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Culture & Cognitive Dissonance in the context of Voting

Author: Ajitha Lakshmi Gopalakrishnan (559663)

Supervisor: Dr. Georg D Granić

Second Assessor: Dr. Peter P Wakker

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Ajitha Lakshmi Gopalakrishnan²

Master thesis supervisor: Dr. Georg D Granić

Abstract

Polarization of people's opinion is not a new phenomenon but in the recent years the recorded instances of the same have risen. While understanding the factors behind polarization, studies have shown that the act of voting in itself is a reason for polarization. While this finding is in alignment with Cognitive Dissonant Theory, there has been limited research in understanding the role of factors like culture on cognitive dissonance particularly in the context of voting. This thesis aims to understand the effect of culture on cognitive dissonance in the context of voting through an experimental analysis. To achieve this, a hypothetical voting experiment was conducted using a sample of 72 Dutch and/or Chinese origin individuals residing in The Netherlands. The design elements of improved Free Choice Paradigm using R-R-C set up for Control and R-C-R set up for Treatment groups were implemented as part of the experiment along with the intervention combining dissonant information and family's opinion. The results show that negative information and family's opinion on the voted candidate results in reduction in the ratings of the voted candidate post elections. However, the current analysis fails to find sufficient evidence supporting effect of culture on the change in the rating of the voted candidate.

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² For any enquiry related to the thesis, please contact ajithalakshmig@gmail.com

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1. Introduction

In recent times, there has been many recorded instances of polarisation of opinions among people. While this phenomenon is not new, it has been attracting a lot attention over the past years through social media. It must be noted here that political polarization is a global illness as it is tearing democracies around the world from Brazil and India to Poland and Turkey (Carothers & O'Donohue, 2019). Brexit and the 2016 US presidential elections are also some of the notable examples. An intense level of polarization has all the potential to inflict damages on all the institutions essential for democracy (Carothers & O'Donohue, 2019). One of the notable studies to explain the reasons behind such behaviour is of Mullainathan & Washington (2009). The authors of this paper find evidence that the act of voting itself will result in polarisation. This finding supports the Cognitive Dissonance Theory which predicts that the act of voting for a political candidate leads to a more favourable opinion of the candidate in the future. Dissonance here is explained as the negative drive state that occurs whenever an individual holds two contrasting views/opinions/beliefs simultaneously. Considering that this dissonance is unpleasant, individuals strive to maintain consistency in their beliefs by changing one or both cognitions to “fit together better” (Aronson, 1969).

Building on Mullainathan & Washington (2009), other researchers also attempted to test the prevalence of cognitive dissonance in voting in other countries. However, the results were not consistent. Common thing among these studies of voting behaviour and cognitive dissonance is that they all tested it using historic data rather than controlled laboratory-based data. This study attempts to do that by running an experiment using hypothetical voting scenarios.

Another question that researchers have attempted to answer is the following, “Does everyone experience cognitive dissonance?”. Most of the initial studies in area of cognitive dissonance have been conducted in a western university with the participants mainly being young, predominantly white, middle-class students at colleges and universities. This led to some researchers trying to understand dissonance through various perspectives. One such perspective was through the lens of culture and race. Some of these studies have tried to look at the differences between cultures especially amongst the cultures of East & West. According to past literature, individuals of eastern cultures are considered to be interdependent i.e., they consider themselves not as separate entities but rather in relation to others. While the individuals of western cultures are considered to be independent i.e., they are seen to be free from social and physical environment (Markus & Kitayama, 1991). While studies have devised experiments, which highlight the differences and similarities between different cultures in handling dissonance inducing situations, not many studies have attempted to test the effect of culture in cognitive dissonance in a hypothetical voting scenario. This thesis is an attempt to bridge this gap. The current study makes use of a survey to run an experiment with participants of Dutch origin people who represent the independent culture and Chinese Origin people who represent the interdependent culture.

Additionally, this survey was restricted to only those currently living in The Netherlands. In line with the idea that country of origin may not identify a person's individual cultural leanings, the participants were provided with an additional set of questions to gauge their cultural leanings better. A set of six statements were provided to the participants and they were inspired from the Culture Compass report of Hofstede Insights³. Through the analysis of the survey data, this thesis attempts to find if introducing negative information and culture cue to an individual has an effect on their preferences. Formally, the research question this thesis attempts to answer is *whether culture has an effect on cognitive dissonance in the context of voting*.

The remainder of this thesis is divided in the following way: Section 2 discusses the prevalent literature around cognitive dissonance concept and the subsequent developments in the area of voting and culture. This section also discusses literature on negative information and how it is perceived by the people of different cultures. Section 3 discusses the experimental design and Section 4 discusses the experimental procedure and describes the data obtained in the survey. Section 5 presents the results of the various analyses performed to test the hypotheses. Finally, Section 6 discusses the results and the limitations of the experiment and potential suggestions for the future studies. This is then followed by concluding remarks of the thesis.

2. Literature Review

This section discusses the various developments in the literature in the area of cognitive dissonance, culture and the areas relevant to voting. The section starts off with brief review of the theory of cognitive dissonance and its main paradigms. This is then followed by a discussion of literature on the cognitive dissonance & voting, cognitive dissonance & culture and culture & voting. This section culminates with a brief review of research connecting culture, information and cognitive wherein the two hypotheses examined in this thesis are introduced.

2.1 Cognitive Dissonance

The theory of Cognitive dissonance has been in the radar of social studies practitioners for more than six decades. Festinger (1957) formally provided an introduction of cognitive dissonance theory in his book titled "*A theory of Cognitive Dissonance*". The then relatively novel concept called "cognition" was noted as any piece of knowledge an individual can have. Cooper (2007) explains further that this "knowledge" can comprise of any information including knowledge about behaviour, knowledge about one's attitude or knowledge about the state of the world. Cognitive dissonance can be defined as the subjective perception of incompatibility between two self-relevant cognitions (Fischer et al., 2008).

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In other words, cognitions are considered to be dissonant if one particular cognition is the negation of another cognition. To understand the definition better, consider the following hypothetical voting example. An individual believes that voting is a civic duty and all individuals of voting age must do so. However, in a recent local election, the individual did not exercise their duty of voting. These two cognitions are dissonant because not voting in the local elections is a clear negation of their belief.

It must be noted that dissonance theory doesn't rest on the assumption that man is a rational animal rather builds on the assumption that man is a rationalizing animal i.e., man puts on a show of attempting to be a rational to others and to himself (Aronson, 1969). Thus, the resulting inconsistency between the two opposite cognitions is associated with the psychological state of unpleasantness. This state of unpleasantness or cognitive dissonance motivates the individual to reduce the discomfort by reducing the discrepancy between the dissonant cognitions (Festinger, 1957; Fischer et al, 2008; Harmon-Jones & Mills, 2019). One of the notable features of cognitive dissonance that distinguishes itself from the similar theories of inconsistency is that dissonance has a magnitude (Cooper, 2007). The magnitude of the resultant cognitive dissonance is determined by the importance of cognitions involved and their relation to a personal standard. Further, the more incongruous two cognitions are, the greater the magnitude of dissonance. Considering that dissonance is an unpleasant feeling, individuals find ways to reduce the same. It can then be said that higher the tension that is the consequence of dissonance, the greater is the need to reduce it. Recalling the hypothetical example of individual not voting in the local elections, if they come to believe that they don't have to vote to improve the conditions of their local community, then their behaviour of not voting is consistent with their attitude. It can then be implied that changing the cognition about one's behaviour is generally difficult and so when the behaviour is discrepant with one's attitudes, it is relatively easier to reduce the dissonance by changing their attitude about it. However, dissonance is affected not just by the existence and degree of discrepancy between cognitions but also by other factors. Going back to the hypothetical voting example, it may well be that the individual was working in another city during the elections and that they could not travel during that period or that they were studying in another country and so could not travel for these local elections alone or that they had met with an unfortunate accident which put them in bedrest at the hospital. All of these might be considered as constant cognitions that would go along with the individual's behaviour of not voting. Following this, it can be argued that individuals have different ways of reducing their dissonance and they often do so by adding constant cognitions, subtracting dissonant cognition, replacing dissonant cognitions with constant cognitions, reducing the importance of dissonant cognition and increasing the importance of constant cognition. In other words, justification process can be considered as the addition of constant cognitions and trivialization process can be considered as the reducing the importance of dissonant cognition (Fischer et al., 2008). Thus, in the hypothetical voting example, changing the attitude of the individual towards the election or by changing relative importance of the cognition would have an impact in reducing the resulting dissonance of their behaviour.

One of the paradigms of cognitive dissonance theory that is most relevant to my study of voting is free choice paradigm (FCP). This classical experiment attempted to manipulate the dissonance arousal through different levels of decision difficulty. The set-up of this classic experiment was as follows: the participants were asked to rank different consumer goods according to their preferences (rating) and after that they were asked to decide (choice) between the consumer good ranked second and sixth (low dissonance) or between the one ranked second and third (high dissonance). Subsequently they were asked to re-rate all the consumer goods (re-rating). The key finding from this experiment was that chosen alternatives are re-rated as more desirable and rejected ones as less desirable especially amongst those who made decisions in the high dissonance condition while the spreading of alternatives was low for participants in the low dissonance condition (Harmon-Jones, 2019). This has been followed by several other experiments. Over the years some researchers have identified some methodological concerns with the way these FCP experiments were created (Chen & Risen, 2010). They argue that the participants are more likely to choose the item that they already preferred thus the item's true rating is more than the rejected item. Therefore, the spreading of alternatives indicates the prior preferences and not the attitude change. One of the solutions that the authors propose is that for the treatment group – Rating, Choice and Re-rating (R-C-R) while for the control group – Rating, Re-rating and Choice (R-R-C). The order of events in R-R-C ideally should not invoke any dissonance as no decision was made and this could be used to compare the change in ratings with R-C-R group.

FCP's relevance to the subject of this thesis can be seen through the similarities between the classical experimental set-up and the typical voting scenario in a democratic society wherein the individual has to cast their vote towards their preferred candidate amongst the set of candidates. Correcting for the methodological concerns raised in the past, this thesis employs the improved FCP that was suggested by Chen & Risen (2010). A more detailed explanation is discussed on the experimental design section.

