

**WHEN DOES INFORMATION MATTER?  
COMPLEXITY, COGNITIVE HEURISTICS AND  
DEMOCRATIC COMPETENCE**

**By**

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## Abstract

*This study aims to analyze how the political environment influences the usage of cues as aids in political decision-making. In particular, it plans to provide empirical evidence on how cues can be used for emulating fully informed behavior in political settings of different levels of complexity with regard to the number of candidates in the system and their ideological differentiation. Political environments of different complexity levels were, thus, simulated in an experiment conducted on a sample of 198 Hungarian citizens. Subjects' voting decisions and evaluations of fictional candidates were examined by using Chi-Square, MANOVA and t-test analyses suggesting that increasing the complexity of the political environment has a negative effect on subjects' effective cue usage. While subjects managed on average to emulate a fully informed behavior in a two-candidate ideologically polarized setting, they were not able to use cues effectively in a more complex system. Additionally, controlling for several demographic and ideological characteristics, the results also shed light on which groups of citizens could be helped more by cues in environments of different levels of complexity. Namely, leftists were able to identify their preferred candidate easier than rightists in a two-candidate polarized system.*

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## Introduction

*"If the same standards that classic democratic theory holds up for citizens were to be applied in any other area of human life, such as finding mates or buying cars or choosing colleges, then people would be found to be just as inept in those areas as well."*

*(Lau and Redlawsk 1997, 586)*

It is argued that the low levels of political information and competence of voters are one of the most significant challenges to the quality of democracy. These views, thus, hold that a well-informed electorate is a necessary feature of a well-functioning democratic society and that the lack of information has a significant impact on electoral outcomes (Bartels 1996). After all, "if the public doesn't know what it's doing politically, why should it have the power to do so much?" (Friedman 1999). Nevertheless, it has also been claimed that the low levels of political information can be mostly inconsequential and that using cues as shortcuts to making reasonable decisions with limited amounts of information can account for this ignorance (Lau and Redlawsk 2001, Sniderman et al 1991, Lupia 1994, Baum and Jamison 2006). Thus, the view of voters as limited information processors who use information shortcuts that can aid them in political decision-making can offer an answer to this democratic competence dilemma.

However, if the political ignorance of the American voter and his ability to use cues are very well documented, the same cannot be said about the European voter who has been relatively less studied. The differences between the American political environment and the European

one, such as those in party systems and their stability, in governmental systems or in political culture, make the results of studies that have been done in an American setting hardly transferable in the European setting. In this sense, several scholars (Kuklinski et al. 2001, Nai 2010) suggest that the political environment in which citizens have to take their decisions influences their quality and has an effect on cue usage as a solution to the competence dilemma.

In line with the research conducted by Kuklinski et al. (2001) and Nai (2010), this study aims, in its turn, to analyze the effects that the political environment has on the effective usage of cues. Following their results, the complexity of the political environment might affect its informational favorability and, in this way, the performance of decision-makers. Thus, in this thesis I plan to assess the degree to which cues and heuristics can offer an answer to the democratic competence dilemma in settings of different complexity. In particular, I plan to provide empirical evidence on how cues can be used in political systems that differ with regard to the number of candidates in the system and their ideological polarization. Despite shedding light on the effectiveness of using heuristics for systems of different complexity, these differences in complexity might also reflect at some level differences between the generic American political setting characterized by a two-party system and some continental European political settings with multi-party systems and less clearly defined ideological positions between some of the candidates.

Thus, for the purpose of this study, system complexity will be defined in terms of the number of candidates that the voters are exposed to and the level of ideological differentiation

between them. Consequently, the main research questions to which I aim to provide an answer are:

*A. Can voters use cues and heuristics as substitutes for "full" political information and can these increase the quality of political decision making?*

*B. What are the differences in cue usage between a two-candidate system that is ideologically polarized and a multiple candidate system in which candidates are less differentiated ideologically?*

