

Cognitive dissonance and political polarization

An experimental approach

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ABSTRACT: According to the theory of cognitive dissonance, the act of voting in and of itself could contribute to political polarization. This would show itself as a decreased willingness to adjust political attitudes towards well-liked candidates after receiving information that paints them in a bad light. A similar effect should occur for not so well-liked candidates after receiving positive information on them. This hypothesis was tested using an experiment where 412 subjects were randomly assigned to vote and non-vote conditions. OLS regression results show that voting subjects adjust their political attitude significantly less compared to non-voting subjects after receiving negative information on their most preferred candidate. However, this effect was not present for subjects on the political right. Similarly, voting subjects also adjusted their political attitude less compared to non-voting subjects after reading positive information on their least preferred candidate. The findings of this thesis improve the validity of similar empirical findings, while also improving the robustness of the finding that casting a vote affects political attitudes.



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1. Introduction

There is a wealth of literature available on the various determinants of voting behavior, from the effects of information and ideology, perceptions of the state of the economy all the way to the roles of gender and race (Palfrey and Poole, 1987; Kinder and Kiewiet, 1979; Lien, 1998). The factors affecting voting behavior through voter's attitudes have received the vast majority of interest in the literature.

Interestingly, one area of research that has received much less attention over the years, and which has only relatively recently started to gain more traction, is that of the effect of voting on attitudes.

Most of the voting behavior research has generally assumed that voting behavior is driven by (political) attitudes and other circumstantial factors. However, insights from psychological research have shown that this strict unidirectional way of thinking may not be correct and that behavior can in fact also contribute to the shaping of attitudes (Bandura, 1989).

One such mechanism through which behavior can influence attitudes is that of cognitive dissonance. Its underlying theory states that we all have a strong internal need for cognitive consistency, which in some situations can lead us to rationalize our decisions when these decisions have negative consequences (Festinger, 1957).

Smokers are for example overwhelmingly aware of the health risks associated with their habit, however they tend to minimize these risks away as a means of reducing the discomfort that arises from knowing that smoking is bad, while continuing to smoke (Chapman et al., 1993; Oakes et al., 2004).

Now imagine that instead of looking at smokers rationalizing away the health risks of smoking, we are looking at voters who rationalize their voting decision following negative information on their candidate or party of choice. At first sight these two situations might seem to have very few similarities, however they are more similar than appears.

In both cases a decision is made, after which negative information is received that clashes with the notion that the decision made was a good one, followed by a rationalization as to why the decision is not (that) bad after all.

If this dynamic of justifying decisions, that have turned out to not be that good in hindsight, not only applies to smokers but also to voters then it follows from this that voting should also affect political attitudes.

The recent surge in studies into the effects of voting on political preferences has primarily been due to this insight. Studies like this have found empirical evidence for the existence of an effect of voting on attitudes towards political candidates and parties, which suggests that the act of voting in and of itself

might contribute to political polarization (Beasley and Joslyn, 2001; Bølstad et al., 2013; McGregor, 2013; Mullainathan and Washington, 2009).

However, as of yet there has not been any experimental research on the topic. Experiments, while less realistic and salient than the real world, offer one big advantage compared to empirical research; they allow for tight control over the environment and context in which decisions are made. Where empirical studies are often plagued by threats of endogeneity and selection bias, experiments can circumvent these issues which threaten the validity of the results due to being able to randomize subjects into e.g. voting and non-voting treatments.

Therefore I will be testing the hypothesis that voting affects attitudes on political candidates and parties, through cognitive dissonance, by means of a randomized control trial. If the results of this experiment are in line with those of the empirical studies mentioned before, this will both improve the validity of these previously obtained empirical results as well as help to further solidify the effect of voting on political attitudes in the literature. In order to facilitate this, I formulated the following research question:

“Does the act of voting in and of itself have an effect on political attitudes?”

In the next section I will explain in detail the theoretical framework surrounding the topic of cognitive dissonance theory and its application to the electoral context. Following this, I will discuss the design of the experiment I am proposing and the hypotheses it will test. In the end I will provide a detailed overview of the analysis of the experimental data, followed up by a discussion of its implications for the existing literature and potential future research.

2. Literature Review

In this section I will be discussing the theoretical background relevant to this thesis and the research question it poses. As mentioned before in the introduction, this thesis focuses on the potential role of cognitive dissonance as a determinant of political polarization. Therefore it is important to gain a good insight into what the theory of cognitive dissonance entails, because without knowing this we cannot derive hypotheses on how cognitive dissonance contributes to political polarization.

In order to gain such an insight, I will first discuss the basic premise of the theory of cognitive dissonance and how its predictions hold up when they are put to the test. Following this introduction, I will zoom in on the predictions made by dissonance theory in settings where people engage in a choice among alternatives. The reasoning behind this decision is that participating in an election is essentially also choosing from a range of alternatives. Therefore, this setting is very applicable to the research question. Finally I will discuss how previous studies have tackled the subject of cognitive dissonance in electoral contexts. This will provide a clear picture of which elements of the electoral process induce cognitive dissonance, how these previous studies have researched this phenomenon and what their findings are.

2.1 The theory of cognitive dissonance

According to Festinger's theory of cognitive dissonance (1957) people tend to have a deep seated need for cognitive consistency. However, this internal need for consistency also causes a certain level of psychological discomfort in us when e.g. one of our behaviors is at odds with a held belief or a known fact and we are not being consistent. This psychological discomfort can be referred to as dissonance, in the sense that two or more cognitions which contradict each other are dissonant. According to the Oxford dictionary a 'cognition' refers to knowing something in its widest sense, including sensation, perception and conception (Cognition, 2019). In the context of the theory of cognitive dissonance however, cognitions often refer to individuals' beliefs, thoughts and actions.

As a consequence of these dissonant cognitions, people will try to find ways to reduce said dissonance, similar to when organisms try to find something to eat when they are hungry.

There are a number of different dissonance reduction strategies. Firstly, one could change their behavior in order to match the other cognition. If you smoke, but are simultaneously aware of the evidence that smoking negatively affects your health, one way to reduce the dissonance between these two cognitions would be to simply stop smoking. However, sometimes changing a behavior or decision (especially when it is a highly addictive habit like smoking) can be exceedingly hard, or even impossible.

In this case it is likely that people choose different dissonance-reducing strategies. Such as changing their beliefs about the negative health effects of smoking or trying to justify their behavior by adding new cognitions e.g. "I know smoking is bad for my health, but if I stop before I'm thirty it will be all right". It follows from Festinger's theory that the choice of dissonance-reduction strategy follows the path of least resistance.

Studies on dissonance reduction strategies among smokers provide a more detailed picture of the nature of the interaction between dissonant beliefs and behaviors. It has been shown that smokers tend to

overwhelmingly agree with the statement that they should never have started smoking (Fong et al., 2004), while at the same time many smokers have also been found to hold beliefs that discount the negative health effects of smoking by exempting themselves from these negative potential health outcomes (Chapman et al., 1993; Oakes et al., 2004).

Borland et al. (2009) find that individuals that hold beliefs that minimize the health risks of smoking or exempt them from these risks are less likely to attempt to quit smoking, while Fotuhi et al. (2013) elaborate further on this phenomenon by analyzing the relationship between risk-minimizing/exempting beliefs and quitting attempts over time. They find that as smokers undertake quitting attempts, they rationalize their smoking to a lesser extent compared to smokers that never attempted to quit. Conversely, former smokers that relapsed after a quitting attempt tended to adopt more beliefs that rationalized their smoking. This shows that in the case of smoking, attempting to quit smoking and holding rationalizing beliefs are essentially substitutes; the dissonance induced by being aware that smoking is bad, while continuing to smoke, can be reduced by either quitting or rationalizing your own smoking behavior. This implies that individuals that experience cognitive dissonance will be more likely to rationalize dissonant cognitions away than they are to change their beliefs or actions, since rationalizations require less effort and achieve the same goal as the other dissonance reduction strategies.

One last aspect of dissonance theory to keep in mind is that of the magnitude of dissonance. This states that when an individual is faced with dissonant cognitions, the magnitude of that dissonance is determined by the importance the elements that make up these cognitions. When we consider two dissonant cognitions, the magnitude of the dissonance is greater when there are many elements (e.g. product attributes) that are dissonant between the cognitions, or when there is one or only a few very important elements that are dissonant.

Hence, the pressure to reduce dissonance, using the dissonance-reduction strategies discussed previously, also increases as the magnitude of dissonance increases and vice versa.

However, there is a limit to the magnitude of dissonance; this limit is equal to the resistance to change of the cognition that is least resistant to change (Festinger, 1957). This means that when an individual e.g. is a big fan of a certain band and is then confronted with a new album that is very bad, this individual might at first still rationalize this away. However, as time goes on and the quality of albums that this band releases drops further every time, the magnitude of dissonance between the belief that this band is great and the continued observations that their music is declining in quality may lead this individual to adjust his/her belief on the greatness of the band, instead of coming up with new rationalizations as to why the band is still good, even in light of their bad music. In other words, the magnitude of dissonance became

so great for the individual that it exceeded the resistance to change of the individual's belief that the band is great, which lead him/her to adjust this belief.

2.2 Choices among alternatives

If we would apply Festinger's cognitive dissonance theory to a choice-among-alternatives perspective, we should see a spreading of alternatives after a person has committed to one of the choice options. No option is perfect, therefore a choice among alternatives always involves a comparison of tradeoffs between the good and bad qualities of the alternatives, therefore it follows that choosing an option induces dissonance in itself. Unchosen alternatives possess certain positive qualities that you are foregoing by making a choice, while at the same time the chosen option also possesses less desirable qualities compared to the alternative choice options. To reduce this dissonance, we would expect that the desirability of the option that is chosen is bolstered while that of the other choice alternatives is lowered.

In his 1956 paper, Brehm tested this notion in an experimental setting by letting a subject pool of 225 female students rate the desirability of a selection of household appliances. Subjects were then instructed to make a choice between two of these appliances, believing that they could take the chosen one home with them. Afterwards, they had to rate all of the products again. He found that the subjects tended to spread their ratings of the chosen and unchosen products in the second rating task, following a choice. This provided supporting evidence for the hypothesis that cognitive dissonance leads to post-decisional dissonance reduction, since the spreading of ratings between chosen and unchosen alternatives can be seen as an expression of that dissonance reduction.

Brehm's (1956) experiment also provided evidence for the magnitude aspect of dissonance theory, since according to Festinger's (1957) theory we would expect the magnitude of dissonance to be greater when choosing between similar products than when choosing between dissimilar products. This should result in an increased pressure to reduce dissonance in the condition where subjects choose between dissimilar products, which is corroborated by Brehm who found that subjects spread ratings further in situations where they had to choose between two similar products, compared to when they chose between two dissimilar products.

More recent research on the topic by Schultz and Lepper (1992; 1996) corroborates Brehm's (1956) findings. Their model, which posits that dissonance reduction can be viewed as a constraint satisfaction problem¹, fits Brehm's (1956) observations very well while also making some more nuanced predictions

¹ In this model beliefs are represented as units, while implications among beliefs are given as connections between the units. If you e.g. hold a belief that excludes you from holding another belief, the connection between these

than traditional cognitive dissonance theory. Their model differentiates between difficult choices between two attractive options (difficult/high), difficult choices between two unattractive options (difficult/low) and ‘easy’ choices, where difficult refers to options that are similar and easy to options that are dissimilar. Simulations showed that the spreading of alternatives in the difficult/high condition were mostly due to larger decreases in the evaluation of the rejected alternative, while in the difficult/low condition the spreading can almost completely be attributed to increases in the evaluation of the chosen alternative. In the easy choice condition the spreading is also almost entirely due to the increase in evaluation of the chosen alternative, however this increase is smaller than in the difficult/low condition.

These predictions were tested in a follow-up paper by Schultz et al. (1999) through subjecting a sample of 107 children enrolled in a summer camp to a choice among alternatives task.