2.2 Cognitive Dissonance & voting

In the past, researchers have attempted to test the relationship between voting and cognitive dissonance. Mullainathan and Washington (2009) used the US presidential election data from American National Election Study (ANES) to establish a causal inference between voting and polarization through dissonance reduction by a variable that is exogenous to voting preferences but still affects the voting decision. The authors identified age restrictions on voting as the exogenous variable and the attitudes of eligible voters particularly subjects in the age group 18-21 years old is considered in a non-presidential year (t) i.e., the election was two years earlier. This indicates that in the election year ($t-2$), half of the sample were in the age group 16-17 thus making them ineligible to vote while the other half of the sample were in the age group 18-19 thus making them eligible to vote. The results from this attitude comparison showed that eligible voters were twice as polarized as the ineligible voters which lead them to conclude that voting can lead to greater polarization via cognitive dissonance. This result

was questioned by Elinder (2012) who argued that the shift of political attitude does not persist until the subsequent elections. He extended the analysis of Mullainathan & Washington (2009) by utilising data from both USA and Sweden to test the polarizing effect of voting via cognitive dissonance. The results indicate no such effect of voting on polarization via cognitive dissonance. This result is further questioned by McGregor (2013) in the context of a multi-party nation like that of Canada. They test whether there is a difference between voter's evaluation of party between voters and non-voters due to voting. The results support dissonance theory which is indicated by attitude change between pre- and post-election questionnaires. Despite the lack of agreement amongst the researchers on the results, one notable similarity between all these papers is that they employ data from the past. The current paper takes this to the next level by conducting experiments.

In addition to that, there are some researchers who employ different paradigms of cognitive dissonance in the context of voting. For example, Nam et al. (2013) employ Induced compliance paradigm. They argue that individuals do not experience dissonance when they are compelled by overwhelming force to think or act in a certain way that is contrary to their beliefs. For dissonance arousal to take place, it would require some degree of choice or volition so that subjects will think that they are thinking hypothetically or in counter-attitudinal manner on their own accord. Their analysis attempts to test whether conservative participants are strongly motivated to avoid dissonance inducing situations than liberal participants. They tested this using the induced compliance set-up by asking them to write counter-attitudinal arguments under high or low perceived choice. Based on two experiments they do find that in certain situations, conservatives avoid dissonant arousing situations especially in the case of ideological situations and a similar behaviour was not observed in the case of consumer goods like computers/beverages.

2.3 Cognitive Dissonance & Culture

Another important aspect of this research is the effect of culture on cognitive dissonance and how it affects the attitudes of the subjects. Heine & Lehman (1997) posited "...dissonance effects are, at least in some important ways, culturally constructed". Generally, individuals from Asian cultures (e.g. China, Japan) are more collectivistic and so interdependent while Individuals from Western cultures (e.g. United States, Canada, some European Nations) are more individualistic and so independent (Harmon-Jones & Mills, 2019). Cooper (2007) notes that the essential difference between dissonance in independent and interdependent cultures rests on the relative importance of events perceived by people of these cultures and the inconsistency between their beliefs and actions.

Heine & Lehman (1997) explain the inconsistency between beliefs and actions through Self-affirmation theory of dissonance and connect it to the two cultures. The theory of self-affirmation is explained as, "the existence of self-system that serves to maintain a global image of self-integrity through frequent

explanations & rationalizations to self'. When a dissonant news is encountered, the self-system is activated and it runs through until the threatening information is rationalized. However, individual differences prevail – people with high self-esteem will be more resilient to specific self-image threats than those with low self-esteem since the former have more access to positive information about self than the latter. They also state that different psychological processes occur because of the existence of pronounced cultural differences in the way the self is constructed. Further, dissonance reduction among North Americans would be more pronounced when individuals are confronted with additional threat to self, such as receiving negative personality feedback.

According to theory, Heine & Lehman (1997) note that North Americans are expected to show higher dissonance reduction than Asians especially when they receive feedback that is threatening to their self-image. Contrastingly there is evidence that individuals with low self-esteem exhibit greater dissonance reduction than people with higher self-esteem. These cross-cultural studies also found that Asians (Japanese) score particularly lower on the self-esteem scales than North Americans might imply that Asians show greater dissonance reduction than North Americans. Therefore, it can be inferred that any relation between culture & self-affirmation may be culture specific. The notion that is generally understood here is that the conventional dissonance tasks should not be threatening to Asians and it might be the key to understand their behaviour in this context.

Hoshino-Browne (2012) note that for East Asians, maintaining harmonious relationships & being similar to others is more important than being unique or standing out. Hoshino-Browne (2004) tested the effect of personal & interpersonal choices on cognitive dissonance by making European Canadian & Chinese students take part in a Chinese menu free choice paradigm experiment. Unlike previous experiments, their experiments invited European Canadians – individuals born and brought up in Canada and Asian Canadians- individuals who were born in Asia but immigrated to Canada. They find that European Canadians show more dissonance effect in personal choices than in the interpersonal choices. On the other hand, Asian Canadians show more dissonance effect in interpersonal choices than in personal choices. They also mention about the self-affirmation and its effect on cognitive dissonance reduction. As Heine & Lehman (1997) show self-affirmation is known to have an impact on personal choices for North Americans, Hoshino-Browne (2004) modified the self-affirmation used for independent & interdependent selves. For independent self, they asked the subjects about an important value and explain why this value uniquely describes them and for the interdependent self, they asked the subjects about an important value to them and their family and explain why they share this particular value. Based on this modification, authors find that when East Asians could affirm their interdependence, they did not show choice justification and dissonance reduction.

While these experiments on culture and dissonance were focused on the modification of free choice paradigm, not many have been attempted to focus on the impact of culture and dissonance in the case of voting behaviour. It will be interesting to see how individuals of interdependent and independent

cultures react to information that is presented after they have casted their votes wherein it can be argued that voting affects not just one's life but also the lives of other people.

2.4 Culture & Voting

Voting is seen as a civic duty and a social norm. We know from past research that interdependent cultures are more receptive towards perceptions about their community than the independent cultures. Coleman (2004) discusses the effect of social conformity on collective voting behaviour through a mathematical modelling. Social conformity is more prominent in interdependent culture than in independent culture and so understanding the dissonance experienced by them is essential.

Rule et al., (2010) have noted that culture has an important role in determining on the individual's voting choice. They also note that culture has an impact on the substantial traits that people value in their leaders and that it differs markedly between leaders from USA & Japan. They also note that most studies focused on the trait inferences & electoral outcomes are set in western cultures. Their study with American & Japanese participants show that traits related to power (dominance & facial maturity) are associated with the electoral choices of American participants while traits related to warmth (likeability & trustworthiness) are associated with electoral choices of Japanese participants. They also mention that threats to ingroup is perceived to be threats to self than threats to outgroup.

While most studies use subjects from North American and East Asians cultures, it is essential to note that culture is not limited to mean an ethnic or racial group or even a group of people living in the same country. Ultimately, a culture is said to exist when a group of people share certain behavioural traits, scripts, norms, values, practices, customs, languages, artifacts etc., Some studies also consider the gender, religion & socioeconomic groups as different cultures. Inspired by Hoshino-Browne (2004), the current study sought participants who are of European descendants particularly Dutch origin to represent the independent culture. In order to represent participants of interdependent culture, participants of Chinese origin who are currently living in the Netherlands were chosen.

2.5 Culture, Cognitive dissonance & Information

In this section, the cultural difference in perceiving information and the relevance of information in the context of cognitive dissonance is discussed. At the end of this section, the two hypotheses that this thesis aims to answer are also presented and discussed.

Researchers over time have studied culture as a lens through which individuals perceive, organize and understand information about themselves and their surroundings (Nisbett & Miyamoto, 2005; Hong et al., 2003; Nam et al., 2021). Shi (2001) argued the impact of culture arises from the stickiness of norms and values rather than attitudes and beliefs. It is also noted that institutional change can change the attitudes and beliefs but not norms and values. As a result, norms like that of importance given to family

and society presides over individual growth in interdependent cultures like that of East Asian countries. Under these conditions, East Asians pay more attention to negative information thus avoiding the disruption of social harmony (Heine et al., 1999; Elliot et al., 2001; Guan et al., 2015; Nam et al., 2021). On the other hand, individualistic cultures like that of Western countries emphasise individual achievements and autonomy more and so people from these cultures tend to seek positive information to achieve social ideals of personal growth and independence (Heine et al., 1999; Aaker & Lee, 2001; Nam et al., 2021).

In terms of formulating and organizing these beliefs, information plays an essential role. Particularly, information plays a vital role in politics and policy related decision making (Bimber, 1991; Simon, 1985; Rijkhoff, 2016). However, in case of cognitive dissonance, the information can either be constant or dissonant thus implying that it depends on the subject's interpretation of the information. The conventional belief as per rational behaviour postulates that individuals actively seek out information in order to be better informed about their decisions. However, researchers have found evidence that there is a difference in terms of seeking information among the subjects. Interestingly, few studies discuss the phenomenon wherein subjects tend to avoid dissonant information particularly after the choice has been made (Mills, 1965; Frey, 1982; Case et al., 2005). Few other studies contradict this finding by showing that some individuals tend to seek dissonant information in order to find arguments that refute this dissonant information (Sears & Freedman, 1967; Taber et al., 2009). However, in the recent decades, Stroud (2008) discusses the phenomenon of selective exposure via dedicated media houses and they find evidence that over time people's political beliefs inspire their media usage which in turn will result in a more politically divided audience. This can be interpreted in the following way: some individuals can use the additional information to change their beliefs/attitudes while few other individuals would develop stronger conviction of their beliefs upon receiving this additional information. The latter interpretation is in alignment with the key finding of cognitive dissonance theory (Festinger, 1957).

Studies particularly about perceiving information in a political context discuss that negative information is more powerful in influencing change in behaviour than positive information (Baumeister et al., 2001; Rozin & Royzman, 2001; Soroka, 2006) which is often observed in the studies as negativity bias (Meffert et al., 2006). In fact, researchers find evidence to show that polarization of beliefs due to biased information processing indicating that positive information about the voted candidate and negative information about the non-voted candidate is preferred over negative information about the voted candidate and positive information about the non-voted candidate which is often termed as congruency bias. (Meffert et al., 2006; Taber et al., 2009).

