (Elinder, 2012). Ideally, the experiment would run using a representative sample over a prolonged period to establish the effects the choice induced attitude changes have over time.

Although the limitations are numerous, the significance of the results in this thesis speak for itself. And even if the limitations identified in the previous sections might make for a less than ideal experiment, none of them should have an effect on the polarization that occurred, with the exception of the inability of this experiment to make long term predictions. If polarizations through the act of voting exists, what can we learn about it? It is important to state that even though the act of voting can cause polarization, it is not the sole factor. Various other factors, both exogenous and endogenous, have been shown to have an effect on polarization. However, even in the absence of any discourse on political issues, the polarization occurred.

Polarization, as this thesis pleads, can have grave consequences both socially and economically and should therefore be avoided. Nevertheless, the conclusion that voting can cause polarization and therefore voting should be avoided all together is not the correct one. Polarization was present long before modern democracies took their place amongst the world and an undemocratic world would be the last thing I advocate. Within the democratic framework we live in, there are still several implications of this thesis, some of which might require further research. If the act of voting itself already leads to polarization, it is yet another argument for our society as a whole, and our politicians in particular, to further engage in consensus seeking dialogues. In addition to this, another possible measures to decrease the polarization through the act of voting is by not forcing people to make a choice whilst voting. Multiple votes electoral system such as cumulative voting systems e.g. a voter is given 10 ‘votes’ to distribute amongst the candidates, might alleviate the choice induced attitude changes experienced by voters, since multiple choices are made, and their subsequent polarization.

Further research is needed to examine if polarization is still caused by the act of voting if the act of voting implies numerous votes. Another possibility is to further investigate the significance of various control variables in the regression models. The variable member, which proved to be significant in both models, could be a factor of interest to future research. Members of a political party are usually more interested in politics and might even consider pursuing a career in this domain. If these individuals are truly more susceptible to polarization, then this could have consequences. Future research could also investigate why Elinder (2012) finds no support for dissonance reduction to influence political attitudes in the long run. Running a similar experiment with a representative sample over a longer period of time might provide insights about his findings.

In conclusion, polarization, being a driving force of social unrest, is caused by various factors and this thesis set out to and indeed succeeded in establishing another one of these factors: the act of voting itself. The thesis adds to the research by establishing this causal relationship not by examining data of the past but via an online experiment. This design allowed for extra robustness checks and various variables to investigate the polarization through voting. The results are highly significant pointing to the causal relationship between polarization and voting. If polarization is something that we as a society want to reduce, or even eradicate altogether, then amongst all other factors causing this polarization that should be examined, one should not forget to examine one of the most trivial: the act of voting.

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