In this experiment the children (around 13 years old) had to rate a selection of posters, after which they were randomly assigned to control and treatment groups. After this assignment, subjects in the treatment groups had to again rate two posters, selected to match the difficult/high, difficult/low and easy conditions as in Schultz and Lepper (1992; 1996). Subjects in the control group simply rated each poster twice, only deciding which poster they would take home after the second rating.

The results of this experiment closely matched the theoretical predictions made by the aforementioned consonance model (Schultz and Lepper, 1992; 1996) and simultaneously provide more corroborating evidence for Brehm’s (1956) findings.

2.3 Cognitive dissonance in electoral contexts

An area of research that has gained more attention over the last years concerns the application of cognitive dissonance theory in the electoral context, aimed particularly at providing additional insight into the existence of political polarization. Where traditional voting models predict that the mere act of voting should not have any influence on post-decisional attitude changes, cognitive dissonance theory begs to differ.

In essence, casting a vote for a political party or candidate can be seen as a form of commitment. A behavioral consequence of this commitment however is that when confronted with dissonance-inducing situations (like e.g. scandals, election losses or political failures), a person that voted for a certain

beliefs (units) is negative. Units with a positive connection maximize consonance by both being active, while units with a negative connection maximize consonance by being inactive.

The model finds the most efficient way of dissonance reduction by maximizing consonance, constrained by each unit’s resistance to changing its activation.

candidate is less likely to adjust their opinion of said candidate accordingly, compared to someone that did not vote at all. Because these non-voting individuals did not commit to any candidate by means of voting, the negative development regarding the candidate does not induce any dissonance.

At the same time, individuals that did vote for said candidate face the psychological discomfort of having supported a candidate who is now shown to be e.g. incompetent or corrupt. Cognitive dissonance theory predicts that it is likely that a significant portion of these voters would rationalize these dissonant cognitions away instead of adjusting their opinions on said candidate, since rationalizing would be the path of least resistance in this case (Beasley and Joslyn, 2001; Mullainathan and Washington, 2009; McGregor, 2013; Festinger, 1957).

This prediction has been tested in a number of empirical studies with differing methodologies. Beasley and Joslyn (2001) compared pre-and post-election candidate evaluations between voters and non-voters using ANES data. Where ANES stands for the American National Election Study, which measures various forms of behaviors, opinions and attitudes, related to elections, every two years².

In their research they analyze the effect of two sources of dissonance on changes in candidate ratings; choice-based and outcome-based dissonance.

Choice-based dissonance is very similar to the previously discussed choice among alternatives scenario, where voting for a candidate represents a commitment to said candidate. After voting, this commitment triggers the dissonance-reduction process whereby alternatives (candidates) are expected to be spread. Outcome-based dissonance however, assumes that dissonance (or the lack thereof) is induced by having supported the losing (winning) candidate. Individuals are expected to reduce this dissonance by changing their attitudes towards the candidates.

They found that voters tended to spread their evaluations of candidates more, compared to non-voters, which supports their choice-based dissonance and hypothesis and is in line with dissonance theory. Additionally, supporters of the winning candidate were found to be more polarized when compared to people who supported the losing candidate.

Similarly, McGregor (2013) analyzed the differences in pre-and-post election candidate ratings between consistent voters, inconsistent voters and non-voters, using data from the Canadian Election Study. According to their main findings, voters³ tended to spread the ratings of preferred and not-preferred candidates significantly more compared to non-voters and inconsistent voters, with there being a much

² Until 2004, after which new waves occurred in 2008, 2012 and 2016.

³ For this result, no distinction was made between consistent and inconsistent voters.

larger difference in ratings spread between consistent and inconsistent voters as between consistent voters and non-voters.

Mullainathan and Washington (2009) also researched the predictive power of cognitive dissonance theory in the electoral context. They looked at the change in individual presidential approval ratings⁴ between an election year and two years after the election. However, instead of simply comparing voters to non-voters, they compared respondents that were barely ineligible to vote during the election to respondents that were barely eligible. The expectation being that a dynamic similar to that of Beasley and Joslyn (2001) would be found and eligibles' ratings would be more spread compared to the ineligibles' ratings.

Their results supported this hypothesis; eligibles were found to be more polarized (read: had higher ratings spreads) compared to ineligibles two years after a presidential election.

In the same vein, Bølstad, Dinas and Riera (2012) analyzed differences between pre-and-post election candidate ratings between regular and tactical voters. These types of voters do not vote for their most preferred candidate or party in order to e.g. prevent a candidate who they vehemently disagree with to rise to power. Since these types of voters do not vote for their most preferred option, they are assumed to face at least some level of dissonance because of this compared to regular voters. Following this methodology they find evidence of tactical voting having an effect on post-vote attitudes, further strengthening the notion that voting itself shapes attitudes through cognitive dissonance.

These empirical studies provide a great deal of evidence supporting the hypothesis that voting shapes post-decisional political attitudes in accordance with predictions made by cognitive dissonance theory. However, as with all empirical research there remains the question of whether the results were affected by selection bias.

It could reasonably be argued for example, that with the approaches by Beasley and Joslyn (2001) and McGregor (2013), who look at differences in candidate ratings between voters and non-voters, there are some characteristics that determine if someone votes or not, which could also be related to an individual's tendency to spread candidate ratings following an election.

While we have seen Mullainathan and Washington (2009) and Bølstad, Dinas and Riera (2012) use more sophisticated identification strategies that try to minimize the potential confounding effects of selection bias, it remains impossible to completely remove all concerns in this area.

So in order to get around these empirical issues that make causal inference difficult, I propose to put the hypothesis that voting affects political attitudes through cognitive dissonance to the test via an

⁴ These ratings were on a scale of 0 – 100

experimental approach. Randomizing subjects into vote and non-vote treatments will eliminate any selection bias, allowing for causal inference.

3. Experimental design

The general idea behind this experiment is to replicate the vote casting process that people go through during an election. Subjects will be randomly assigned to treatments, after which they will be presented with profiles of two political candidates. The two candidates have differing positions on various topics, with candidate A having five typical left-wing stances and candidate B articulating their right-wing equivalents. The candidates occupy opposite positions on the topics of government's role in the economic domain, the provision of social services, environmental policy and immigration.

For the construction of the candidate profiles, I have borrowed part of the candidate profiles from Artiga Gonzalez and Granic (2019), whose methodology also employs the use of distinct left and right-wing candidate profiles. However, where Artiga Gonzalez and Granic opt to have their left-wing candidate take 3 left-wing positions, one centrist one and a right-wing one (and vice versa for their right-wing candidate), I am choosing to let the left-wing candidate A take 5 left-wing stances and let the right-wing candidate B take 5 right-wing stances. I do this because, as I will elaborate on later in this section, I will introduce dissonance in my subjects by presenting them with news articles that reflect on either of their preferences in a certain manner. By making the candidates A and B more ideologically distinct, I hope to minimize the degree of dissonance that arises from the choice itself, because ideally all the dissonance the subjects experience in the experiment will be brought on by the 'news articles' they will be reading. I cannot make sure that subjects do not experience any dissonance due to the choice between candidates itself, but increasing the ideological distance between the two candidates will make them more dissimilar, which has been shown to reduce the degree of dissonance that arises from the choice between alternatives itself (Brehm, 1956; Schultz and Lepper, 1992; 1996; Schultz et al., 1999)

The stances taken from Gonzalez and Granic's work and the ones added to the profiles have been formulated based on the classification of policy stances by the Manifesto Project, which analyzes and codes statements made by political parties in their manifestos, allowing for comparative analysis of parties' stances between party systems and/or over time (Budge et al., 2001; Klingemann et al., 2006; Volkens et al., 2013) and by Lowe et al. (2011).

I have opted for this approach to ensure that the policy stances of candidates A and B are the equal and opposite of each other on each topic chosen. An overview of the candidate profiles, including the coding of statements can be found on the first page of the appendix.

Using this setup, dissonance can be induced in subjects by confronting them with negative information on the candidate they like the most. However, presenting people with positive information on the candidate they like the least will also serve this purpose.

As I will explain further down this page, subjects will be required to rate both candidates on how favorable they view each of them. In this context, how much a subject prefers a certain candidate is determined by how this candidate was rated in the first rating task. If e.g. a subject rates candidate A more favorably than candidate B, it is assumed that this subject prefers candidate A over candidate B.

In this experiment I would like to analyze the effect of voting on attitude changes following the presentation of both negative information on the most liked candidate, as well as positive information on the least liked candidate. In order to do this, I have formulated the following hypotheses:

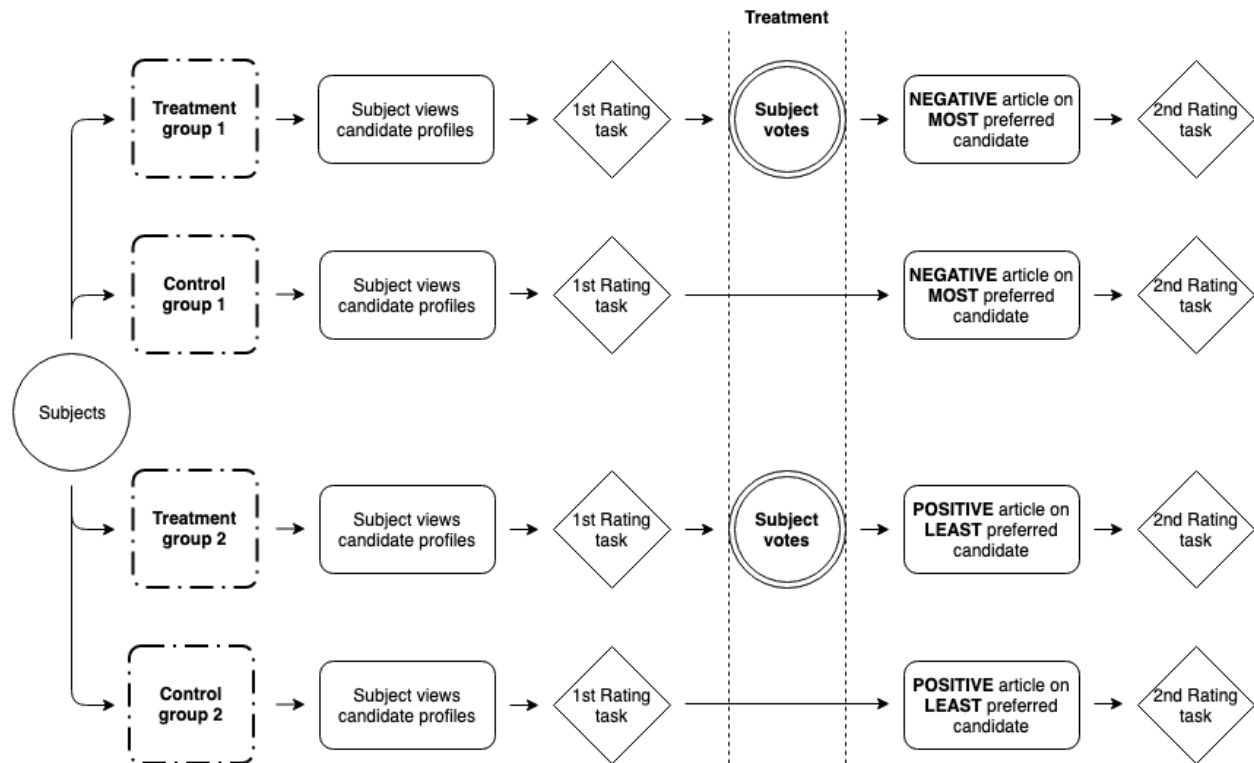
***H1:** After reading the negative news article on their most preferred candidate, voting subjects engage in less downward attitude adjustment towards this candidate compared to subjects that did not vote.*

***H2:** After reading the positive news article on their least preferred candidate, voting subjects engage in less upward attitude adjustment towards this candidate compared to subjects that did not vote.*

In figure 1 we can see an overview of the experimental design. There are 4 groups in total; 2 treatment groups each with their own control group. Subjects will be randomly assigned to either of these 4 groups, after which they will first fill out a number of demographic control questions. These questions will provide information on each subject's age, gender, employment status and political orientation. After these demographic controls, all subjects will be asked to read the profiles of the two candidates carefully. When subjects have finished reading the profiles, they are asked to indicate their feelings towards

candidates A and B at that moment on a 0 – 100 thermometer scale rating⁵, ranging from extremely unfavorable to neutral to extremely favorable.