Interestingly, Meffert et al., (2006) find results that indicate that voters are seeking more negative information about the candidate of choice in the information selection and processing phases. However, in the information recalling phases which is seen here as re-rating phase, they tend to show positive

attitudes towards the candidate of their choice. This result is akin to that of Sears & Freedman (1967) & Taber et al., (2009) implying that voters seek such negative information to counter their beliefs/attitudes.

Researchers also find evidence that not just the content of the information but also the source of the information plays an important role in affecting the preferences of the voters. Fridkin & Kenny (2004) state that negative information when provided by an objective news medium will have a negative effect on the candidate ratings.

The current study thus builds on the finding of Fridkin & Kenny (2004) and introduces negative information from a credible source about the participant's voted candidate as a treatment. Building on the finding that interdependent cultures give more importance to negative information to avoid disrupting the social harmony (Heine et al., 1999; Elliot et al., 2001; Guan et al., 2015; Nam et al., 2021), an additional sentence regarding the unfavourable opinion on the voted candidate of the subject from the perspective of the subject's family is included. The additional statement was added to bring out the cultural leaning of the subject. The expectation here is that negative information along with the family's opinion will have an impact on the interdependent cultures who would prefer to be harmonious with their family and society.

This brings us to the study's first hypothesis which attempts to test the effect of additional negative information along with family's opinion on the rating of participant's voted candidate. It is expected that in order to counter the exposure to negative information, subjects are postulated to increase the ratings of the voted candidate.

Hypothesis 1: Exposure to additional negative information and family's opinion affects the change in ratings of the voted candidate positively.

Since the family's opinion was introduced as part of the intervention, it is only logical to test whether this information intervention affects a person from the collectivist or interdependent culture more than a person from individualistic or independent culture. Additionally, it is expected that the effect would be negative (i.e. reduction in the rating of the voted candidate) for the individuals of collectivist nature as they would prefer to be harmonious with their family. Thus, the second hypothesis of this study is noted as below.

Hypothesis 2: Being from a collectivist culture, exposure to additional negative information and family's opinion affects the change in the ratings of the voted candidate negatively.

3. Experimental Design

In order to conduct this experiment, Qualtrics was used to build the survey. The following section describes the various information that the survey participants received and the general design of the survey. To ensure that individuals cultural leanings are captured, the first section that the subjects encounter are statements that seek to gauge their cultural standing. Following this section, individuals were also presented with filler questions that were related to demographics. This leads to the actual experiment wherein the subjects are presented with three hypothetical candidates and their policy stance which is then followed by rating and voting. *Table 1* provides a brief overview of the experimental flow. A more detailed explanation of steps, procedure and survey design followed to answer the research question are explained in this section and Section 4 – Experimental procedure.

Table 1: Experimental Flow

Control	Treatment
Welcome page	
Demographic questions	
Cultural leanings questions	
Candidate description	
Rating 1	
Rating 2	Candidate Dropping out of Election
Candidate Dropping out of Election	Election
Election	Dissonant News + Family’s opinion
	Rating 2
End of survey	

3.1 Demographic Questions

The first set of questions that participants encountered were about their age, gender, highest level of completed education, ethnicity and most importantly their country of origin. In addition to being additional control variables, they also provide information whether these factors have any impact. Evidence from previous literature shows that these variables ideally should not have any influence on polarization (Mullainathan & Washington, 2009; Rijkhoff, 2016) however, it must be noted that not many studies have attempted to analyse cognitive dissonance and voting through culture.

3.2 Cultural Insights

In order to obtain the cultural leanings of the participants, a set of six statements were presented to the participants. These statements were modified based on the Cultural Compass report by the Hofstede Insights⁴ which was created to understand the cultural value preferences and potential behavioural pitfalls while working with people of different countries in an organizational setting. The country level comparison tool includes statements that can be classified under six dimensions: Power Distance, Individualism, Masculinity, Uncertainty Avoidance, Long Term Orientation, Indulgence. Since majority of the statements in each of the dimensions were mainly framed to capture the organisational culture of different countries, only certain statements from Individualism, Uncertainty Avoidance and Indulgence dimensions were used for the purpose of understanding the cultural leanings of the individuals. The below provided table details what each of the three dimensions attempts to capture through its statements.

Table 2: Dimensions of Compass Insights

Dimension	Explanation
Individualism	People’s self-image pertaining to “I” and “We”.
Uncertainty Avoidance	Attitudes of the culture in dealing with unknown or ambiguous events and how they deal with the anxiety that comes along with it.
Indulgence	Attempts to capture the extent to which people control their desires and impulses.

To elaborate, the participants were asked to rate the statements according to their preferences on a scale of 0-100. The responses to the statements under each of these dimensions are interpreted in a certain way. For example, in case of statements under Individualism, a higher score implies that they possess a strong sense of “I” i.e., their personal identity is different from others and a lower score implies that they possess a strong sense of “We” i.e., mutual practical and psychological dependency between the individual and the in-group. In case of statements under Uncertainty Avoidance, a higher score indicates the need for predictability and a proper structure in the form of written and unwritten rules and norms and a lower score indicates normalisation of uncertainty and how each day is embraced by the individuals as it comes. For statements under the Indulgence dimension, a higher score reflects the positive attitude of the individual towards the fact that one can act as one pleases and a lower score reflects the attitude of the society where restraint is strictly followed and gratification of needs are regulated by strict social norms and leisure is considered as less important. Amongst the six statements presented to the participants, three represented Individualism, two represented Indulgence and one

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represented Uncertainty avoidance. For example, participants were presented with the following statement: “On a scale of 0-100, would you prefer to have people around you always (0) or would you prefer privacy for your relaxation (100)?”. Similarly, statements related to reliance on others vs being self-confident; rewards based out of loyalty vs good job; few vs more rules and regulations; restraining vs spending money on your desires; preference of wealth & strong economy over free-speech. The complete list of six statements is included in the Appendix for reference.

3.3 Candidate Description

Another key design feature of this thesis is the description of three hypothetical candidates through their policy stance. In order to set the stage for the election, participants of the survey were informed that they are now citizens of a hypothetical democratic society and they are all of voting age. They were then notified that a hypothetical election would be taking place to determine the said nation’s next Prime Minister. For the election, the participants were informed that three candidates from different parties are contesting for the same post. The candidates’ main policy leanings regarding economy and budgetary allocation for nation’s security were presented. Evidence shows that individuals are capable of evaluating policies as per their personal leanings and make according judgements regarding the same (De Vries et al., 2013). Policy statements that the candidates made were based out of the manifestos of Dutch political parties during the period 2015-2020. The statements on issues like Military & Protectionism and Government control of limited parties particularly in the parfum of the Conservative parties, the Nationalist parties, the Socialist parties and the Liberal parties were considered. Statements from these parties were chosen in order to ensure that extreme nature of their views on these issues are taken into account. The statements though particular to the Netherlands, were modified to retain their generic nature thus ensuring that the individuals who are not familiar with policy stance of Dutch parties can relate to the statements as well. Motivation for including statements of Military& Protectionism and Government control is based on the evidence from some of the group-based ethical voter models showing voters are considered to be motivated by altruistic or ethical concerns for the welfare of the others rather than being narrowly defined self-interest (Feddersen, 2004).

The statements presented to the subjects were constructed using the RILE scale. The RILE scale is one of the popular ways to holistically analyse the information available on the underlying data set to cancel out the non-systematic error and gives an overview of the major political processes (Budge & Meyer, 2013). The RILE scale was used in such a way that the “right candidate” was as much in the right from the “centre candidate” and the “left candidate” was as much in the left from the “middle candidate”, thus ensuring the clear distinction between them. For example, in the year 2017, Socialist Party (SP), a left-wing populist party of the Netherlands, included the following statement in its manifesto: “*Militaire missies zijn daarvoor niet de oplossing, betere opvang van mensen en diplomatieke inspanningen om conflicten te beëindigen zijn dat wel.*” (Burst et al., 2020). The English translation of the same is as

follows *“Military missions are not the solution, better reception of people and diplomatic efforts to end conflicts are”*. Inspired by this statement, the survey employed the following as the policy stance of one of the hypothetical candidates contesting for the prime ministerial election: *“Does not support military missions abroad and does not want to invest more in defense. Instead, the candidate wants to use the existing money more prudently. Supports higher government control especially in key areas like housing, employment etc.,”*. Based on this candidate’s lack of military support and preference for higher government control in areas of housing and employment, it is inferred that this candidate is left leaning. Similarly, the policy stance of the right leaning candidate is given as, *“Supports the nation's military missions abroad and seeks higher budget for military and defense. Supports lesser government control”* and for middle/center leaning candidate’s stance is given as, *“Wants the nation to take a neutral stance in the of world stage. Supports the existing level of government control”*. In order to ensure that the participants decide their preferred candidates based only on the candidates’ policy leanings and not subconsciously be influenced by other factors, the candidates’ age, gender identity, race, experience were not included (Rule et al, 2010).

3.4 Candidate ratings

Following the candidates’ description, the participants of the survey were asked to rate each of the candidates on a thermometer scale of 0-100 wherein ratings between 50 and 100 mean the participant perceives the candidate’s opinion favourably and the ratings between 0 and 50 mean the participant perceives the candidate’s opinion unfavourably. The thermometer scale has been used for candidate evaluations by the USA’s National Election Survey since their 1979 pilot study (Weisberg & Miller, 1979). Several other studies that have analysed cognitive dissonance and voting have also used a similar approach (Mullainathan & Washington, 2009; Elinder, 2012; McGregor, 2013; Rijkhoff, 2016). It must be noted that the subjects were asked to re-rate all three candidates according to their preferences. However, the order in which the re-rating task was presented to the subjects depended on whether the subject was in the Control or Treatment group. Control group received the second rating task immediately after the first rating task while the Treatment group received the same after they have cast their votes and received the intervention.

3.5 Election

Once the candidates have recorded their ratings for the candidates, the approach of Free Choice Paradigm was employed here. Before they were asked cast their vote, the participants were notified that one of candidates particularly the one they had given highest rating for has dropped out of the election. No additional information pertaining to their withdrawal was provided to the participants as that reason may affect the voters perceptions and ratings. Thus, the ballot contained only two candidates: the second highest rated candidate and the least rated candidate from the first rating. This scenario forms the basis

for the creation of cognitive dissonance while also ensuring that the candidates are still provided with free will in choosing their preferred candidate albeit the choice being sacrificing one (Bølstad et al, 2013; Rijkhoff, 2016). An additional robustness check was added here to corroborate the choice dominance using the second rating. By presenting only two candidates in the polls, the scenario is akin to the one under plurality rule: multicandidate contests generally boil down to a competition between two candidates (Feddersen, 2004).