As far as my preliminary expectations are concerned, I anticipate that the more complex the political spectrum is, the less helpful cues are. While cues might indeed work and enhance citizens' capability of casting a correct vote, the complexity of the system might intervene in this relationship. This means that in a political environment with a higher number of candidates with less sharp ideologically differentiated positions, heuristics might help voters less in emulating the behavior of a fully-informed voter. This can be justified by the fact that in such an environment a simple cue might not be able to help voters in assessing candidates that are differentiated only slightly in terms of ideological positioning. Thus, more complex and nuanced information might be needed in order to help voters choose effectively. Along these lines, the three main hypotheses which I will test in this study are:

*H1: Cues have a positive effect on correct voting in a two-candidate system that is ideologically polarized.*



*H2: Cues do not have an effect on correct voting in a multiple candidate system with less differentiated ideological positions between candidates.*

*H3: Increasing the complexity of the political environment in terms of the number of candidates and their ideological differentiation has a negative effect on correct voting.*

In order to test these hypotheses, political environments of different levels of complexity will be simulated in an experimental design. Thus, in order to emulate the specificities of two political environments that differ in their levels of complexity understood in terms of the number of candidates and their ideological differentiation, two basic experimental settings will be used. One of the experimental settings will emulate a two-candidate election in which the candidates are ideologically polarized (close to the American presidential elections) and the other will emulate the specificities of a multiple candidate election in which runners are not well differentiated ideologically (close to some European elections). This will allow me to study differences in how cues work within these systems and to see if complexity in terms of candidate number and ideological differentiation affects cue usage and the quality of political decisions.

The importance of this thesis lies not only in the fact that it covers an important gap in the literature on cognitive heuristics as aids for political decision-making, but also in the original empirical evidence that it brings on how voters make decisions in different types of political environments. On the one hand, this paper will deal with effective cue usage in a more direct and extensive way than previous research by focusing specifically on the effect of the ideological complexity of political environments. On the other hand, it provides experimental

data on how cues work in political systems of different levels of complexity with regard to the number of candidates in the system and their ideological differentiation, and on how different types of voters, such as extremists or moderates, can be helped by these. Thus, if the results of other studies are hardly transferable from setting to setting, this paper brings new evidence for testing comparatively cue usage as an answer to the democratic competence dilemma in two different mock political systems.

This thesis has been organized in three chapters. The first chapter brings an overview of the literature on cognitive heuristics and democratic competence. Thus, in the first part of this chapter, "gut" rationality will be introduced as a solution to the democratic competence dilemma. In the second part of the chapter, the main results of previous empirical research on cognitive heuristics that informed my hypotheses and analysis will be presented. Finally, the last part of the chapter will deal with cognitive heuristics in a European setting and, specifically, on how the political environment might affect cue usage.

The second chapter of this thesis, on the one hand, will deal with issues of conceptualization and measurement, and on the other hand, will introduce my experimental design and discuss how it responds to challenges of external and internal validity. As far as this chapter is concerned, the main concept introduced here is that of a correct voting decision. Though at a first sight this term seems to have doubtful normative implications, in this paper, "correct voting" will be defined in terms of the information that the voters dispose of. Thus, "correct voting" is based on the values and beliefs of the individual voter and it is defined as being the same decision that the voter would have taken under conditions of full information.

Consequently, the present experiment will simulate a full-information condition and effective cue usage will be measured by calculating the deviation from the vote choice in this full-information situation. If subjects cast the same vote by being given a cue that they cast by being given full information, that vote is considered to be a correct one.

Finally, the last chapter of this thesis describes the results that have been obtained by using a sample of 198 Hungarian citizens. Subjects voting decisions on fictional candidates have been analyzed by running several Chi-Square analyses that supported my initial hypotheses. In addition, candidate evaluations on 7-point scales have also been used in order to measure the quality of political decisions. The results of MANOVA analyses and t-test analyses, though mixed, shed light on the differences in cue usage in the two environments and support the third hypothesis stating that the complexity of the political environment has a negative effect on correct voting. Additionally, controlling for several demographic and ideological characteristics the results also shed light on which groups of citizens could be helped more by cues.