Figure 1. Experimental design overview



After this step, subjects in treatment groups 1 and 2 will receive their ‘treatment’ and are asked to imagine that an election is being held at that moment and they are in the voting booth looking down on a ballot and have to vote for either candidate A or candidate B, after which their voting decision is recorded. Subjects in control groups 1 and 2 skip this step in the experiment, as can be seen in figure 1.

Following the treatment, or lack thereof in case of the control groups, the subjects will be presented with a ‘news article’ designed to induce some degree of dissonance and will be asked to imagine coming home and reading this article after voting (or just rating in case of the control groups).

Subjects in treatment group 1 and control group 1 will be presented with the following news article that

⁵ In the actual experiment a thermometer rating ranging from -50 to +50 was used, with a score of 0 indicating neutral feelings towards a candidate. This was done from the position that negative numbers representing negative feelings and vice versa, and zero representing neutrality, would make the interpretation of the rating scale more intuitive.

will reflect negatively on the candidate they preferred most. For convenience sake, treatment group 1 and control group 1 will from here on out jointly be referred to as the negative news condition.

“Last week, three women who worked under Candidate A/B in the last 8 years have come forward with accusations of sexual harassment, detailing multiple accounts of inappropriate comments and behavior on the part of Candidate A/B.

According to these allegations Candidate A/B repeatedly made sexually suggestive comments to his female staff where in other cases he harassed some by sending them unsolicited nude pictures of himself.

In light of privacy concerns, the women who have come forward have chosen to remain anonymous, however their identities have been confirmed by our editor.”

For subjects in treatment groups 1 and 2, preferences with respect to candidates A and B were determined based on which candidate they voted for. The determination of preference for subjects in control groups 1 and 2 preferences was made based on how they rated the candidates in the first rating task, since these subjects were not asked to make a voting decision⁶.

In the case that subjects in control groups 1 and 2 rated both candidates equally (un)favorably and no clear preference could be observed, the preference for either candidate A or B was randomly determined.

Subjects in the positive news condition⁷ will be presented with a different article. They will be asked to read the following article that reflects positively on the candidate they preferred the least.

“Yesterday afternoon, an 8 year old boy narrowly escaped drowning to death after he accidentally rode his bike into a river. From a distance Candidate A and two assistants noticed the boy failing to keep his head above water and immediately ran over to save him.

Candidate A wasted no time by jumping in the water right away, pulling the unconscious kid out and providing critical first aid in the minutes before the ambulance arrived.

⁶ Of all 196 subjects in either treatment group 1 or 2, only 8 of them did not vote for the candidate they rated more highly. Hence, the unequal determination of preference between treatment and control groups does not lead to significant inconsistencies and can therefore be assumed to be innocuous.

⁷ Treatment group 2 and control group 2 together.

The hospital's spokesperson noted that if Candidate A had not acted so decisively, the boy would surely have died."

For the topics of the news articles I considered a number of different topics, with the most important consideration being that the act described in the article should reflect equally negative/positive on a left-wing candidate as on a right-wing candidate. Candidate B is adamant about cutting down on unnecessary government spending, so if this candidate would be implicated in e.g. a fraud scandal where he or she used government funds for extravagant private purchases it would reflect more negatively on this candidate than on candidate A due to the hypocrisy of arguing against frivolous government spending while spending government funds frivolously.

Due to this consideration, I have opted for a story on sexual harassment in the negative news condition, since neither candidate takes any position on gender issues. Therefore neither candidate is viewed as hypocritical in light of this scandal. On top of that it also has the benefit of being quite a realistic political scandal, so subjects will not have to suspend their disbelief much.

With regards to the positive news condition, I have chosen a story where candidate A/B rescues a little boy from drowning, since this also should not have a different impact on left and right-wing candidates. Additionally, while this type of story is less common when it comes to politicians doing the rescuing, these types of 'hero stories' are also sufficiently common that it will not seem unrealistic to subjects reading it.

At the end of the experiment, all subjects will be asked to rate candidates A and B again, according to how they feel about each candidate after reading the news articles. Additionally, they will also be asked to rate how good or bad (depending on which condition they were in) they perceived the acts described in the 'news articles' to be.

3.1 Dependent variable

In order to measure the degree to which subjects adjust their attitudes towards the candidates, I have constructed an outcome measure named ΔED . ΔED stands for the change in the evaluative difference between the candidates. This variable is based on the standard difference-in-differences formula and its calculation can be seen in equation 1. I The reason for using this variable instead of simply using the

change in evaluation for the candidate, because ΔED also controls for potential changes in the evaluation of the candidate on which no news is provided⁸

$$\Delta ED = (R1_{t2} - R1_{t1}) - (R2_{t2} - R2_{t1}) \quad (1)$$

R1 refers to the rating of a subject's most preferred candidate and R2 refers to the rating of the least preferred candidate, these ratings come from the thermometer rating scale introduced earlier. The subscript of R1 and R2 denotes the timing of the rating, with t1 referring to the first rating task and t2 to the second rating task. In order to facilitate the interpretation of the values of ΔED , I have included an overview with its expected signs and expected differences in magnitude between per group in table 1. In this overview we will refer to $(R1_{t2} - R1_{t1})$ as $\Delta 1^{st} Pref$ and to $(R2_{t2} - R2_{t1})$ as $\Delta 2^{nd} Pref$.

Table 1. Expected signs of ΔED and its components

GROUP	ΔED	$\Delta 1^{st} Pref$	$\Delta 2^{nd} Pref$
Treatment 1	(-)	(-)	(0)
Control 1	(-)	(-)	(0)
Treatment 2	(-)	(0)	(+)
Control 2	(-)	(0)	(+)

In the table above (+) and (-) refer to positive and negative expected signs respectively, while (0) refers to the expectation of no change in a term. Differences in magnitude between treatment and control group are indicated by larger/smaller font sizes, additionally the terms that are expected to be of greater magnitude have also been bolded.

Since subjects in the negative news condition (treatment and control groups 1) will read a negative story on their most preferred candidate, we expect the sign of $\Delta 1^{st} Pref$ to be negative. At the same time we expect no change between $R2_{t1}$ and $R2_{t2}$, since these subjects will not receive any information on their

⁸ The least preferred candidate in case of the negative news condition and the most preferred candidate in case of the positive news condition.

least preferred candidate between the rating tasks, therefore $\Delta 2^{nd} Pref$ is expected to be equal to zero⁹. From this it follows that the expected sign of ΔED is negative for subjects the negative news condition. However, we expect ΔED to be more negative in control group 1 than in treatment group 1. We expect this because of the hypothesis that after reading the negative article on their most preferred candidate, voting subjects adjust their attitudes towards this candidate less compared to non-voting subjects.

According to the theory of cognitive dissonance and the empirical works discussed in the literature review, we would expect the vote to serve as a form of commitment to a candidate. When a subject is confronted with a negative news article on the candidate he or she voted for, we expect this to induce dissonance in the subject. We would then expect the subject to engage in dissonance reduction, which we aim to capture using the second rating task. Subjects in the control group that do not vote are not hindered by the same commitment as subjects in the treatment group during the second rating task. Therefore we would expect treated subjects to adjust their evaluation of their most preferred candidate (adjusted for the change in evaluation of their least preferred candidate) less so than subjects in the control group.

For subjects in the positive news condition we also expect the sign of ΔED to be negative, while also expecting ΔED to be more negative for subjects in control group 2 compared to subjects in treatment group 2 for the same reasons as discussed above. However, in this case the negative sign of ΔED is caused by the positive sign of $\Delta 2^{nd} Pref$, since $\Delta 2^{nd} Pref$ enters negatively in the calculation of ΔED .

3.2 Materials and procedures

The experiment, as described in the previous section, was conducted in the form of an online survey, using Qualtrics Survey Software to program the different paths subjects could be assigned to (see figure 1). In total, the experiment was conducted on 412 anonymous participants who took an average time of 3 minutes and 48 seconds to complete the experiment. This average completion time was calculated for responses that lasted at most 15 minutes, but if it were to be calculated using all completion times, the average time would be around 10,5 minutes.

The reason for this large difference is that a handful of subjects took multiple hours, or even multiple days in some cases, to complete the survey, indicating that they stopped their participation in the survey at

⁹ The data showed that instead of $\Delta 2^{nd} Pref$ being equal to zero in the negative news condition and $\Delta 1^{st} Pref$ being equal to zero in the positive news condition, the sign of $\Delta 2^{nd} Pref$ turned out to be positive in the negative news condition while the sign of $\Delta 1^{st} Pref$ turned out to be negative in the positive news condition. This does not threaten our conclusions however, since the calculation of ΔED accounts for this.

some point and resumed it at a later time. However, since 15 minutes is already a very generous time window to complete the experiment in and 96% of subjects completed the experiment within this time window, the average completion time of 3 minutes and 48 seconds reflects reality better than that of 10,5 minutes.

Subjects were recruited to take part in the experiment via a number of different channels. Around 180 participants were recruited through the survey sharing platform SurveySwap, while around 60 participants were recruited through a similar platform on the social news site Reddit. I recruited another 40 participants by means of distributing flyers, containing QR-codes linking to the survey, on the campus of the Erasmus University Rotterdam. Finally, the remaining participants were contacted through social media (Facebook and WhatsApp). A large subsection of this final group consists of fellow students of the Master's program Behavioral Economics.

The data were collected during a six week period, from May 31st to July 11th 2019. In order to boost the participation rate of the experiment, a random lottery incentive was used. Subjects could choose to participate in a raffle where they had the chance to win a €10,00 gift card, in total one of these gift cards was awarded among all subjects wishing to participate in the raffle.

4. Results

In this section I will provide a detailed overview of the results of the experiment as described in the previous section, as well as explain which analyses I conducted and why.

I will start this section by discussing some descriptive statistics on the sample in order to check its general makeup and if this differs between treatments. Following this I will provide a rough preliminary analysis of the dynamics of the rating tasks as well as of the voting dynamics in the treatment groups. Lastly I will expand on this rudimentary analysis by providing an in-depth walkthrough of the statistical models aimed at tackling the hypotheses.

4.1 Descriptive sample statistics

We can find the demographic makeup of the sample in table 6 and figures 7 to 12 of the appendix. First off, we can see that the gender composition of the sample is quite equally divided between male and female, with a very slight skew towards the female side.

On the contrary, the educational attainment categories are far from equally represented. There are just a handful of subjects who indicated to have completed either vocational training, a doctorate or no schooling whatsoever. Around half of all respondents have received Bachelor's degrees, with the rest being divided almost equally between the high school diploma and Master's degree category.

Looking at subjects' employment status we see that the vast majority (around 65%) of respondents across all treatments are students, while the remaining subjects are mostly employed for wages, with another handful being either self-employed or unemployed.

Finally, when it comes to political ideology we see that the sample skews quite heavily towards the left, with only roughly one quarter of subjects across all treatments identifying as right of center. This makes sense considering that the sample consists mostly of students, who tend to lean more towards the left than the right.

4.2 Voting and rating statistics

First we will discuss the voting dynamics in treatment groups 1 and 2, in figure 2 we can see the voting results for these groups.

We can immediately see that the vast majority of subjects in both treatment groups prefer the left-wing candidate A over the right-wing candidate B, which makes sense since the sample is quite heavily skewed towards the political left.

Furthermore, we also observe that the distribution of votes over candidates A and B is almost identical between the two groups, with this difference being equal to just 0.8 percentage points.

Additionally, as I already mentioned in the experimental design section, the setup of the experiment allows subjects to respond inconsistently. Meaning they would for example vote for the candidate they rated the lowest in the first rating task or vice versa. This has the potential to threaten the validity of the results if not corrected for in the analysis, however as we can see in figure 3, this does not seem to be a serious problem as only between 2.2% and 3.9% of all subjects over the two treatment groups voted for their least preferred candidate.