3.6 Dissonant news & Family influence

In order to test both the hypotheses regarding the effect of negative information coupled with family's opinion on cognitive dissonance and the effect of culture, some of the participants were presented with two additional information. First information communicated to the participants in the Treatment group was the candidate that they voted for has been accused of voter fraud and the authorities have started an investigation to gather additional evidence. Voter fraud occurs when individual casts vote despite knowing that they are ineligible to vote in order to defraud the election system. However, the problems often associated with election administration system like notices/flyers spreading misinformation about voting location, missing ballot boxes, thugs dispatched to intimidate the voters at the poll etc., are often lumped together by the popular media. This kind of mislabelling distracts the attention of public from the real problems plaguing the system. Several studies have claimed that the rate of illegal voting or the incidence of particular frauds like double voting is extremely rare (Levitt, 2007; Goel et al, 2020). Thus, by tapping into the ambiguous coverage of voter fraud in the media, negative dissonance is created among the participants of the survey.

Furthermore, to see how a person belonging to interdependent and independent cultures react, the opinion of the family members on the negative information was also provided to the participants. This piece of information reads that the subject's family do not like the candidate and they believe that it is more likely that the claim against the candidate would be true. It must be noted that in the interdependent cultures being harmonious with the in-group is very important. This will create an additional dissonance among the participants thus increasing their need to reduce the same.

4. Experimental Procedure

This particular section details the procedure of the experiment. It explores the difference between the treatment and the control groups in more detail. Additionally, the steps regarding the collection of the sample and the eventual data exclusion are covered in this section. A brief summary of the obtained data based on the Control and Treatment groups are also presented.

4.1 Procedure

The experiment was built in a way that the participants were randomly allocated to one of the two groups. The information and tasks available to each of the groups were identical except the intervention pertaining to dissonant news and family's opinion received by the Treatment group. The opening page for all the participants began with information about how the following survey was voluntary, usage of collected data and sought their willingness to participate in the survey. The next section contained demographic questions like age, gender, highest level of completed education and country of origin. Following the demographic questions, the statements to understand the cultural leaning of the participants was included in the next section. The subjects were presented with six statements related to the three dimensions like Individualism, Uncertainty avoidance and Indulgence. Once the participants have answered these questions, they were then presented with three candidates and their descriptions. Control group is asked to rate all the three participants and re-rate them once again. The participants were informed that the second rating is not a memory task and were asked to re-rate the candidates according to what they feel at that moment. Based on the ratings task, the candidate with the highest score was dropped out of the election and no additional information was provided in connection to that. Then the participants were asked to cast their vote for the remaining two candidates i.e., their second and least preferred candidates. Post their record of voting, participants were directed to the end of the survey.

For the treatment group, the following the candidates' description, they were asked to rate all the three candidates according to their preferences. Based on these ratings, they were informed that their highest rated candidate has dropped out of the election without divulging any other explanation. This led them to their next task of voting in the election between the their second and least preferred candidates. The intervention was then presented to them in the following way: First, they were informed that the candidate that they voted for has been accused of voter fraud. Second, they were informed how their family views this matter and their belief about the result of this accusation is presented. Following this, the participants were asked to re-rate all the three candidates. Once the re-rating is completed, participants are directed to the end page of the survey.

At the beginning of the survey, the participants were informed that the whole process will take a maximum of 10 minutes to complete which is the expected time for completing the treatment group questions but for the control group the time required complete the survey is close to 7-8 minutes.

4.2 Sample

Considering this paper attempts to look at the cultural effects on the cognitive dissonance in the case of voting, the sample had to be restricted to include only participants of Chinese origin and Dutch origin. The expectation was that Chinese origin participants will be the representatives of the interdependent culture while the Dutch origin participants will be representatives of the independent culture. In addition to that, participants of Chinese origin should be either studying, working or already possess a Dutch citizenship while the participants of Dutch origin must be of European descent only. Such restrictions had to be put in place in order to avoid the inclusion of participants from other interdependent cultures into the sample of Dutch participants as this would create unnecessary noise in terms of their cultural practices. Survey participants were drawn from the students of various universities and organisations residing in The Netherlands.

4.3 Data Exclusion

The raw data from the survey responses consisted of 98 overall responses with 41 responses in the Control group, 43 responses in the Treatment group and 14 responses with blank data. The final 14 responses could not be classified in either of the groups as the participants exited the survey after completing only their demographic information. Due to their various stages of incompleteness, these 14 responses had to be omitted from the overall count. Additionally, it was informed in the beginning of the welcome page that the survey is only for Dutch or Chinese origin individuals, nearly 4 respondents have mentioned their country of origin as India and 4 respondents mentioned Indonesia, Turkey, Greece and Egypt as their country of origin respectively. Owing to their distinct cultural origin, these responses had to be excluded in order to have only two countries of origin Dutch (European descent) and Chinese. Furthermore, four responses provided ratings for the first time while they failed to provide any ratings for the second time. Therefore, they had to be omitted out of the analysis.

4.4 Descriptive Statistics

Final data for the analysis has now reduced to 72 responses with 34 responses in the control group and the remaining 38 in the treatment group. *Table 3* provides summary statistics in the form of division of participants in Treatment, Control and overall share as per the various categorical variables. 63.89% of the sample consisted of responses from female participants, 34.72% of the sample consisted of responses from male participants while 1% of the sample did not prefer to say their gender. In terms of highest level of completed education, 52.78% of the sample have obtained a Bachelor's degree, 30.56% of the sample have obtained a Master's degree, 9.72% have completed their High School, 5.56% of the

sample have completed their PhD and 1% of the sample obtained other type of education. Average age of the respondent is 24 years with a minimum age of a respondent in the sample being 19 years and a maximum age of a respondent being 34 years.

55.56% of the sample have reported their country of origin is The Netherlands, 36.11% of the sample have reported their country of origin as China. Nearly 7% of the sample have reported their country of origin as other European countries like Belgium (2.78%), France (2.78%) and Germany (1.39%). They are still considered in the sample as they have Dutch citizenship. One of the participants have mentioned their country of origin as Italy but with Chinese lineage, thus increasing the subjects of Chinese origin to 37.5%. Therefore, this person is included along with those who have reported China as their country of origin. In terms of ethnicity, 61.11% of the sample identify as White and 38.89% of the sample identify as Asian.

Table 3: Summary of participant demographics

Variable	Categories	Control	Treatment	Total
Ethnicity	Asian	38.24%	39.47%	38.89%
	White	61.76%	60.53%	61.11%
Gender	Male	38.24%	31.58%	34.72%
	Female	61.76%	65.79%	63.89%
	Prefer not to say	-	2.63%	1%
Education	High School	8.82%	10.53%	9.72%
	Bachelors	52.94%	52.63%	52.78%
	Masters	29.41%	31.58%	30.56%
	PhD	5.88%	5.26%	5.56%
	Others	2.94%	-	1%
Origin	The Netherlands	55.88%	55.26%	55.56%
	China	35.29%	39.47%	37.5%
	Other European Nations	8.82%	7.89%	7%

In terms of cultural leanings, three variables were generated in order to capture the three dimensions namely Individualism, Uncertainty avoidance and Indulgence. Amongst the six statements presented to the participants, three of them represent Individualism, two of them represent Indulgence and one of them represent Uncertainty avoidance. Average preferences for each of statement and average score for each dimension is discussed in *Table 4* in terms of ethnicity.

Table 4: Summary of Average Preferences as per Ethnicity

Dimension	Statements	White	Asian
Individualism	Surrounded by people vs Privacy	47	63
	Reliance on others vs Self-confident	79	72
	Rewarding loyalty vs Good job	76	77
Uncertainty Avoidance	Few vs Many rules & regulations	51	61
Indulgence	Restraining vs Spending money on your desires	57	56
	Wealth & economy vs Free speech	73	67

Based on the results, an average Asian prefers more privacy than being surrounded by people while an average White person prefers being surrounded by people over privacy. Both Asians and White people prefer to be self-confident over relying on others and prefer to be rewarded for their good jobs over being loyal. Asians relatively prefer to have more rules and regulations than having a few while White people seem to be on the middle ground in terms of number of rules and regulations. Both Asians and White people prefer to be spending money on their desires rather than restraining but the average score is not greater than 60 points. White people prefer to have free speech over wealth economy whereas Asians also have the same preference but their average score is lower than that of White people.

The difference between the Asian and White participants are of importance to the study as it shows the cultural variations in terms of perceiving these statements. Recalling the interpretation of scores for each dimension, lower score i.e., score less than 50 implied that society is collectivist, more comfortable with uncertainty and more restraint. To elaborate, the scores obtained by China in the Country Comparison tool of Culture Compass⁵, points to a society that is less individualistic, more comfortable with uncertainty and more restraint in their behaviour. However, the obtained results do not point in that direction as the scores in each of these dimensions are greater than 50 for the Asian participants who are of Chinese lineage. It is also noted that the difference between the scores of Asian and White participants are not very wide in certain statements.

To test the significance of these differences, two sample Wilcoxon Mann-Whitney test was run to compare the distribution of the average preferences as per ethnicity. Based on the results, it is noted that there is a significant difference between the privacy preferences of Asian and White participants ($z = 2.933$; $p = 0.003$). It is also noted that there is a significant difference between the preference for rules among the Asian and White participants ($z = 2.023$; $p = 0.043$). For the remaining statements, there is

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not enough evidence to show a significant difference between the Asian and White participants implying that that the preferences are relatively similar.

As explained in the experimental design and procedure, after the subjects provided first set of ratings for the candidates as per their preferences, the highest rated candidate is dropped out of the election. The subjects are left to choose between the second highest rated candidate and least preferred candidate. To understand the sample better, the candidates who are dropped i.e., the highest rated candidates across Control and Treatment groups are analysed here. *Table 5* provides an idea regarding the subjects' preferences for the candidates. Based on the share of dropped candidates, it is inferred that participants in both Control and Treatment have provided highest rating for Candidate C who was constructed as a left leaning candidate. Additionally, Wilcoxon Mann-Whitney test was run to see whether there is any difference between the distribution of preferences for these highest rated candidates in the first rating task between the Control & Treatment groups. Ideally, between the Treatment and Control groups there should not be difference in terms of candidate preferences since the candidates are dropped after the first rating and it is entirely based on the subjects' preferences and therefore should be random. The results are in alignment with that idea as I fail to find sufficient evidence to reject null hypothesis that there is no significant difference between the Control and Treatment groups in terms of their highest rated candidate ($z = -0.232$; $p = 0.8553$) in Rating 1.