## Chapter 1. Theoretical Framework

### *1.1 Information, "gut" rationality and democratic competence*

Low voting rates and declining trust in the government translate into concerns with the state of democracy. Questions regarding citizens' competence to evaluate actions in the political arena and make "good" decisions based on their evaluations are part of these concerns and constitute long-standing debates within the fields of democratic theory and political behavior. The main issues raised in these debates are: What is citizen competence? How can it be measured? How much citizen competence do we have? How can the level of citizen competence be improved?

On the one hand, students of public opinion had a pessimistic view on citizens' political capabilities and have argued that informed political choices require a basis of information about political issues and candidates. Moreover, they related issues regarding the effectiveness of democratic institutions with what citizens know or should know in order to make good political decisions. Widespread evidence about the significant extent of the political ignorance of American voters marked the results of earlier survey research. Campbell et al. (1960) concluded that specific legislation and issues do not have much influence on mass political behavior and can rarely provide enough reasons for a shift in public opinion.

On the other hand, political scientists argued that information is not a necessary condition for rational decision-making. They claimed that the conclusion concerning political information as a decisive factor for political decision-making has at its roots a memory-based assumption. This memory-based assumption rests on the idea that recallable information is the only usable information. Thus, measuring citizens' ability to reason and take decisions only by measuring the extent to which they can recall political information underestimates their political competence (Lodge et al. 1995). This tradition of research states that what actually happens is an on-line processing of information in which information is processed as it is received. According to the on-line processing model, people store summary judgements that are based on all the information they previously received and, in this way, they might not be able to recall the facts on which these summary judgements were based. Nevertheless, recall is neither necessary, nor sufficient for a person in order to learn from previous experience and to subsequently use this learning in decision-making (Rahn et al. 1994).

This updating literature follows the Downsian tradition of research regarding low-informational rationality. In Downs' model citizens do not have much incentive to gather information about politics since their voting choice, at the individual level, usually is not decisive in determining elections results. Thus, what Downsians claim voters actually do is use easily obtained forms of information that serve as "second-best substitutes" for complete political information or, otherwise said, informational shortcuts. These informational shortcuts can be seen as the results of on-line information processing (Popkin and Dimock 1999).

Despite considering themselves as part of the second tradition of research regarding citizens' competence, Popkin and Dimock (1999) argue that the fact that citizens can get by with this kind of "gut" reasoning does not imply that familiarity with basic political issues does not influence political behavior. Otherwise said, "political knowledge does not determine *whether* citizens can make reasoned decisions, but it does determine *how* new information is incorporated" (Popkin and Dimock 1999, 122). Thus, political knowledge can influence the way in which citizens make inferences about political issues. If the recall model of citizen competence offers a too pessimistic view of democratic competence, the updating model offers a too optimistic one, understating the influence that knowledge could have on how people use cues.

Thus, the conclusion Popkin and Dimock reach in their analysis is that prior knowledge and beliefs determine the nature and extent of updating in two ways. First of all, knowledge about the political context (such as institutional familiarity) affects the cues that will be salient and the kind of information people will use to evaluate candidates. More specifically, by analyzing the reactions to the 1992 House banking scandal, Popkin and Dimock found that the lack of political knowledge is related to the salience of personal scandals involving politicians. Secondly, by analyzing the relationship between knowledgeability and turnout using data from the 1992, 1994 and 1996 ANES survey, they found that citizens with less political knowledge have more trouble in perceiving differences between candidates and parties and this, in its turn, affects citizens' choice to participate in elections. Since they do not understand what the stakes are, they have little incentive to vote. Thus, by simply knowing who the "good guys" and "bad guys" are or just by managing to identify partisanship, people cannot follow policy debates thoroughly.

Kuklinski and Quirk (2000) arrive at similar conclusions regarding "gut" reasoning in political decision-making. Firstly, by taking a cognitive science perspective on heuristics, they argue that people, even if they do use heuristics, cannot use them as a one-size-fits-all rational strategy for each kind of political decision that they have to make. Thus, they usually use them unknowingly and automatically without much interest in their accuracy and in their relevance to the specific decision that they have to make. Secondly, along the same lines with Popkin and Dimock, they argue that people often lack the contextual political knowledge needed to use heuristics intelligently or even to use them at all. Thirdly, heuristics and cues might often be missing from the citizen's environment and the information that they get might not be as readily available as some studies suggest. Empirical research on heuristics usually provides people with statements or characteristics attributable to the groups, political leaders or issues that they have to vote on and, in this way, they provide subjects with an easy way to assimilate cues. However, in the political world such usable cues are not regularly available, citizens receiving larger amounts of information that makes it harder for them to get usable cues.