Figure 2 Voting results – Treatment groups 1 and 2

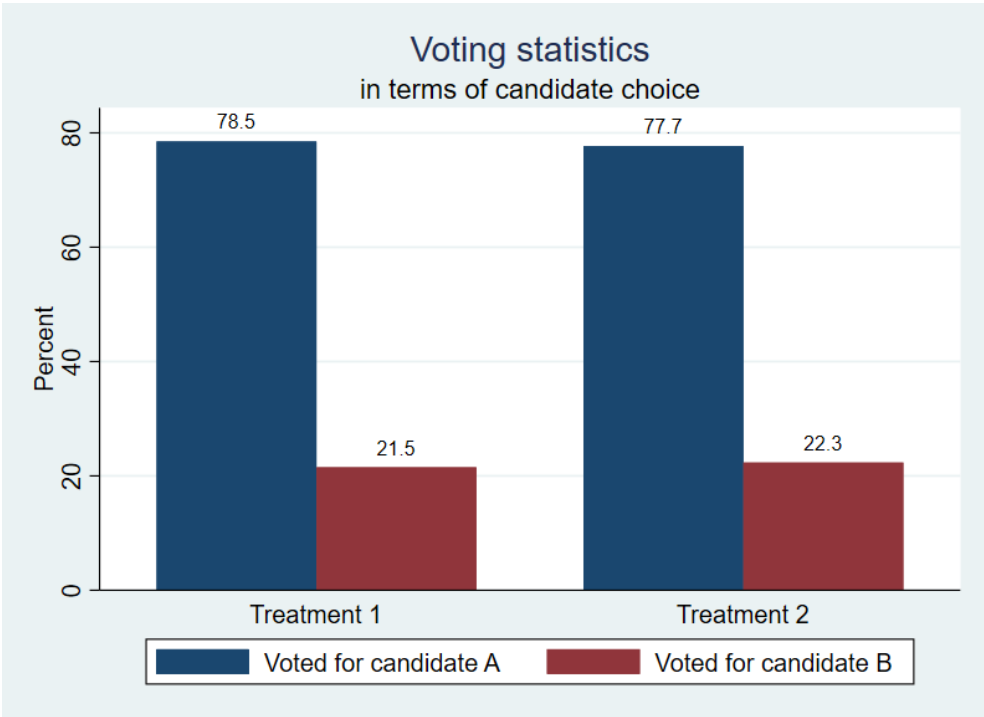
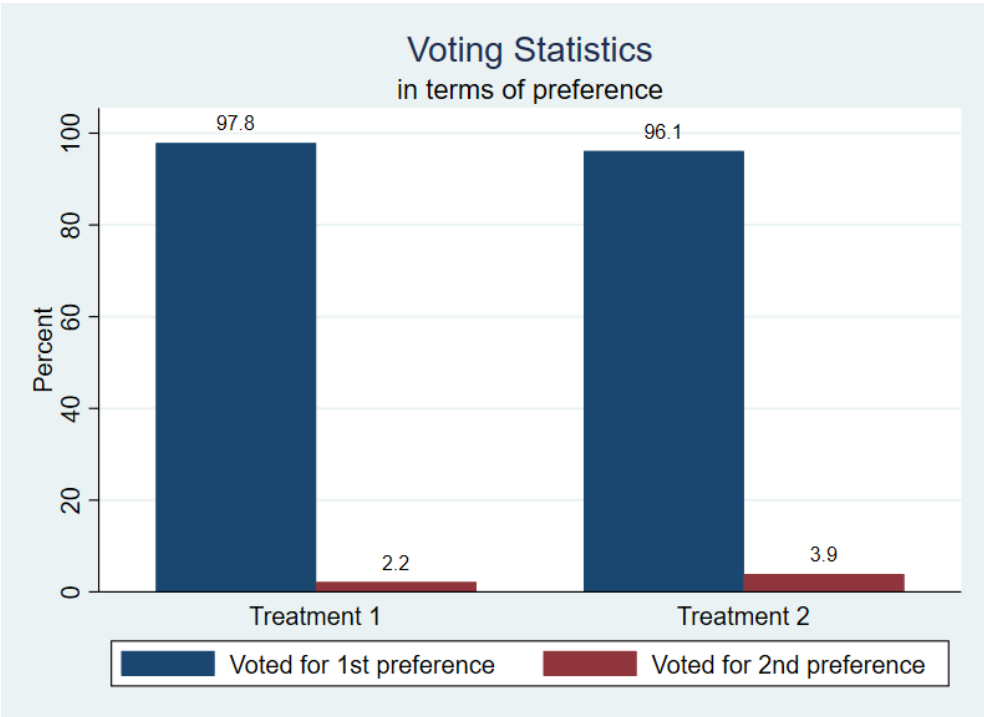


Figure 3 Voting results in terms of preference – Treatment groups 1 and 2



In figure 4 on page we can see a boxplot of the candidate ratings from the first rating task, where ratings on subjects' most preferred candidate are shown in blue and ratings on their least preferred candidate in red.

From the boxplot we can see that the both the range and interquartile range of the most preferred candidate are roughly the same across all four groups, with both being narrower for treatment group 2, suggesting that the variance of ratings on the most preferred candidate is slightly lower in this group. At the same time we see that, with the exception of a few outliers, all first ratings of the most preferred candidate are concentrated between 0 and 50. However, this distribution is more skewed towards the higher end of the scale.

When we look at the distributions of the first ratings for the least preferred candidates, the first thing that stands out is that the range and interquartile range of these ratings are larger than those of the first ratings of the most preferred candidate. Where the range of ratings for the most preferred candidate is limited to 0 – 50, the range of the first ratings of the least preferred candidate stretches from -50 to around 25.

The high end for treatment group 2 extends to almost 50, this suggests that the variance in first ratings is greater for the least preferred candidate than it is for the most preferred candidate.

The descriptive statistics of the second rating task can be found in figure 5. When it comes to the negative news condition we see that the ratings range for the most preferred candidate now encompasses the entire range of the thermometer scale, with the interquartile range shifting downwards and stretching out as well, this holds for both treatment group 1 as well as control group 1.

So while the distribution of ratings shifts downwards after reading the negative article, the variance also increases greatly compared to the distribution of the first ratings on the most preferred candidate. When it comes to the distribution of ratings for the least preferred candidate however, there does not seem to be a large difference in (interquartile) range and variance between the first and second rating task in the negative news condition.

Figure 4 Boxplot of ratings in the first rating task – by group

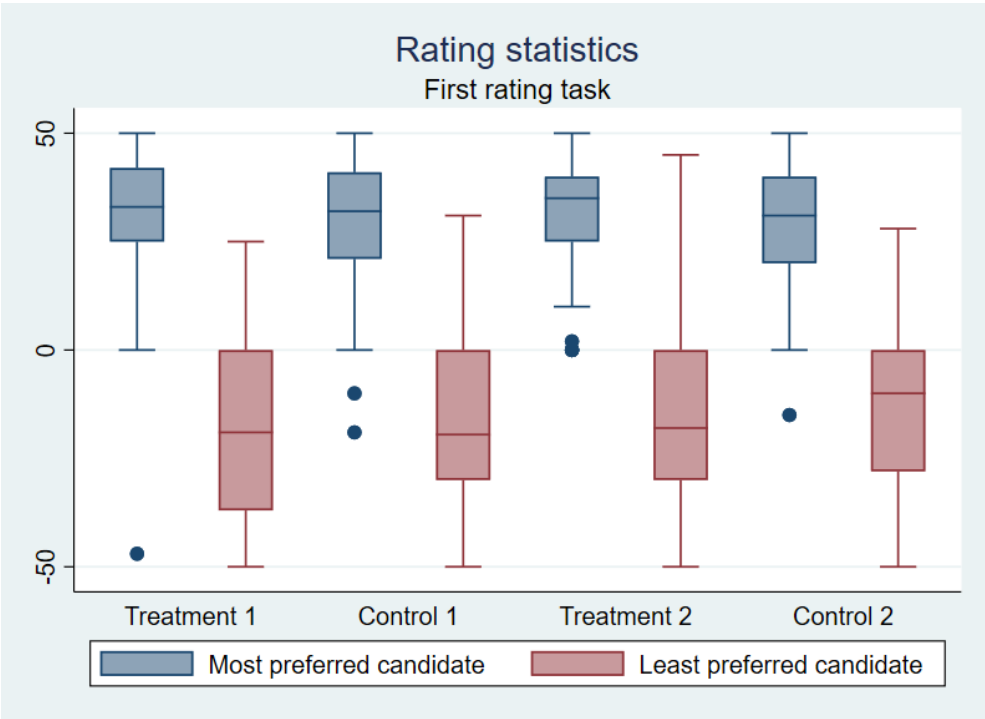
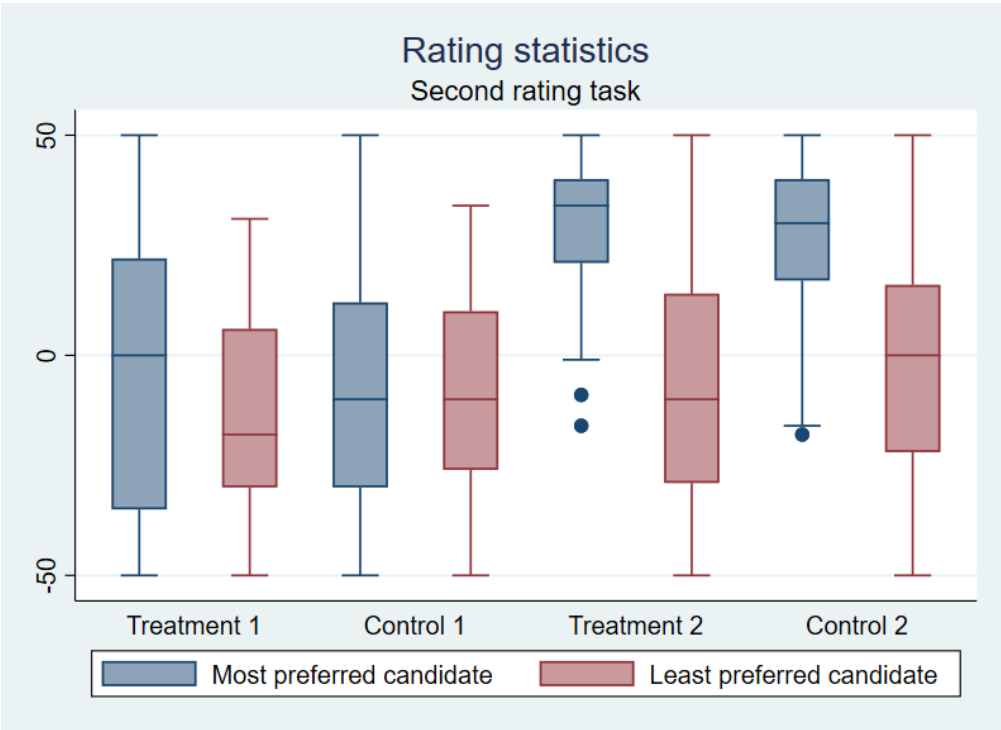


Figure 5 boxplot of ratings in the second rating task – by group



In the positive news condition we see that the distributions of the ratings for both the most and least preferred candidate do not change as much as in the negative news condition. After the positive news article on the least preferred candidate, the distribution of ratings of the most preferred candidate shifts downwards slightly, while its variance increases compared to the first rating task.