Table 5: Share of highest rated candidates as per Control & Treatment

Candidate	Control	Treatment
Candidate A	20.59%	23.68%
Candidate B	35.29%	26.32%
Candidate C	44.12%	50%

5. Results

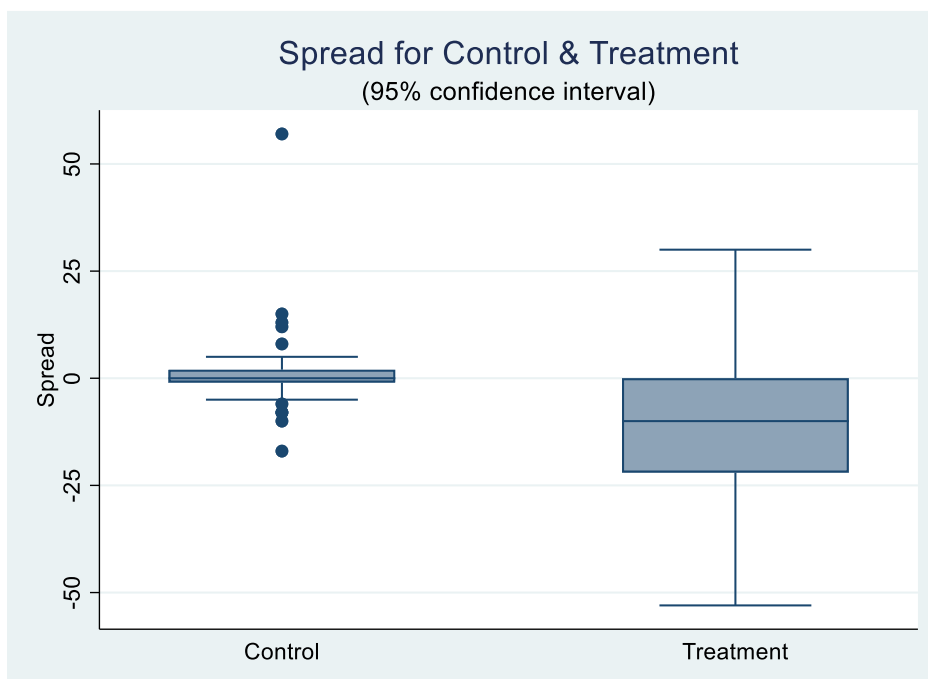
The following section presents the results of the various statistical tests that were run to test the hypotheses. Parametric & non-parametric tests were run to test the treatment effect is observed thus testing for Hypothesis 1. Similar tests are run to test the differences in Spread according to ethnicity as this would be relevant for testing Hypothesis 2. The section also discusses the Principal Component Analysis that was done to test whether combining the cultural leaning statements as per their dimensions is relevant for the current analysis. Particularly, this section will present and discuss the regression results.

In order to test the first hypothesis of whether providing additional negative information and family's opinion affects the ratings of the voted candidate, a variable Spread was created. It is calculated by the difference between rating 2 and rating 1 of the second preferred candidate i.e., the candidate the participant voted for in the election thus indicating that Spread is a continuous variable whose values can be either positive or negative (between the range [-100, 100]). It must be noted that all the participants except one voted for their second preferred candidate. In that subject's case, the change in the rating of the voted candidate is only considered. This change in the ratings is inferred in the following way: A positive spread indicates that the participant has increased the rating of the candidate, irrespective of the treatment group. This implies that upon receiving the negative information and family's opinion on the voted candidate, subjects have increased the ratings of the said candidate in order to counter the dissonance created. A negative spread would then imply that the subjects trust the information source and reduce the ratings of the voted candidate thus implying that they do not face cognitive dissonance.

5.1 Spread as per Control & Treatment groups

Figure 1 explains the Spread for treatment and control groups. The Control group's box plot is very small compared to that of Treatment group whose respondents received additional negative information and family's opinion. Control group's ($M = 1.7059$; $SE = 1.9819$; $SD = 11.5563$) 95% confidence interval ranges above and below the zero spread reference line ($-2.2459, 5.6576$). On the other hand, the spread of treatment group is much larger than the control group ($M = -11.3158$; $SE = 2.7991$; $SD = 17.2550$) with the 95% confidence interval below the zero spread reference line ($-16.8971, -5.7344$).

Figure 1: Spread as per Control & Treatment

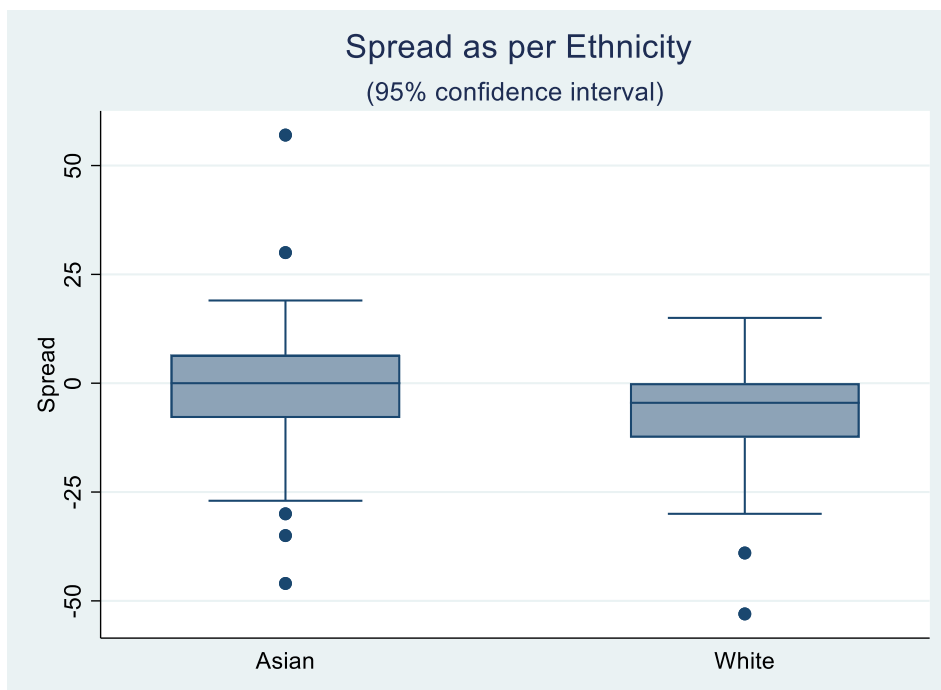


Additionally, parametric & non-parametric tests were run to gain further insights about the dependent variable Spread as per the Treatment and Control groups. Based on the results of two sample t-tests with equal variance, it is found that there is a significant difference between the mean spread of Control and Treatment groups at 1% level of significance ($t(70) = 3.7161, p = 0.0004$). This is also corroborated by the Wilcoxon Mann-Whitney test wherein the difference between the distributions of Treatment and Control is tested. Here, it shows that the distributions of Control and Treatment groups are significantly different at 1% level of significance ($z=3.800, p = 0.0001$). This implies that the provision of additional information to the subjects has an impact on the re-rating of the voted candidate. However, further regression analysis must be done to understand more about the effect of the same on the ratings which is discussed in the subsequent sections.

5.2 Spread as per ethnicity

In order to test the second hypothesis of ethnicity's relationship with spread, parametric and non-parametric tests were run. Figure 2 explains the box plot of the spread between the White and Asian ethnicity. The box plot for the group of Asians is slightly different from the box plot of White people. The 95% confidence interval for the group of Asians ($M = -1.1785, SE = 3.7047, SD = 19.6036$) such that the values are above and below zero spread reference line ($-8.5656, 6.2084$). On the other hand, the 95% confidence interval for the group of White people ($M = -7.7045, SE = 1.9725, SD = 13.0839$) is such that they are below the zero spread reference line ($-11.6376, -3.7715$).

Figure 2: Spread as per Ethnicity



Additionally, parametric and non-parametric tests were run to see if there is a difference between spread of Asian and White people. The two-sample t-test with unequal variance mean spread of Asian participants is significantly different than the mean spread of White participants ($t(70) = 1.6959, p = 0.0944$). However, this is significant only at 10% level of significance. A similar result is obtained through running Wilcoxon Mann-Whitney test which finds that there is a significant difference between the distribution of Spread of Asian and White participants at a significance level of 10% ($z = 1.762, p = 0.0784$). Based on these results, it can be inferred that there is a significant difference between the rating of voted candidate among the Asian and White participants. However, further regression analysis is needed to understand the effect of the same and the same is discussed in the subsequent sections.

5.3 Cultural leanings

In this section the results from the various cultural leaning statements are discussed as per the ethnicity. This analysis will throw light on whether these cultural leanings scores are as per the expectations of the overall country's behaviour as reported by the Hofstede Insights⁶.

Table 6 presents the mean scores of each of the statement as per the ethnicity. Privacy, Reliance and Reward statements represent Individualism dimension and for a collectivist culture the score is less than 50 while an individualistic culture scores greater than 50. Privacy captures the participants' preference between privacy and being surrounded by people. Note a higher score (score > 50) on this statement indicates that the person prefers privacy over being surrounded by people. The results indicate that the Asian participants prefer privacy over being surrounded by people ($M = 63.107$) while the White participants prefer being surrounded by people over privacy ($M = 46.977$). The score for this particular statement is contradictory to the expectations as the Asians (Here, participants of Chinese lineage) as representatives of collectivist culture are expected to prefer having people around them over privacy while the White participants as representatives of individualistic culture are expected to prefer privacy over being surrounded by people.

Reliance statement captures participants' preference between relying on others and being self-confident. Note a higher score (score > 50) would indicate that the participant would prefer to be self-confident over being reliant on others. The results show that both Asian and White participants prefer to be self-confident over being relying on the others with the mean score of 72.82 for Asian participants and 79.0 for White participants. This is also contradictory to the expectations as the Asians representing the collectivist culture are expected to prefer being reliant on others over being self-confident. However,

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the expectations are in line with the expected behaviour of White people who represent the individualistic culture.