Despite the fact that Kuklinski and Quirk argue that network news programs provide citizens with too large amounts of information that make cues less readily available than some studies suggest, cues like partisanship, candidate characteristics or even positions on issues are usually easy to get in most campaigns. However, the question of how useful they are in helping voters differentiate between candidates and issues in informationally complex environment remains. On the one hand, the number of cues and how these interact with each other in real-life political situations is indeed rarely simulated in the context experiments, this

leading to questions of external validity. On the other hand, not isolating specific cues might lead to even more severe issues of internal validity in what regards the measurement of the actual treatment that needs to be applied to each experimental group. Thus, for the present study, I chose to present subjects with a simple, but realistic cue (position towards taxation) in order to isolate my treatment and understand its effect. As far as the complexity of the informational environment is concerned, this study is only limited in testing how the number of candidates and the ideological differentiation between them affects cue usage.

Analyzing the viability of using heuristics in decision making, Tversky and Kahneman (1974) identify three main heuristics that are commonly used in decision making: *representativeness* which refers to evaluating probability by the degree to which A is representative to B (if A is representative to B there is high probability that A belongs to B), *availability* referring to the assessment of the frequency of a class/ the probability of an event by the ease with which such occurrences can be brought to mind, and *adjustment and anchoring* referring to estimating by adjusting a (given) initial value. Even if assessing probabilities using heuristics can be useful, they argue that it can also lead to several errors, thus, casting a shadow of doubt on the viability of using heuristics in decision making. The representativeness heuristic can lead to insensitivity to prior probability of outcomes, to insensitivity to sample size, misconceptions of change, insensitivity to predictability, or illusions of validity. In its turn, availability can lead to errors such as judging by availability of instances (e.g. judging how many male or female are on a list by the number of the group that had more famous people representatives), assessing the relative frequency based on the ease of remembering a specific set, or to illusory correlations. The adjustment can be



insufficient and it can lead to an underestimation of disjunctive events and overestimation of conjunctive events.

Another differentiation that is made when talking about the use of cognitive heuristics in political decision-making refers to the context in which these are used. If large empirical evidence can be found on the use of heuristics in candidate elections, there is relatively less evidence regarding the use of heuristics in issue elections. Trying to assess the source of voting confusion in direct democracy, Michael Kang (2003) argues that this actually does not stem from more political ignorance when passing from candidate elections to issue elections or from heavy campaign spending, but rather from the scarcity of cognitive shortcuts at this level. When deciding directly ballot measures citizens rarely have a strong party affiliation cue to guide them, since candidates or parties may not have a strong position on some issues. Thus, Kang argues that "voter confusion in direct democracy runs deeper than issue complexity or lack of information" (2003, 1153), but since voter ignorance might be largely inconsequential when people have to choose among candidates or parties since they can still take a relatively correct voting decision, this is not the case when it comes to "issue politics". The lack of cues like party identification and candidate characteristics might thus prove fatal when it comes to voter competence in direct democracy.

Along the lines of Kang's study, the present study, despite simulating a candidate election, has several characteristics of an issue election. First of all, since the candidates are fictitious, party identification was not used as a cue. Secondly, despite the fact that candidate characteristics were given to subjects, these characteristics were actually treated as basic or

non-heuristic information, since they were the same in both the Control and the Treatment group and, consequently, were not expected to induce a difference between these groups. Finally, the actual treatment was an issue position cue, thus bringing the simulated candidate election close to an issue election.