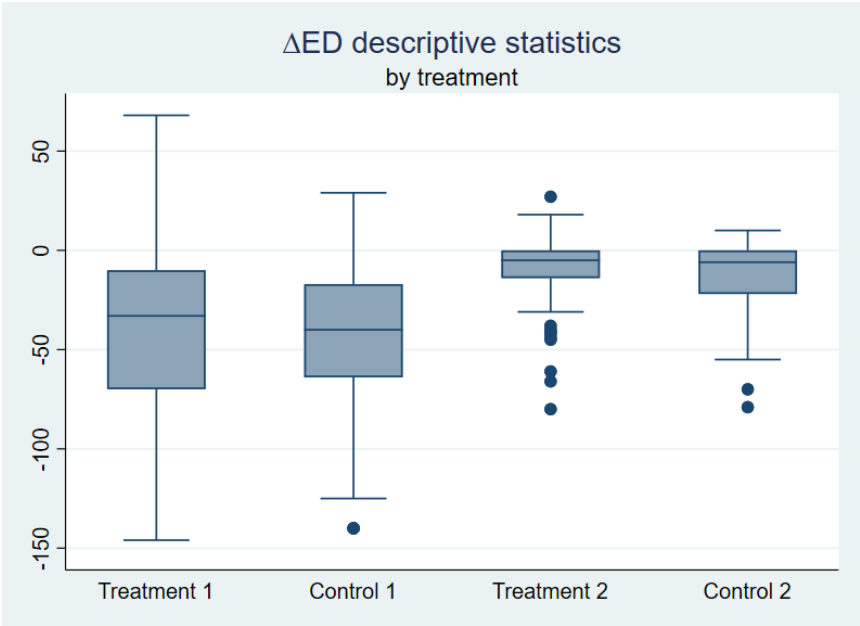
We see a larger change in the distribution of ratings for the least preferred candidate, which also makes sense since subjects received new (positive) information on this candidate and not the other. Here we see the opposite happening, as these distributions shift upward indicating that subjects rate the least preferred candidate more favorably now. At the same time the variance in ratings increases, indicating that this sentiment is not shared among all subjects equally.

If we were to aggregate these plots into an overview of the distribution of the outcome variable ΔED we would arrive at the plot seen in figure 6.

We can see that both in the negative news condition and in the positive news condition the distribution of ΔED seems to be shifted more towards the positive for treated subjects compared to subjects in the control group. This would be in accordance with the theory and empirical works discussed in the literature review and the ex-ante expectations on ΔED , however we also observe that there is a large difference in variance between the distributions of ΔED (both treatment and control) in the negative news condition and the positive news condition.

For this reason we cannot yet draw any conclusions with regard to the hypotheses, without performing more robust statistical analyses.

Figure 6 Boxplot of ΔED – by group



4.3 Main results

As can be seen in tables 2 to 5, the experimental data have been analyzed using OLS regression models. In order to check whether the estimates obtained are unbiased, I ran a diagnostics check of the OLS assumptions for all models.

Every model used in the analysis was estimated using the form as described in equation 2. The dependent variable in every model is ΔED , with $Vote_i$ being the treatment dummy that equals 1 for every observation in the treatment group and zero otherwise and $\sum_{c=1}^C \beta_c X_{ci}$ capturing the demographic controls for gender, educational attainment, employment status and political orientation.

$$\Delta ED_i = \beta_0 + \beta_1 Vote_i + \sum_{c=1}^C \beta_c X_{ci} + u_i \quad (2)$$

Since all data were generated by means of a randomized control trial, there can be no reverse causality between the treatment variable and ΔED , because the treatment dummy is randomly determined.

Consequently, there should per definition also not be any omitted variables that are both correlated with the treatment dummy, as well as determinants of ΔED for exactly the same reason.

Additionally, the Ramsey Reset test concludes that there is no evidence of model misspecification for the models used in the negative and positive news conditions of hypotheses 1 and 2. Since we are only interested in the causal effect of voting on ΔED , the assumption of conditional mean independence holds. Lastly, since all models were estimated using heteroscedasticity-robust standard errors and there was also no evidence of significant multicollinearity problems, the OLS is the best linear unbiased estimator for the effect of voting on ΔED .

4.3.1 Hypothesis 1

If we take a look at tables 2 and 3, we find an overview of the OLS results w.r.t. hypothesis 1. Here we analyze the data for subjects in the negative news condition, meaning that the sample is restricted to observations from treatment group 1 and control group 1.

Hypothesis 1 states that subjects that voted should engage in less (downward) attitude adjustment compared to subjects that did not vote, after reading the negative news article on their most preferred candidate. Since we expect the sign of ΔED to be negative for subjects in treatment group 1 as well as for those in control group 1, this should translate to a positive coefficient of the treatment dummy ('Vote'). Furthermore, unless specifically said so otherwise, when discussing the results I will always refer to the most complete model.

Looking at table 2 we notice that the coefficient of the treatment dummy ‘Vote’ is positive for every iteration of the model. According to the result of the unrestricted model under column 6, ΔED is around 6 points higher for subjects in treatment group 1 compared to subjects in control group 1. Following this observation, it looks like voting subjects adjusted their attitude towards the candidates, as measured by ΔED , less compared to subjects that did not vote. However, this effect is not significant at a 10% significance level ($p=0.218$), so using this model we cannot conclude that the true effect of voting on ΔED is different from zero.

Furthermore, we notice that female subjects score on average around 9.8 points lower on ΔED compared to their male counterparts, this effect is significant at the 10% level ($p=0.055$). This effect makes sense since the topic of the news article that subjects read in this condition was sexual misconduct and women generally tend to be less tolerant towards such acts than men (Foulis and McCabe, 1997).

We also see that subjects with Master’s degrees have significantly higher ΔED scores compared to subjects with Bachelor’s degrees, this effect being significant at the 5% level ($p=0.031$). Subjects with Master’s degrees are slightly older, on average, than those with Bachelor’s degrees, however age was not found to have any significant effect on ΔED . As there are also no significant differences w.r.t. ΔED for the different categories of employment status¹⁰, an explanation for this observation may lie in the political attitudes of these subgroups.

If we compare the distribution of political attitudes, found in figures 12 and 13 of the appendix, between subjects with Bachelor’s and Master’s degrees, we see that those with Master’s degrees tend to be a lot more centrist¹¹ compared to subjects with Bachelor’s degrees.

Among Master graduates there are still more people that identify as left of center than centrist, however the difference between these categories is far smaller than it is for Bachelor graduates. At the same time we also see that less Master graduates identify as right of center compared to Bachelor graduates. However, this does not explain why we see subjects with Master’s degrees having higher ΔED scores on average, compared to those with bachelor’s degrees. This is the case because according to the model, individuals that are right of center score around 16.7 points higher on ΔED compared to subjects left of center (significant at the 1% level). This implies that in the negative news condition, subjects on the political right adjusted their attitude less compared to those on the left, which would be consistent with previous reports on differences in attitudes towards sexual harassment and misconduct across the political spectrum (Kurtzleben, 2017; Quinnipac University, 2017).

¹⁰ Only a handful of subjects were self-employed, so this effect should not be assigned any serious weight.

¹¹ Centrist refers to subjects that politically identify as neither left nor right

Table 2 Primary analysis results – Negative news condition

DESCRIPTION	VARIABLES	(1) ΔED	(2) ΔED	(3) ΔED	(4) ΔED	(5) ΔED	(6) ΔED
Treatment	Vote	5.422 (4.822)	5.220 (4.858)	4.833 (4.880)	5.791 (4.790)	5.727 (4.907)	5.994 (4.850)
	Age		0.336 (0.437)	0.460 (0.451)	-0.259 (0.546)	-0.391 (0.560)	-0.080 (0.568)
Gender (base = Male)	Female			-9.887* (5.240)	-10.232** (4.980)	-10.351** (5.180)	-9.820* (5.090)
	Other			-11.142 (10.380)	-5.940 (11.235)	-8.145 (9.118)	-4.402 (9.204)
	No schooling				40.866 (34.260)	40.559*** (6.611)	46.267*** (7.762)
	High School				-7.089 (6.110)	-7.040 (5.753)	-4.543 (5.775)
Educational attainment (base = Bachelor's degree)	Vocational training				-7.409 (17.223)	-19.079 (14.985)	-12.385 (14.723)
	Master's degree				12.713* (6.447)	12.589** (6.054)	13.639** (6.350)
	Doctorate				26.655 (16.189)	24.952 (16.699)	21.572 (14.953)
	Employed for wages					-1.863 (6.262)	-2.813 (6.259)
Employment status (base = Student)	Self employed					25.128** (11.190)	22.343** (9.985)
	Unemployed					14.397 (10.823)	11.770 (9.972)
Political orientation (base = Left of center)	Right of center						16.695*** (6.249)
	Neither left nor right						2.024 (6.502)
	Constant	-43.809*** (3.264)	-52.198*** (11.471)	-49.090*** (11.391)	-33.238** (14.233)	-30.560** (13.438)	-44.109*** (14.654)
	Observations	203	202	202	202	202	202
	R-squared	0.006	0.008	0.028	0.078	0.105	0.146

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Table 3 Secondary analysis results – Negative news condition

DESCRIPTION	VARIABLES	(1) ΔED	(2) ΔED	(3) ΔED	(4) ΔED
Treatment	Vote	4.211 (7.058)	11.057** (5.390)	-1.787 (7.786)	10.778** (5.402)
Interaction terms	Female * Vote	3.299 (9.584)			
	Right of center * Vote		-19.389 (11.854)		
	Left of center * Vote			13.524 (10.238)	
Gender (base = Male)	Age	-0.058 (0.571)	-0.013 (0.555)	-0.119 (0.557)	-0.459 (0.580)
	Female	-11.381 (6.897)	-10.943** (4.973)	-10.237** (5.011)	-11.306* (5.768)
	Other	-4.526 (9.258)	-4.362 (9.512)	-3.721 (9.738)	-4.384 (9.528)
Educational attainment (base = Bachelor's degree)	No schooling	46.900*** (7.835)	48.870*** (7.776)	43.867*** (7.993)	50.430*** (8.203)
	High school	-4.649 (5.822)	-3.967 (5.770)	-3.863 (5.856)	-4.127 (6.810)
	Vocational training	-12.252 (14.623)	-10.794 (15.247)	-10.996 (16.496)	-11.101 (15.676)
	Master's degree	13.358** (6.412)	15.178** (6.348)	15.294** (6.551)	18.890*** (6.457)
	Doctorate	21.030 (15.030)	20.118 (14.616)	22.477 (14.121)	15.325 (19.019)
Employment status (base = Student)	Employed for wages	-2.817 (6.264)	-4.060 (6.474)	-3.294 (6.317)	2.450 (6.962)
	Self Employed	21.858** (10.072)	18.926* (9.854)	21.546** (9.833)	21.533* (11.350)
	Unemployed	11.251 (10.325)	8.267 (10.132)	11.613 (10.232)	15.839 (14.618)
Political orientation	Right of center	16.950*** (6.203)	25.982*** (7.266)		
	Neither left nor right	2.220 (6.560)	2.914 (6.503)	-15.582** (7.139)	
	Left of center			-23.100*** (7.207)	
	Constant	-43.753*** (14.881)	-47.615*** (14.447)	-23.026* (13.269)	-38.320** (15.044)
	Observations	202	202	202	149
	R-squared	0.146	0.160	0.154	0.143

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Like stated earlier, among subjects with master's degrees, right-wing political attitudes are less prevalent compared to the subjects with Bachelor's degrees. So if the explanation for why we see Master graduates having higher ΔED scores would have laid solely in the distribution of political attitudes, we should have observed a negative coefficient, therefore it is plausible that this explanation lies somewhere outside the data.

In order to check if the effect of voting on political attitude adjustment, or the lack thereof, is driven by a particular subgroup of the sample, I ran additional OLS regression including interaction effects between gender and voting and political orientation and voting. The estimated coefficients of these models can be found in columns 1 to 3 of table 3.

Under the first column we can see that the interaction term between the 'Female' dummy and the treatment dummy is not significant at the 10% level ($p=0.731$), therefore we cannot conclude that the effect of voting on ΔED , which is also still insignificant in this model ($p=0.552$), is different for women than it is for men.

The coefficient of the interaction between being right of center and voting, as seen under column 2, is quite large, however it also fails to be significant at the 10% level ($p=0.104$). On the other side, the coefficient of the interaction between being left of center and voting is negative and is also not significant at the 10% level ($p=0.188$). Therefore we cannot at first glance conclude that the effect for voting on ΔED is different for different categories of political ideology.