Reward statement captures whether a person thinks whether loyalty to the boss should be rewarded or good job should be rewarded. A higher score (score > 50) would indicate that person thinks that good job should be rewarded over loyalty to the boss. The mean scores are similar for both ethnicities. While the behaviour of White participants is as per expectations, the behaviour of Asian participants is not as collectivist culture give importance to loyalty.

Table 6: Summary Statistics of Mean Scores as per Ethnicity

Statement	Mean		95% confidence interval	
	Asian	White	Asian	White
Privacy	63.107 (4.563)	46.977 (3.348)	54.009 – 72.206	40.303 – 53.652
Self- Reliance	72.82 (4.0)	79.000 (2.727)	64.846– 80.797	73.632 – 84.505
Reward	77.321 (3.841)	76.023 (2.649)	69.663– 84.980	70.742 – 81.304
Rules	61.464 (5.004)	50.659 (3.552)	51.486 – 71.442	43.578 – 57.741
Spending	55.679 (3.172)	56.500 (3.555)	49.353 – 62.004	49.412 – 63.588
Free speech	67.071 (4.262)	73.227 (3.348)	58.573 – 75.569	66.552 – 79.902

Note: Standard Errors are within the parenthesis.

The Rules statement represents the uncertainty avoidance dimension wherein a lower score in the dimension (less than 50) indicates that the society has normalised uncertainty. Here, the Rules statement captures whether the participants prefer more rules and regulation over less rules & regulations this avoiding uncertainty. A higher score (> 50) would indicate that more rules & regulations are preferred over less. Results show that the Asians have clear preference of more rules & regulations, the White participants seem to prefer neither of these options. This is contrary to the expectations as the uncertainty avoidance score of China is lower than that of Netherlands in the country comparison tool of Hofstede Insights.

Statements Spending and Free speech capture the indulgence dimension of the sample. The Spending statement captures whether the participants prefer to show restraint or give in to their desires and purchase products. A higher score (> 50) indicates that person prefers to give in to their desires and

purchase products over showing restraint however their scores are less than 60. Both the set of participants seem to be showing similar behaviour which is leaning towards indulging in their desires. The behaviour of Asians is in contrast to the expected behaviour as collectivist cultures are more restraint than individualistic cultures.

The statement Free speech captures whether the participants prefer wealth and strong economy over free speech in a society. A higher score (> 50) would indicate that participants prefer free speech over wealth & strong economy in a society. Mean scores show that both the groups prefer free speech over wealth & strong economy. Preference of free speech reflects a more indulgent society which is contradictory to the expected behaviour of Asians.

There are a few potential explanations as to why the expected behaviour of individuals from collectivist culture did not match the actual behaviour. One of the explanations is that the Asian participants of this experiment were all residing in the Netherlands. Thus, it can be argued that they were exposed to relatively less of their own culture but more of the individualistic culture that is prevalent in the Netherlands. This could have significantly changed their preferences on various items. A more detailed explanation of this behaviour of the sample is discussed in Section 6- Discussion and Conclusion.

5.4 Principal Component Analysis

Before we delve into the causal analysis of this paper, it is imperative to get a better understanding of the cultural leanings of the participants of the study. This study set out to contribute to the literature through its usage of statements to gauge the cultural leaning of the subjects that were inspired from the culture compass report of Hofstede Insights.⁷ As discussed before culture compass report utilises different statements to capture different dimensions of an individual's cultural leaning particularly in an organizational setting. Considering that this study utilises only few of these statements that are relevant to individual's culture in a non-organisational setting, it is imperative to understand whether the 6 statements of three different dimensions included in this thesis are in fact capturing similar components in their respective dimensions. If the six statements can be combined to form three dimensions, then these new variables can be introduced as independent variables in the causal analysis. To achieve this, principal components analysis (PCA) was done. Abdi & Williams (2010) explain the PCA as a multi-variate technique to analyse data wherein observations are described by several inter-correlated quantitative dependent variables. They further add that the main goal of the analysis is to extract important information from the data table and represent this additional information in the form of a set of orthogonal variables called principal components. In other words, the method is used to

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extract the dominant pattern that is underlying in the data and compress the same by keeping only the relevant information pertaining to the data.

In this thesis, it must be noted that six statements discussed before capture three different dimensions. Through this analysis, it is tested whether the underlying data points to the direction of capturing similar components in each of the dimensions. To be precise, PCA is used to test whether statements Privacy, Self-reliance and Reward capture Individualism dimension, while statement Rules capture Uncertainty Avoidance and statements Spending and Free speech capture the Indulgence dimension⁸.

Table 7 captures the principal components and lists the Eigenvalues of each component. All the 72 observations were considered and the number of components were restricted to three. As the goal of PCA is to extract the maximum possible information from the data pertaining to the underlying dimensions, the newly constructed principal components have to fulfil certain expectations. The first principal component is required to have largest possible variance (here Eigenvalue) and therefore this will explain the largest part of the data. Subsequently the second principal component is constructed as an orthogonal to that and explains the second largest part of the data. In *Table 7*, the first principal component has a variance of 1.49 while second and third principal components have a variance of 1.26 and 1.04 respectively. Together, these three components explain nearly 63% of total variance and so only these components are considered for the next step which would be explaining the sum of variances of individual components.

Table 7: Principal Components/Correlation

Component	Eigenvalue	Proportion
1	1.489	0.248
2	1.257	0.210
3	1.044	0.174
4	0.948	0.158
5	0.726	0.121
6	0.536	0.089

Table 8 explains the rotated component matrix⁹ for each of the six statements. The expectation is that if Component 1 captures the underlying information pertaining to Privacy, Self-reliance and Reward, then it will be essential for the analysis to combine them as single variable Individualism. However, as seen from *Table 8*, Component 1 only captures the statements under the Indulgence dimension i.e., Spending and Free Speech. Component 2 captures the Uncertainty dimension through the Rules

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⁹ Note: Varimax rotation was used here as I expect that there are no correlation between the components.

statement. Based on these results, one can infer that Spending and Free Speech can be combined to form Indulgence variable and still retain the maximum amount of information pertaining to the underlying data.

Table 8: Rotated Component Matrix on Cultural Leaning Statements

Statement	Component 1	Component 2	Component 3
Privacy		0.561	
Self-reliance			0.897
Reward	0.619		0.351
Rules		0.670	
Spending	0.351	0.409	
Free Speech	0.716		-0.257

However, as an additional measure, Cronbach’s alpha test was conducted for all these statements and the obtained value for scale reliability was unacceptable as the coefficient (0.372) was less than conventionally accepted scale reliability coefficient of 0.7 (Tavakol & Dennick, 2011). This indicates that these statements cannot be combined to form different dimensions. Considering that the results of the above analysis are not strongly in favour of combining the statements as per the dimensions, variables representing each of these statements are introduced as separate independent variables in the subsequent regression analysis.

5.6 Regression

In this section, the regression results with the dependent variable spread and various control variables are presented.

Table 9 presents the results of the regression of 4 models. All the 4 models employ Spread as the dependent variable which explains the change in the rating of the voted candidate in the rating 2 and rating 1. Model 1 tests the effect of intervention on the dependent variable. Being in the treatment group significantly reduces the spread by 13.02 points at 1% level of significance. This implies that receiving additional negative information along with family’s opinion influences people to give lower second rating than when they do not receive negative information and family’s opinion, *ceteris paribus*. Based on Model 1’s results, Hypothesis 1 i.e., being exposed to additional negative information and family’s opinion, affects the change in ratings of the voted candidate positively is rejected as the results indicate that exposure affects the change in candidate ratings negatively.

Further implying that participants respond to the negative information by changing their attitude in alignment with the information and thus reduce the dissonance that had risen due to this exposure of information.

Table 9: OLS Regression Results

VARIABLES	Spread			
	(1)	(2)	(3)	(4)
Age		1.451*	1.376*	1.910**
		[0.754]	[0.747]	[0.868]
Female		5.326*	6.005*	7.779**
		[3.126]	[3.176]	[3.109]
High School		-3.651	-3.451	0.067
		[3.450]	[3.327]	[4.846]
Masters		-12.344**	-12.219**	-14.059***
		[5.022]	[5.048]	[4.945]
PhD		-2.692	-0.706	-10.303
		[6.555]	[7.638]	[7.532]
Other		-15.431*	-14.891	-18.087**
		[8.627]	[9.094]	[8.350]
Asian		5.722	2.530	7.201
		[4.631]	[6.208]	[4.927]
Privacy				0.009
				[0.072]
Self-reliant				0.037
				[0.129]
Reward				-0.226**
				[0.102]
Rules				-0.089
				[0.075]
Spending				-0.094
				[0.063]
Free speech				0.113
				[0.098]
Treatment	-13.022***	-12.840***	-15.131***	-13.942***
	[3.430]	[3.353]	[3.219]	[3.792]
Asian#Treatment			5.937	
			[8.006]	
Constant	1.706	-34.087*	-31.596*	-30.240
	[1.980]	[17.578]	[17.387]	[19.821]
Observations	72	72	72	72
R-squared	0.165	0.320	0.328	0.416
Robust standard errors in brackets *** p<0.01, ** p<0.05, * p<0.1				
Robust standard errors are reported in parentheses				

Model 2 introduces other control variables like Age, Gender, Highest level of completed education in categories and ethnicity of the participant. Demographic variables like Age and Female have a positive effect on Spread in Models 2, 3 & 4. One year increase in age, increases Spread by 1.451 points, 1.376 points and 1.910 points, ceteris paribus in Model 2, 3 & 4 respectively. Also, being female compared to being a male or a gender non-confirming person increases the Spread by 5.326 points, 6.005 points and 7.779 points respectively in Model 2, 3 and 4 respectively. These coefficients are significant at 10%

in Model 2 & 3 but significant at 5% in Model 4. This implies that with increase in age and being female (compared to being a male or a gender non-confirming person) increases the candidate ratings in the second time. An implication of the same could be that older and female participants increase the ratings of the voted candidate the second time compared to younger and non-female participants. Treatment effect is again significant here in this model, thus indicating that being in the treatment group compared to being in the control group reduces the spread by 12.84 points and this effect is significant at 1% level of significance. This implies that receiving additional information and family's opinion about the candidate you voted for influences you to give lower rating to that candidate than the first time, keeping other variables constant.