However, when we look at the effect of voting on ΔED in the model under column 2, we see that including the interaction term leads to this effect now becoming significant at the 5% level, while it becomes almost twice as great as under the most complete model in table 2. Additionally, while the effect of the interaction term between being right of center and voting is technically not significant at the 10% level, it is approaching significance quite closely. Since the sample is quite skewed towards the left side of the political spectrum, there are not that many right-wing subjects to begin with, so if with this relative lack of people on the right the effect of the interaction still approaches significance, there might be an effect after all.

In order to verify if this is the case or not I ran another OLS regression where all subjects that identified as right of center were dropped, this reduced the total number of observations from 202 to 149. What we observe in this model is that the effect of voting on ΔED is not only larger compared to the original model, it is now also significant at the 5% level ($p=0.048$).

This suggest that in the case of the negative news condition there is an effect of voting on political attitude adjustment that matches previous empirical results, but that this effect differs depending what

side of the political spectrum an individual place him or herself on.

Going back to the experimental design section, we recall that hypothesis 1 was formulated as follows:

***H1:** After reading the negative news article on their most preferred candidate, voting subjects engage in less downward attitude adjustment towards this candidate compared to subjects that did not vote.*

If we adhere strictly to the wording of the hypothesis, we cannot conclude that its corresponding null hypothesis of there being no effect of voting on political attitude adjustment can be rejected. The effect of voting on subsequent attitude adjustment after reading the negative article was only significant once subjects to the right of the political center were dropped from the sample. Therefore we cannot reject the null hypothesis, since the wording of hypothesis 1 implies that this effect should have been present for the entire sample in order for the null hypothesis to be rejected.

4.3.2 Hypothesis 2

In tables 4 and 5 on pages 29 and 30, we can find the OLS results for the positive news condition, in this analysis the sample is restricted to observations from treatment group 2 and control group 2, with the dependent variable also being ΔED in every estimation.

Hypothesis 2 also states that subjects that voted should engage in less political attitude adjustment compared to non-voting subjects after having read the positive news article on their least preferred candidate. As discussed in the experimental design section, the expected sign of ΔED is, similar to the negative news condition, also negative in the positive news condition for subjects in treatment group 2 as well as for those in control group 2.

Therefore we can apply the same logic as under hypothesis 1 and conclude that a positive coefficient of the treatment dummy would be in line with hypothesis 2.

From table 4 we can infer that the coefficient of the treatment dummy is indeed positive for each iteration of the model. As we keep adding more controls to the model we see that the effect of voting on ΔED slowly becomes larger, reaching an effect size of around 4.8 points in the most complete model under column 6.

The statistical significance of this effect also increases when we move from the model including just the treatment dummy and constant to the most complete model. Where the effect of voting on ΔED is only significant at the 10% level ($p=0.066$) in the model under column 1, this effect is significant at the 5%

level ($p=0.048$) in the most complete version of the model. This more complete model explains around 4.8% of the total variation in ΔED , which also makes it the best fitting one.

Contrary to the results obtained for the negative news condition, we do not see any significant gender differences w.r.t. ΔED . So after reading a news article where their least preferred candidate saves a little kid from drowning, women did not adjust their opinion of this candidate (relative to their attitude towards their most preferred candidate) any more or less compared to men.

Looking at the rest of the results obtained for the control variables, we do not observe any relevant significant effects on ΔED . We do obtain significant effects on ΔED for individuals that do not identify as either male or female, as well as for those with doctorates and the unemployed.

However, since there are so few individuals in the sample that fall into these categories, these effects, while significant, are better left ignored.

In table 5 we can find the results of the secondary analysis, which includes the same interaction terms used in the secondary analysis of the negative news condition.

If we check whether the effect of voting on ΔED differs for different categories of gender and political orientation, we notice that none of the three interaction terms are statistically significant at the 10% level¹². This means that the effect of voting on political attitude adjustment is not significantly different for women than it is for men nor is it different for individuals that politically identify as left of center compared to those right of center.

If we recall that hypothesis 2 was stated as such:

***H2:** After reading the positive news article on their least preferred candidate, voting subjects engage in less upward attitude adjustment towards this candidate compared to subjects that did not vote.*

We can conclude that there is enough evidence to reject its corresponding null hypothesis of no effect of voting on subsequent attitude adjustment, using a 5% significance level.

¹² P-values for Female * Vote, Right of center * Vote and Left of center * Vote are equal to 0.241, 0.208 and 0.112 respectively.

Table 4 Primary analysis results – Positive news condition

DESCRIPTION	VARIABLES	(1) ΔED	(2) ΔED	(3) ΔED	(4) ΔED	(5) ΔED	(6) ΔED
Treatment	Vote	4.385* (2.372)	4.382* (2.384)	4.393* (2.398)	4.741* (2.431)	4.744* (2.430)	4.788** (2.407)
	Age		0.151 (0.138)	0.166 (0.139)	0.183 (0.155)	0.070 (0.173)	0.086 (0.180)
Gender (base = Male)	Female			1.018 (2.489)	0.766 (2.508)	0.396 (2.590)	0.574 (2.599)
	Other			13.172*** (2.711)	13.418*** (3.326)	12.903*** (3.738)	13.206*** (3.859)
	No schooling				1.266 (6.019)	-3.966 (3.020)	-5.387 (3.831)
	High School				-1.721 (3.132)	-1.799 (3.231)	-2.113 (3.255)
Educational attainment (base = Bachelor's degree)	Vocational training				5.436* (3.123)	5.770* (3.406)	5.967* (3.570)
	Master's degree				-1.729 (3.230)	-1.163 (3.303)	-1.171 (3.302)
	Doctorate				11.502*** (3.002)	12.457*** (3.671)	12.216*** (3.731)
	Employed for wages					1.013 (3.118)	1.004 (3.213)
Employment status (base = Student)	Self employed					-0.107 (3.757)	0.001 (3.506)
	Unemployed					10.626*** (2.994)	10.678*** (3.268)
Political orientation (base = Left of center)	Right of center						1.455 (3.285)
	Neither left nor right						-1.480 (3.201)
	Constant	-13.792*** (1.754)	-17.692*** (3.934)	-18.779*** (4.395)	-18.687*** (4.531)	-16.318*** (4.572)	-16.814*** (4.684)
	Observations	209	208	208	208	208	208
	R-squared	0.016	0.020	0.026	0.034	0.045	0.048

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5 Secondary analysis results – Positive news condition

DESCRIPTION	VARIABLES	(1) ΔED	(2) ΔED	(3) ΔED
Treatment	Vote	8.117** (4.006)	3.421 (2.698)	9.726*** (3.689)
Interaction terms	Female * Vote	-6.009 (5.114)		
	Right of center * Vote		7.244 (5.730)	
	Left of center * Vote			-7.680 (4.804)
Gender (base = Male)	Age	0.107 (0.188)	0.093 (0.182)	0.088 (0.184)
	Female	3.494 (3.798)	0.497 (2.598)	0.379 (2.601)
	Other	13.443*** (4.726)	13.133*** (3.421)	13.055*** (3.071)
Educational attainment (base = Bachelor's degree)	No schooling	-4.080 (4.125)	-5.405* (3.232)	-5.076 (3.420)
	High School	-1.967 (3.237)	-1.950 (3.160)	-1.972 (3.178)
	Vocational training	5.825 (3.774)	5.789* (3.481)	6.166* (3.561)
	Master's degree	-0.960 (3.248)	-1.065 (3.312)	-0.945 (3.286)
	Doctorate	11.176*** (3.962)	11.579*** (3.906)	11.009*** (3.991)
Employment status (base = Student)	Employed for wages	0.604 (3.266)	0.902 (3.202)	0.844 (3.189)
	Self employed	-0.664 (3.506)	-0.105 (3.560)	-0.171 (3.631)
	Unemployed	11.070*** (3.348)	10.078*** (3.355)	9.529*** (3.387)
Political orientation	Right of center	1.616 (3.216)	-1.850 (5.323)	
	Neither left nor right	-1.336 (3.184)	-1.565 (3.228)	-2.976 (3.817)
	Left of center			2.183 (4.713)
	Constant	-19.004*** (5.441)	-16.216*** (4.696)	-17.509*** (5.901)
	Observations	208	208	208
	R-squared	0.055	0.054	0.059

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

5. Discussion

In this final chapter I will briefly summarize the findings of this thesis and place them in the context of previous research on the connection between cognitive dissonance theory and political polarization. I will also discuss the limitations of my work and provide some potential avenues for future research.

I found mixed evidence for the existence of an effect of voting on ΔED in the negative news condition, where subjects read an article that described their most preferred candidate engaging in acts of sexual misconduct. In this negative news condition there was no overall effect of voting on ΔED , however the results also suggest that the absence of this effect could be explained by differences in political orientation between subjects. According to these results, subjects on the right side of the political spectrum engaged in much less attitude adjustment after having read the article compared to subjects that identified as left of center, while the effect of voting on ΔED did not differ significantly between these two streams of political ideology.

This suggests that individuals on the right did not find the acts of sexual misconduct described in the article as serious as individuals on the left. Additional evidence for this hypothesis can be found by comparing the distribution of opinions on the gravity of the acts described in the negative news article, these distributions can be found in figures 14 and 15 of the appendix. Around 76% of subjects who do not identify as politically right thought the acts described were either very bad or extremely bad, whereas only around 44% of subjects on the right shared this opinion. Similarly, around 24% of subjects on the right thought the acts of sexual misconduct were only a little bad, where just around 5% of subjects not on the political right thought the same. This observation is also consistent with reports of public opinion on sexual misconduct and harassment (Kurtzleben, 2017; Quinnipac University, 2017).

This hypothesis is further strengthened by the fact that if we exclude individuals on the political right from the analysis altogether, we do find a significant effect (at the 5% level) of voting on ΔED .

This implies that there is a significant effect of voting on ΔED in the negative news condition, however this effect is being distorted if we use the entire sample, because the seriousness of the allegations described in the article is perceived differently depending on where individuals place themselves on the political spectrum.

When it comes to the positive news condition however, all the evidence points in the direction of there being a significant effect of voting on ΔED . Where gender and political orientation were found to have

significant effects on ΔED in the negative news condition, these variables do not have any significant effect on ΔED in the positive news condition.

Thus, we found evidence that suggests that subjects who voted were more polarized in their attitudes towards their most and least preferred candidate compared to subjects that did not vote. This finding is consistent with predictions made by cognitive dissonance theory (Brehm, 1956; Festinger, 1957) and findings by previous empirical studies (Beasley and Joslyn, 2001; Bølstad et al., 2013; McGregor, 2013; Mullainathan and Washington, 2009).

The effect size of voting on ΔED obtained in this thesis is equal to around 0.31 standard deviations of ΔED in the negative news condition, using the model with the restricted sample found under column 4 of table 3. This effect size equals around 0.28 standard deviations in the positive news condition, using the unrestricted model found under column 6 of table 4.

McGregor (2013), who used the same definition of ΔED as used in this thesis as the dependent variable in his analysis, obtained effect sizes ranging from 0.41 – 0.50 standard deviations of ΔED . Similarly, Mullainathan and Washington (2009) obtained an effect size of around 0.40 standard deviations for the effect of voting on presidential approval ratings¹³ (by party affiliation).

We notice that the effect sizes obtained in this thesis are smaller compared to those obtained by the aforementioned empirical studies, however this makes sense as this thesis analyzed experimental data of a hypothetical election and the empirical studies analyzed data regarding real elections. It was to be expected that people care more about real elections than about one that was made up for research purposes, therefore it makes sense that we observe larger effect sizes in the empirical literature.

The results of the experiment conducted in this thesis point in the same direction as those of the empirical works (Beasley and Joslyn, 2001; Bølstad et al., 2013; McGregor, 2013; Mullainathan and Washington, 2009), but with the exception that the results of this thesis are exempt from the potentially confounding effects of selection bias due to the randomization of subjects into treatments.

Empirical studies are unable to match this property of the experimental design, since it would be illegal and not to mention highly unethical to make a determination as to if an individual is allowed to vote or not. Nevertheless, the experimental results strengthen the case for the link between cognitive dissonance theory and political polarization by providing evidence of a causal effect of the act of voting on attitudes

¹³ Effect sizes for the results obtained by Beasley and Joslyn (2001) and Bølstad et al. (2013) could not be calculated, since these authors did not publish enough descriptive statistics on their dependent variables.

towards political candidates. This also provides the claims made by the aforementioned empirical studies with more legitimacy.

However, the experiment in this thesis could still be improved by conducting it on a more representative sample. Like we can see in the descriptive statistics in table 6 of the appendix, this sample consisted mostly of students, and highly educated people and is also skewed towards the left of the political spectrum. This is not representative of the entire electorate, since students and highly educated people are normally in the minority when viewed over an entire country's population.

It would have been interesting to see whether differences in e.g. employment status or educational attainment (aside from people with Bachelor's or Master's degrees) are predictive of ΔED . This could also potentially have opened up another dimension of analysis in terms of interaction effects, in order to see if the effect of voting on ΔED would be different for e.g. wage workers compared to the self-employed. However, since there is too little variation within the educational attainment and employment status variables, we cannot say anything substantial on this.

Therefore, I would suggest to repeat this experiment using a more representative sample. An example of one such sample is the LISS panel. This panel contains around 7000 individuals from the Netherlands and has roughly the same demographic makeup as the Dutch population. Due to the fact that this experiment was run as an online survey, it would also be very easy to implement in this panel, since its members complete surveys via the internet.

To end this thesis on a concluding note, we did not find sufficient evidence to reject the first null hypothesis. However, we did find sufficient evidence to reject the second null hypothesis. This would normally present us with mixed findings regarding the research question. However, the failure to reject the first null hypothesis was due to politically based differences w.r.t. the perception of the negative article. As we saw from the analysis, excluding subjects in the political right from the primary model lead to the effect of voting on political attitude adjustment becoming significant at the 5% level. This, combined the result on hypothesis 2, leads me to believe that it is more likely than not that there is an overall effect of voting on political attitude adjustment. This means that the research question:

“Does the act of voting in and of itself have an effect on political attitudes?”

can be answered with a yes. We found evidence to suggest that the act of voting in and of itself makes people less likely to adjust their political opinions when confronted with information that reflects negatively on their most preferred candidate or when confronted with positive information on their least preferred candidate.

6. References

- Artiga González, T., & Granic, G. D. (2019). Spatial Voting Meets Spatial Policy Positions: An Experimental Appraisal. *Available at SSRN 3417629*.
- Bandura, A. (1989). Human agency in social cognitive theory. *American psychologist*, *44*(9), 1175.
- Beasley, R. K., & Joslyn, M. R. (2001). Cognitive dissonance and post-decision attitude change in six presidential elections. *Political psychology*, *22*(3), 521-540.
- Bølstad, J., Dinas, E., & Riera, P. (2013). Tactical voting and party preferences: A test of cognitive dissonance theory. *Political behavior*, *35*(3), 429-452.
- Borland, R., Yong, H. H., Balmford, J., Fong, G. T., Zanna, M. P., & Hastings, G. (2009). Do risk-minimizing beliefs about smoking inhibit quitting? Findings from the International Tobacco Control (ITC) Four-Country Survey. *Preventive medicine*, *49*(2-3), 219-223.
- Brehm, J. W. (1956). Postdecision changes in the desirability of alternatives. *The Journal of Abnormal and Social Psychology*, *52*(3), 384.
- Budge, I., Klingemann, H. D., Volkens, A., Bara, J., & Tanenbaum, E. (2001). *Mapping policy preferences: estimates for parties, electors, and governments, 1945-1998* (Vol. 1). Oxford University Press on Demand.
- Chapman, S., Wong, W. L., & Smith, W. (1993). Self-exempting beliefs about smoking and health: differences between smokers and ex-smokers. *American journal of public health*, *83*(2), 215-219.
- Cognition. (2019). In *Oxford English dictionary*. Retrieved from <https://www.oed.com/view/Entry/35876?redirectedFrom=cognition#eid>
- Festinger, L. (1957). *A theory of cognitive dissonance* (Vol. 1). Stanford university press.
- Fong, G. T., Hammond, D., Laux, F. L., Zanna, M. P., Cummings, K. M., Borland, R., & Ross, H. (2004). The near-universal experience of regret among smokers in four countries: findings from the International Tobacco Control Policy Evaluation Survey. *Nicotine & Tobacco Research*, *6*(Suppl_3), S341-S351.
- Fotuhi, O., Fong, G. T., Zanna, M. P., Borland, R., Yong, H. H., & Cummings, K. M. (2013). Patterns of cognitive dissonance-reducing beliefs among smokers: a longitudinal analysis from the International Tobacco Control (ITC) Four Country Survey. *Tobacco control*, *22*(1), 52-58.
- Foulis, D., & McCabe, M. P. (1997). Sexual harassment: Factors affecting attitudes and perceptions. *Sex Roles*, *37*(9-10), 773-798.
- Kinder, D. R., & Kiewiet, D. R. (1979). Economic discontent and political behavior: The role of personal grievances and collective economic judgments in congressional voting. *American Journal of Political Science*, 495-527.
- Klingemann, H. D., Volkens, A., McDonald, M. D., Budge, I., & Bara, J. (2006). *Mapping policy preferences II: estimates for parties, electors, and governments in Eastern Europe, European Union, and OECD 1990-2003* (Vol. 2). Oxford University Press on Demand.

- Kurtzleben, D. (2017, December). Poll: Americans overwhelmingly support “zero tolerance” on sexual harassment. Retrieved from <https://www.npr.org/2017/12/14/570601136/poll-sexual-harassment-ipsos>
- Lien, P. T. (1998). Does the gender gap in political attitudes and behavior vary across racial groups?. *Political Research Quarterly*, 51(4), 869-894.
- Lowe, W., Benoit, K., Mikhaylov, S., & Laver, M. (2011). Scaling policy preferences from coded political texts. *Legislative studies quarterly*, 36(1), 123-155.
- McGregor, R. M. (2013). Cognitive dissonance and political attitudes: The case of Canada. *The Social Science Journal*, 50(2), 168-176.
- Mullainathan, S., & Washington, E. L. (2009). Sticking with Your Vote: Cognitive Dissonance and Voting. *Yale Economic Applications and Policy Discussion Paper*, (14).
- Oakes, W., Chapman, S., Borland, R., Balmford, J., & Trotter, L. (2004). “Bulletproof skeptics in life's jungle”: which self-exempting beliefs about smoking most predict lack of progression towards quitting?. *Preventive medicine*, 39(4), 776-782.
- Palfrey, T. R., & Poole, K. T. (1987). The relationship between information, ideology, and voting behavior. *American journal of political science*, 511-530.
- Shultz, T. R., & Lepper, M. R. (1992). A constraint satisfaction model of cognitive dissonance phenomena. In *Proceedings of the Fourteenth Annual Conference of the Cognitive Science Society* (pp. 462-467). Erlbaum Hillsdale, NJ.
- Shultz, T. R., & Lepper, M. R. (1996). Cognitive dissonance reduction as constraint satisfaction. *Psychological review*, 103(2), 219.
- Shultz, T. R., Léveillé, E., & Lepper, M. R. (1999). Free choice and cognitive dissonance revisited: Choosing “lesser evils” versus “greater goods”. *Personality and Social Psychology Bulletin*, 25(1), 40-48.
- Volkens, A., Bara, J., Budge, I., McDonald, M. D., & Klingemann, H. D. (Eds.). (2013). *Mapping policy preferences from texts: statistical solutions for manifesto analysts* (Vol. 3). OUP Oxford
- Quinnipiac University. (2017). 60% of U.S. women say they've been sexually harassed Quinnipiac University national poll finds; Trump job approval still stuck below 40%. Retrieved from <https://poll.qu.edu/national/release-detail?ReleaseID=2502>

7. Appendix

Candidate A

- Recent economic crises have taught us that the economy has become too complex to be left unregulated. *(403: Market regulation +)*
- Consumers need to be protected from large corporations so as to ensure their basic consumer rights. *(403: Market regulation +)*
- A strong social safety net for those who have been left behind via social housing and health care is important *(504: Welfare State expansion +)*
- A sustainable economy is a healthy economy, companies that operate in a polluting or wasteful manner need to pay extra environmental taxes. *(416: Anti-growth economy +)*
- Everyone that requests asylum and is a law-abiding person deserves a chance to better their life and should be able to acquire citizenship. *(607: Multiculturalism +)*

Candidate B

- Government intervention in the economic domain should be considered carefully. It will most likely distort the economic equilibrium. *(401: Free enterprise +)*
- It is the government's job to implement healthy economic policies and to reduce the federal budget deficits. *(414: Economic Orthodoxy +)*
- Government spending should be reduced by limiting social services provided. Private sector companies can provide these services more efficiently and effectively than governmental agencies. *(505: Welfare State limitation +)*
- Businesses need to be able to operate with as few burdens as possible, additional taxes only serve to damage job growth and investments. *(410: Productivity +)*
- Immigration needs to be merit-based, if you have the education and/or skills we need at the moment you can acquire citizenship. If not, you will have to leave. *(607: Multiculturalism -)*

Table 6 Descriptive sample statistics by group

	Treatment 1		Control 1		Treatment 2		Control 2	
	MEAN	<i>SD</i>	MEAN	<i>SD</i>	MEAN	<i>SD</i>	MEAN	<i>SD</i>
Age	24.500	4.652	24.945	5.572	25.824	7.749	25.764	5.731
Male	0.430	0.498	0.382	0.488	0.447	0.500	0.425	0.497
Female	0.527	0.502	0.555	0.499	0.544	0.501	0.566	0.498
Other	0.043	0.204	0.064	0.245	0.010	0.099	0.009	0.097
No schooling	0.000	0.000	0.009	0.095	0.010	0.099	0.009	0.097
High school	0.280	0.451	0.273	0.447	0.223	0.418	0.179	0.385
Vocational training	0.022	0.146	0.018	0.134	0.019	0.139	0.038	0.191
Bachelor's degree	0.484	0.502	0.455	0.500	0.466	0.501	0.528	0.502
Master's degree	0.204	0.405	0.209	0.409	0.282	0.452	0.236	0.427
Doctorate	0.011	0.104	0.036	0.188	0.000	0.000	0.009	0.097
Employed for wages	0.258	0.440	0.291	0.456	0.252	0.437	0.274	0.448
Self employed	0.043	0.204	0.045	0.209	0.058	0.235	0.038	0.191
Student	0.667	0.474	0.627	0.486	0.650	0.479	0.651	0.479
Unemployed	0.032	0.178	0.036	0.188	0.039	0.194	0.038	0.191
Very left	0.194	0.397	0.218	0.415	0.155	0.364	0.151	0.360
Somewhat left	0.237	0.427	0.155	0.363	0.282	0.452	0.302	0.461
Closer to the left	0.161	0.370	0.164	0.372	0.243	0.431	0.160	0.369
Neither left nor right	0.140	0.349	0.200	0.402	0.155	0.364	0.179	0.385
Closer to the right	0.151	0.360	0.127	0.335	0.107	0.310	0.132	0.340
Somewhat right	0.075	0.265	0.091	0.289	0.029	0.169	0.066	0.250
Very right	0.043	0.204	0.045	0.209	0.029	0.169	0.009	0.097
<i>N</i>	93		110		103		106	