Amongst the education level categories in Model 2,3 & 4, only Masters level of education is significant at 5% level of significance. It can be interpreted as having completed Masters level of education compared to completing Bachelors reduces the ratings of voted candidate in the re-rating phase by 12.344 points in Model 2, 12.219 points in Model 3 and 14.059 points in Model 4, *ceteris paribus*. In other words, having a Master's degree compared to having a Bachelor's degree makes an individual provide lower ratings than before for their voted candidate. Similarly, individuals with other educational degrees significantly decreases (at 10% level of significance) the ratings of the voted candidate by 15.431 points compared to individuals holding Bachelor's degree in Model 2, *ceteris paribus*. While in Model 4 when the variables related to cultural leanings are also considered, having other degrees compared to having a bachelor's degree significantly reduces (at 5% level of significance) the rating of the voted candidate by 18.087 points, *ceteris paribus*. Model 3 has introduced the interaction term of ethnicity and condition to test the second hypothesis which states that being from a collectivist culture, exposure to negative information and family's opinion affects the change in the ratings of the voted candidate negatively. In order to do that, the interaction term *Asian#Treatment* was created. From the results, the hypothesis 2 is rejected as the interaction term is not significant. Thus, we do not find sufficient evidence to show that culture has an effect on the subject's rating of voted candidate when they are exposed to negative information and family's opinion. However, the effect of treatment is significant (at 1% level of significance) and it is found to be negative. Being in the treatment group compared to being in the control group decreases the ratings of the voted candidate by 15.131 points, *ceteris paribus*.

Model 4 considers all the control variables including the variables capturing the cultural leanings of the subjects. Here also the treatment effect is found to be negative and significant. Being in the treatment group compared to being in the control group significantly reduces (at 1% level of significance) the dependent variable Spread by 13.942 points, keeping other variables constant. This follows that additional negative information on the voted candidate reduces the rating of the said candidate. Amongst the cultural leaning variables, only Reward statement is found to be significant (at 5% level of significance) but the effect of it is negative on Spread. In other words, an individual who gives more

importance to rewarding good job over rewarding loyalty (reward score > 50), reduces the ratings of voted candidate in the second rating by 0.266 points, *ceteris paribus*.

6. Discussion & Conclusion

The main research question of this thesis was to understand the effect of culture on cognitive dissonance in the context of voting. In order to do that an online experiment with a hypothetical election was developed by building on the insights from previous research. The survey also asked the subjects few questions in order to understand their cultural leanings. In order to test the research question, two hypotheses were introduced and the results of the experiment however do not align with them. In this section, the results of the regression analysis are discussed and potential explanations for the same are also provided. This section also presents some of the limitations of the research and offers few suggestions for future research.

Recalling Hypothesis 1, it was postulated that upon receiving the negative news and family's opinion on the voted candidate, the subjects will increase the rating of the voted candidate. This hypothesis was built with keeping in mind the findings of Sear & Friedman (1967) & Taber et al., (2009). However, the results obtained based on the experiment indicates otherwise. While the treatment is found to be significant, the impact it has on the ratings of the voted candidate is found to be negative. In other words, the subjects who received the negative information and family's opinion reacted by decreasing the ratings of the voted candidate. This result however resonates with that of Fridkin & Kenny (2004; 2011) who argued that the provision of negative information from a trusted source would have a negative effect on the candidate's rating. It can also be argued that sampled individuals have less tolerance for negative political rhetoric (Fridkin & Kenny, 2011).

It can be inferred that the subjects may not have experienced cognitive dissonance. An explanation for this behaviour could be that the hypothetical nature of the experiment made the subjects to take this experiment lightly and so not they were unable to develop a personal connection between the candidate of their choice given the experiment's short time period. In reality, the individuals develop deeper associations with a political party or a candidate over a longer period of time. Sometimes, this relationship between an individual and the political party or the candidate can be due to generational influence. An example could be the following: Say an individual and their partner are members of a conservative political party. It is highly probably that their child would also grow up to be member of the same conservative political party as a result of selective exposure of information and news. Additionally, holding party membership could also have an influence in developing a relationship between an individual and their attitude towards the political party. While all these factors could have had an effect on the individual's attitude towards the voted candidate, the survey design did not take into consideration of these factors. This is a limitation of the survey design. The prevailing survey design could be improved by including the subjects' political standing i.e., whether they identify

themselves to be right, left or center leaning. This can then be checked for consistency by comparing the political leaning of the candidate for whom they have provided the highest rating in Rating 1. Further, a question pertaining to their membership in any political party would be great addition.

Another factor that this thesis set out to study was the effect of culture on cognitive dissonance in the context of voting. Hypothesis 2 was introduced in order to capture this effect. It postulated that being from a collectivist culture, exposure of negative information and family's opinion about the voted candidate would result in reducing the ratings of the voted candidate. The results from the analysis did not find evidence in support of the hypothesis. The potential reasons as to why this was observed was that all the Asian participants of the study had moved to the Netherlands for studying, working or have become Dutch citizens. Hence, their ties to their country of origin could have been limited. In addition to that the study did not include participants of Chinese origin here in the Netherlands for the purpose of tourism for there were travel restrictions between countries due to pandemic. It could also be argued that the candidate descriptions provided in the survey may not be perceived as most relevant from the perspective of subjects particularly those of Chinese origin. There has been some evidence to show that usage of RILE scale to measure ideology may not be ideal as there are individual level variations including cultural differences (Bauer et al., 2017). This could be extended to infer that issues that are relevant to interdependent cultures may not be assigned the same level of relevance and importance in independent cultures. The candidate description focused mainly on military & defense issues and it could be argued that the level of importance given to these issues may not be same in both of these countries and thus affected their ratings.

This brings us to the major limitation of the study which is the sample size. Results from this thesis must be accepted with caution as the sample size was only 72. While nearly 98 responses were obtained overall, several responses had to be dropped due to lack of completion. In addition to that, few participants from countries of origin other than China & the Netherlands had filled out the survey and so had to be dropped out. Despite reaching out to some of the local establishments of Chinese origin, the responses from such places had been mediocre to none. Additionally, this thesis attempted to contribute to the literature by taking into account the cultural leanings of the individuals and not just their country of origin or their ethnicity. The six statements presented to the participants captured their preferences to classify whether they are from collectivist culture or independent culture and how they fare in terms of comparison between the overall country's behaviour. It is noted that the observed behaviour of the sample did not match the expected behaviour of the individuals from these two countries of origin, as per my sample. An observation that could potentially explain this difference in the expected and observed behaviour could be due to the nature of the sample. Participants recruited for the study were residents of the Netherlands which implies that participants particularly the Chinese, self-selected to be here in the Netherlands. This is an indication that these participants could be influenced by the individualistic culture of the Netherlands. In other words, the statements provided in

this survey resulted in them tapping into their individualistic side of themselves akin to the behaviour of bicultural Asians that Hoshino-Browne (2012) had observed in their research. A sample consisting of both Chinese participants living in China and Chinese participants living in the Netherlands would have provided a clearer picture in terms of further cultural differences. Due to the time constraint of this thesis, the participants fulfilling this specific type could not be recruited to participate in the survey in a short span of time. Furthermore, the results provided in the Country Comparison tool of Hofstede Insights, utilises subjects only in the particular country and majority of the questions were suitable to test the organisational culture and not culture in general. Therefore, the score for the two countries under each of these dimensions must be taken with a grain of salt.

In terms of the survey design, expansion of the treatment could have provided better results. To elaborate, in this thesis the both negative information and family's opinion is included in the same intervention. Instead, they could have been separated and provided as different treatments. As per the analysis, there is evidence of treatment effect on the ratings of the voted candidate. However, it is ambiguous as to which aspect of intervention has an effect as the intervention combines both negative information about the voted candidate and the family's opinion. Inclusion of them as separate interventions would have offered clearer insights regarding the attitudes of the subjects towards the voted candidate. One of the reasons for not making this distinction in the intervention is the availability of sample size. Considering that this study required targeted sample of Dutch and Chinese origin, increasing the number of treatments would have required me to seek responses from more people. As mentioned before the number of avenues for obtaining responses from people of Chinese origin had been already limited due to the pandemic. Inclusion of these treatments without the consideration of sample size would have further reduced the power of the study. Potentially, relaxation of the restrictions on the participants' country of residence would have brought in additional respondents. In other words, extending the sample of Chinese origin individuals living not just in The Netherlands but also other Western European Nations i.e., individuals of interdependent cultures particularly members of Chinese origin to who are currently living in the European Union could have greatly helped in increasing the sample size.

In conclusion, this thesis attempted to find evidence of culture having an impact on cognitive dissonance in the context of voting. A hypothetical voting experiment was conducted by drawing sample from people of Dutch and/or Chinese origin who are currently residing in the Netherlands. The first hypothesis postulated that exposure of negative information and family's opinion would influence the subjects to increase the ratings of the voted candidate in the second rating, indicating cognitive dissonance. The results from the analysis show that the treatment is effective but does not find sufficient evidence to support hypothesis 1 as it is found that participants decrease the ratings of the voted candidate when exposed to the intervention. Hypothesis 2 postulated that being from a collectivist culture and being in the treatment group would result in subjects reducing the ratings of the voted

candidate in the second rating. The results however do not provide sufficient evidence to support this claim as the interaction term in the analysis is found to be insignificant. The study also acknowledges some limitations in the experimental design, sample size and procedure and offers some explanations and solutions for improving the same.

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8. Appendix

Survey

Block 1: Welcome Message

This survey seeks responses only from Dutch and/or Chinese origin individuals. If this applies to you, please proceed further.

Dear participant,

Thank you for taking your time to participate in this survey. Your participation will be helping me complete my Masters thesis. To incentivize you further, two participants stand a chance to win a EUR 10 Amazon gift card. If you are interested, please leave your email id at the end of the survey to participate.

This survey will take approximately 10 mins to complete. All answers are recorded anonymously and are kept in strict confidentiality as per the Erasmus University research ethics code of conduct.

For any questions/concerns feel free to contact me at 559663ag@student.eur.nl.

Thank you once again for your time.

Block 2: Demographics

Q12 Age: ____

Q13 Gender

- Male (1)
- Female (2)
- Non-binary / third gender (3)
- Prefer not to say (4)

Q17 Your highest level of completed education

- High School (1)
- Bachelors (2)
- Masters (3)
- PhD (4)
- Other (5)

Q18 What is your country of Origin? ____

Q62 What is your ethnicity?