Figure 8 Average age by group

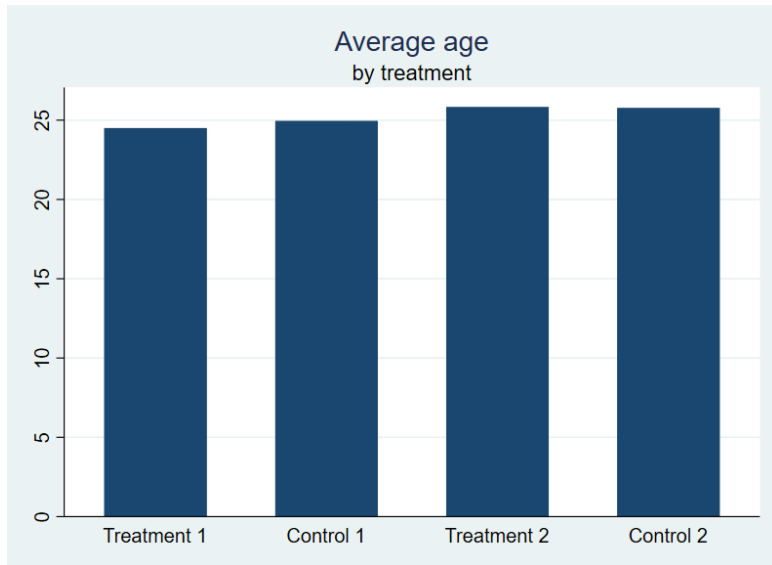


Figure 7 Gender composition by group

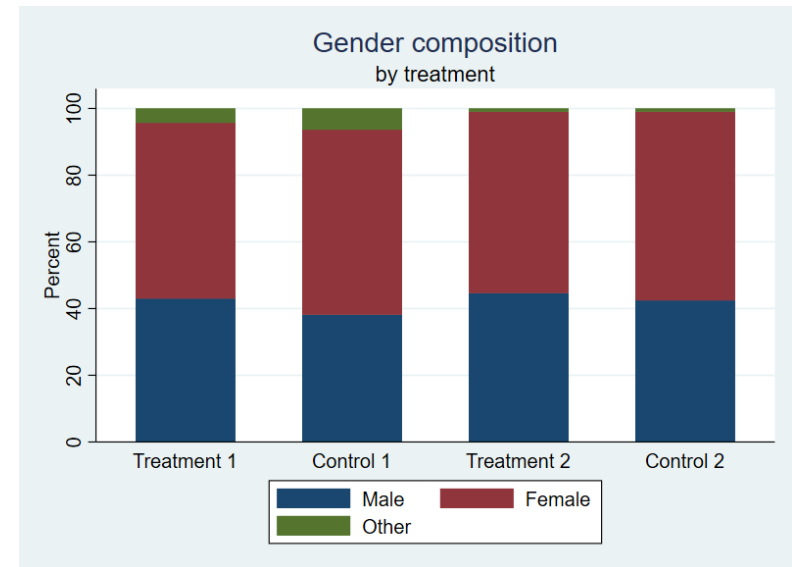


Figure 10 Distribution of Educational attainment by group

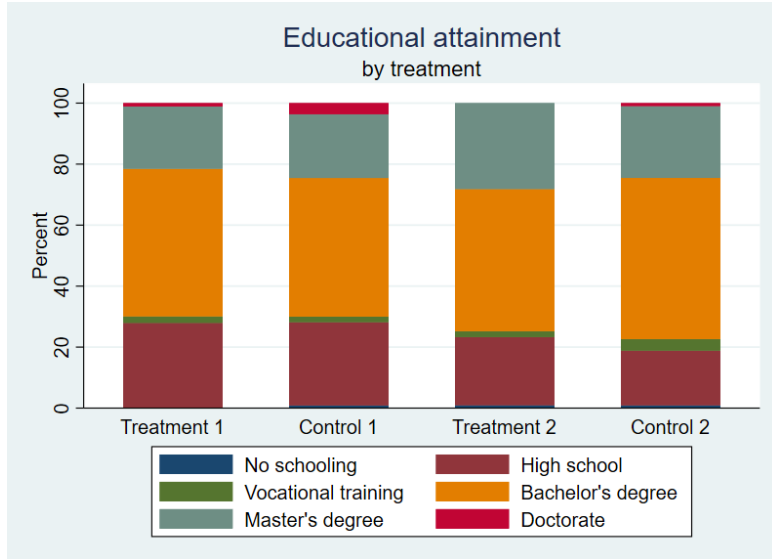


Figure 9 Distribution of Employment status by group

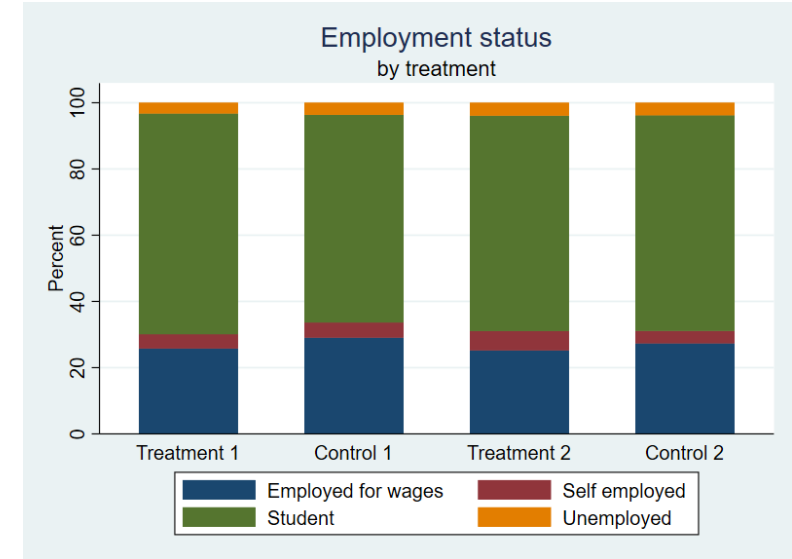


Figure 11 Distribution of political attitudes by group

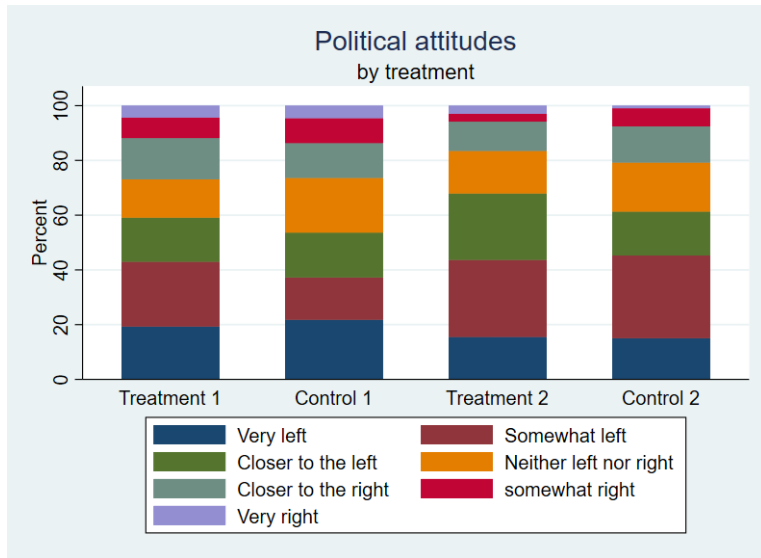


Figure 12 Distribution of political attitudes for Master graduates

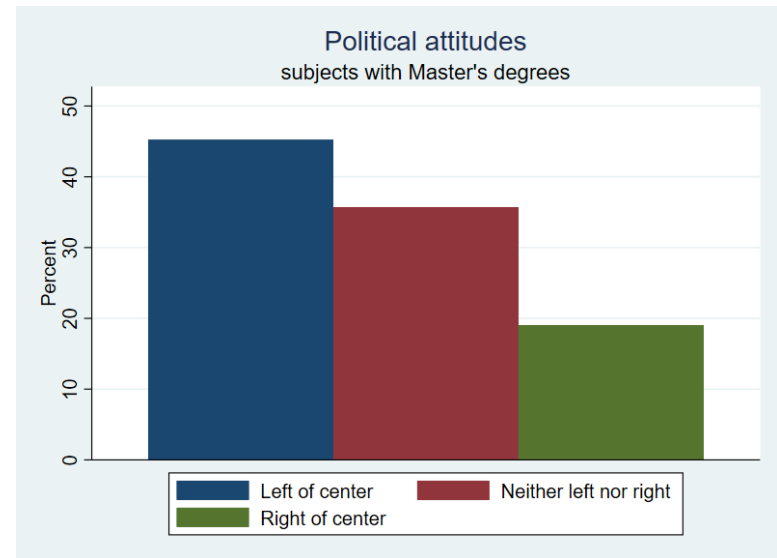


Figure 13 Distribution of political attitudes for Bachelor graduates

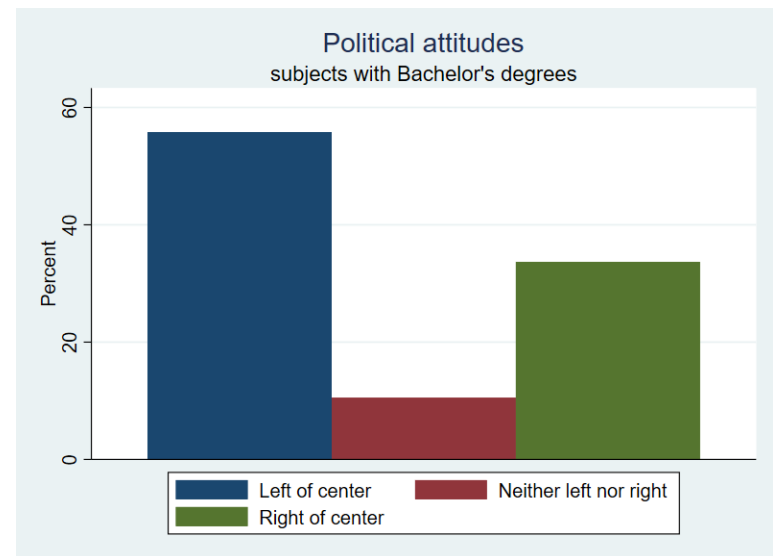


Figure 11 Distribution of attitudes towards the negative news article for subjects not on the right

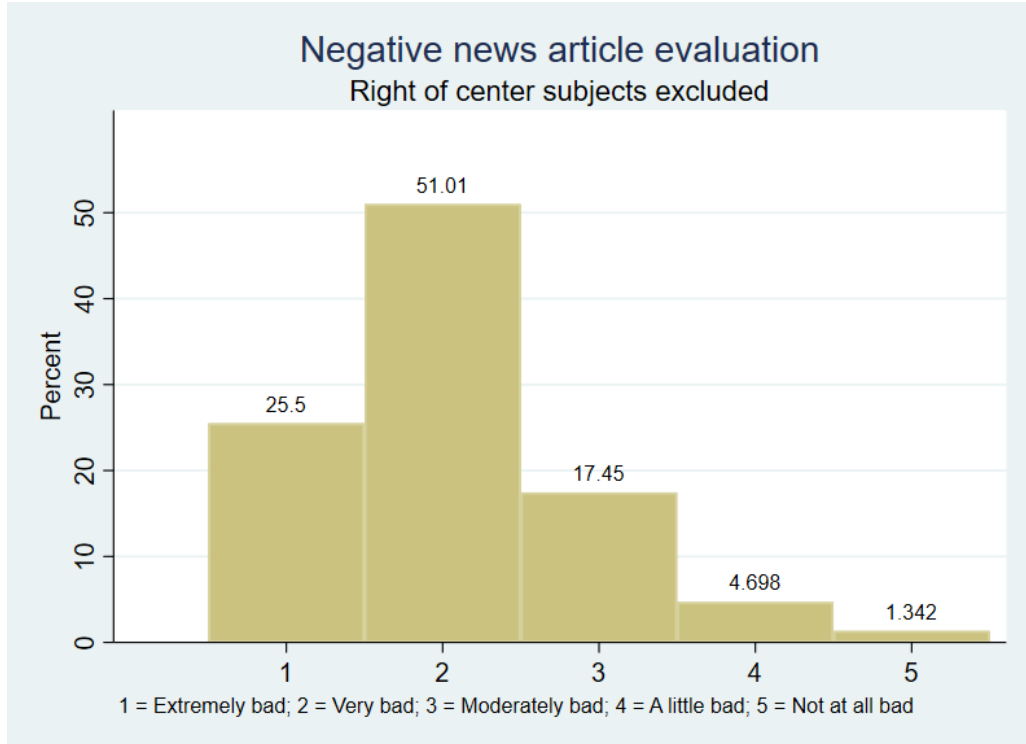


Figure 12 Distribution of attitudes towards the negative news article for subjects on the right