- White (9)
- Black or African American (10)
- American Indian or Alaska Native (11)
- Asian (12)
- Native Hawaiian or Pacific Islander (13)
- Other (14)

Block 3: Cultural Leanings

Q7 In this next section, you will be presented with a list of statements. Please go through them and indicate your preferences by moving the slider.

Q9 The following statements are related to you and your relation with others.

On a scale of 0 - 100, would you prefer to have people around you always (0) or would you prefer privacy for your relaxation (100)?

I prefer to have people around me always I prefer Privacy, so that I can relax

0 10 20 30 40 50 60 70 80 90 100

Privacy Preference ()	
------------------------	--

Q11 On a scale of 0 - 100, would you prefer to be relying on others always (0) or would you prefer to be confident in yourself (100)?

I prefer to rely on others I prefer to be confident in myself

0 10 20 30 40 50 60 70 80 90 100

Reliance on others ()	
------------------------	--

Q20 Consider that you are part of a workplace. On a scale of 0 - 100, do you agree with the statement "Loyalty towards boss should be rewarded" (0) or "Doing a good job should be rewarded" (100)?

Loyalty towards boss should be rewarded Doing a good job should be rewarded

0 10 20 30 40 50 60 70 80 90 100



Q21 In a society, do you think it is better to have few laws and regulations as long as people follow them (0) or it is better to have many laws and regulations as it helps to know what is expected of each person (100)?

Few laws & regulations as long as people follow them Many laws & regulations as the expectations out of each person is clear

0 10 20 30 40 50 60 70 80 90 100



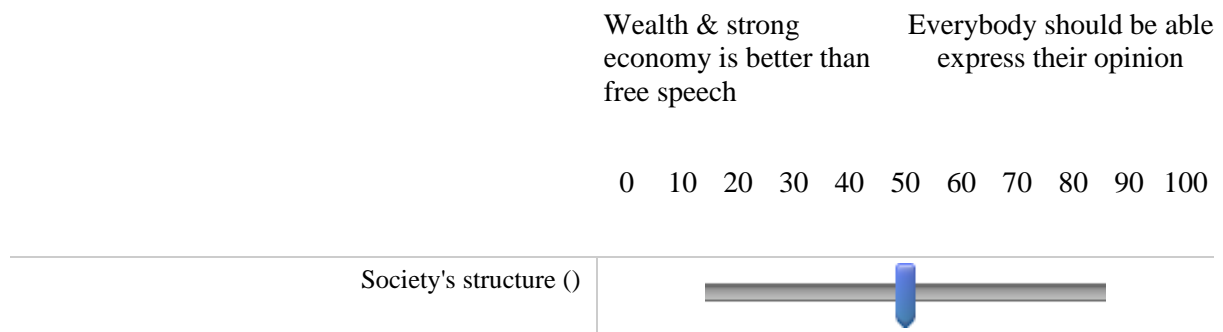
Q22 In terms of spending, do you believe that one must control their basic & natural human desires (0) or it is okay to give into your desires and purchase what you want (100)?

One must control their basic & natural desires It is okay to give into your desires and purchase what you want

0 10 20 30 40 50 60 70 80 90 100



23 In a society, do you believe wealth & strong economy is better than free speech (0) or everybody should be able to express their opinion (100)?



Block 4: Candidate Description

Q24 In this next section, consider that you are a legal citizen of voting age in a hypothetical society. In a few weeks, election for the post of Prime Minister will be conducted and all the citizens of voting age are expected to vote. You are presented with three major candidates of different political parties and you are supposed to vote for one of them.

Description of each candidate's policy leanings are mentioned below. Please read through them carefully.

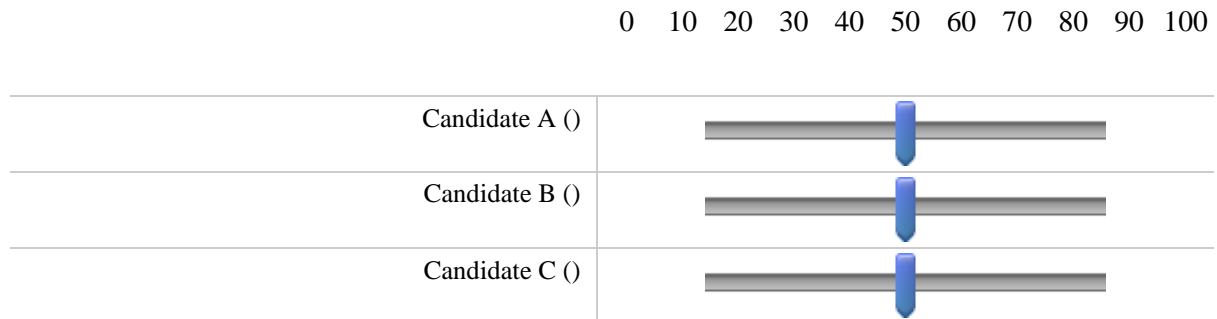
Candidate A: Supports the nation's military missions abroad and seeks higher budget for military and defense. Supports lesser government control.

Candidate B: Wants the nation to take a neutral stance in the of world stage. Supports the existing level of government control.

Candidate C: Does not support military missions abroad and does not want to invest more in defense. Instead, the candidate wants to use the existing money more prudently. Supports higher government control especially in key areas like housing, employment etc.,

Rating 1

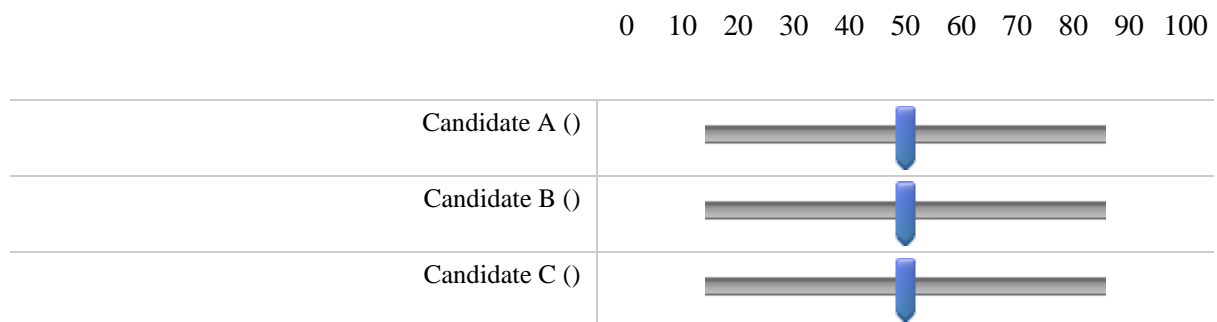
Q25 Two weeks before the election day, you are asked to rate three candidates on a scale of 0-100 according to your preference. Note that **0 indicates low preference and 100 indicates high preference**.



Block 4a: Control

Rating 2

Q29 This is not a memory task. Kindly note that there are no right or wrong answers here. Hence, you are asked to rate three candidates once again on a scale of 0-100 according to how you feel at this moment. Here, **0 indicates low preference and 100 indicates high preference**.



Dropping the highest rated candidate based on Rating 1 (Depending on the answer, the highest rated candidate is dropped with the following message:

A week before the election day, it is informed that one of the candidates - Candidate <highest rated candidate> has dropped out of the elections. Now, Candidate <second highest rated candidate > & Candidate <Least preferred candidate> are contesting for the post.

Block 4a: Control - Election

Q30 On the election day, you are asked to cast your vote for the below two candidates.

Q31 Who would you vote for?

- Candidate <second highest rated candidate >
- Candidate <Least preferred candidate>

Block 4b: Treatment

Dropping the highest rated candidate based on Rating 1 (Depending on the answer, the highest rated candidate is dropped with the following message:

A week before the election day, it is informed that one of the candidates - Candidate <highest rated candidate> has dropped out of the elections. Now, Candidate <second highest rated candidate > & Candidate <Least preferred candidate> are contesting for the post.

Block 4b: Treatment - Election

Q30 On the election day, you are asked to cast your vote for the below two candidates.

Q31 Who would you vote for?

- Candidate <second highest rated candidate >
- Candidate <Least preferred candidate>

Block 4b: Treatment – Intervention

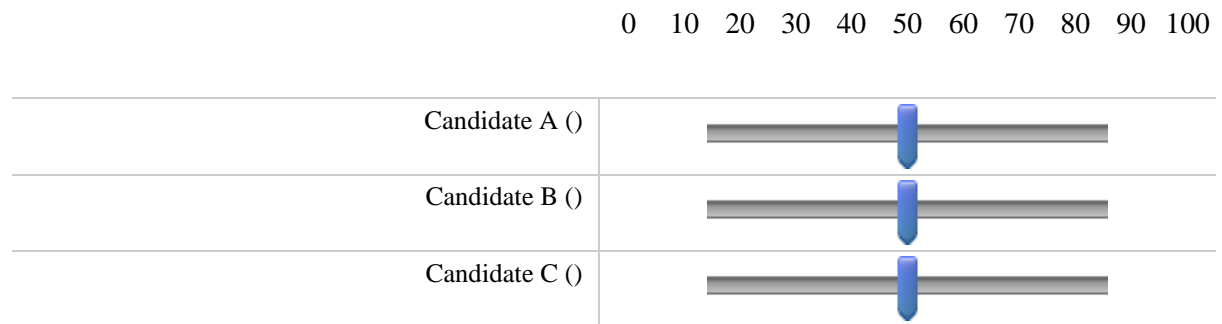
Q53 Post the elections, a trustworthy news outlet reveals that the candidate you voted for i.e. Candidate <Voted Candidate> has been accused of voter fraud. The authorities have decided to start an investigation to gather further evidence of this claim.

Additionally, while discussing about this latest development with your family you also find that they do not like <Voted Candidate> very much and they believe that this claim could be true.

Rating 2

In light of this event, you are asked to rate all the three candidates once again on a scale of 0-100 where **0 indicates low preference and 100 indicates high preference**. Kindly note that this is not a

memory task and there are no right or wrong answers. Indicate your preferences based on how you feel at this moment.



This is the end of the survey! Thank you for your cooperation.

If you would like to participate in the lottery to win a EUR 10 gift card from Amazon, please leave your email id below. Two people will be randomly selected for this and they will be contacted two weeks after the survey is closed.