Finally, along the same lines, Elmendorf and Schleicher (2012) argue that although political parties can help less informed voters by providing them with credible and low-cost cues regarding candidates' ideology and policy preferences, they can also constitute a cause of electoral dysfunction. On the one hand, in federal systems, party cues can be poorly calibrated to the electorate and issue space of sub-national governments, on the other hand, even if well calibrated, the geographic clustering of partisan voters can lead to dysfunctional elections at regional levels because the "miracle of aggregation" can no longer happen (see Fiorina 2002). The solution that Elmendorf and Schleicher propose is designing well thought laws regarding party regulation and ballot design that might help in overcoming this problem by focusing on the meaning and utility of party labels.

### ***1.2 Previous empirical research on cognitive heuristics***

Lau and Redlawsk (2001) claim that, in most discussions of cognitive shortcuts, the assumption that these improve decision-making abilities often remains untested. Although it can be argued that heuristics are not limited to political experts (almost everyone can employ cognitive shortcuts when dealing with politics) and that they may compensate, at least partially, for lack of knowledge about and attention to politics (voters do not have to be

informed of every event within the political arena in order to still make accurate political judgments), without empirically testing these hypothesis one cannot be certain of their effect. Thus, in their study, Lau and Redlawsk analyze in an experimental setting the effect of five main heuristics commonly used in voting. These heuristics have been identified as candidate party affiliation, candidate ideology, endorsements through which voters "leave" the cognitive effort to trusted others, the viability heuristic (poll results), and candidate appearance. The results of their study show that although these heuristics increase the probability of correct vote by sophisticated voters, they decrease the probability of a correct vote by novices. The present study will use only one of these heuristics identified by Lau and Redlawsk (candidate ideology) in order to avoid the effects that multiple and confounding heuristics might produce (see Huckfeldt et al. 2005).

Along the same lines, Larry Bartels (1996) analyzes the electoral consequences of voter ignorance by trying to simulate the behavior of a hypothetical "fully informed" electorate and compare it to the behavior and results of the actual voting. His results suggest that the actual vote differs from what a fully informed electorate's vote would be. On the one hand, this points to the fact that cues and cognitive shortcuts might not work to the extent of making an ignorant voter emulate the behavior of one that has encyclopedic political information. On the other hand, it suggests that individual errors do not cancel in a large electorate. An additional finding of his research is that information also conditions the effect of some socio-demographic variables (gender, race, religion) and that the lack of information usually leads to biases in favor of incumbents and democrats.

Nevertheless, since the different scores that voters get for their levels of political information are assigned by interviewers there is a danger that effective cue processors and actually fully informed voters are not properly distinguished in Bartels' study. In order to overcome this issue, experimental studies like the present one simulate a "full-information" situation and expose subjects to it after presenting them with cues. This enables the separate measurement of cue effect, full information effect, and of the deviations between them, thus being able to differentiate between effective cue processors and fully informed subjects.

In their turn, Schweider and Quirk (2004) question the utility of using heuristics in the political decision-making process by differentiating between using cues, and perceiving and acquiring them. They, thus, posit a two-step normative model of the heuristic reasoning process that stating that citizens have to first acquire cues from the political environment and only then to apply them in their decision-making. In order to test the effectiveness of each of these two processes for decision-making, Schweider and Quirk ran an experiment in which they manipulated several ways in which cues can be presented: the sources that were providing the cues, the informational environment in which cues were presented, and the nature of the cues themselves. After exposing subjects (n=300) to cues on several proposed public policies (long-term health care, juvenile justice etc.), they measured subjects' policy preferences on these matters to determine whether cue exposure had affected preferences. Additionally, they also tested the recognition of these cues, the recognition of specific details of policy proposals, information about the horse race aspects of policy competition, and the recognition of non-political human interest information about persons discussed in connection with the policy competition and policy proposals.

Their results show not only that cues do not affect subjects' policy positions, but also that citizens rarely perceive them, cues being recognized at lower rates than all the other types of information that the subjects were exposed to. Moreover, they also show that citizens with low levels of general political knowledge performed particularly poor in recognizing cues. These findings suggest that people use heuristic reasoning less frequently than others have assumed and that cue ineffectiveness can present itself in two separate ways. On the one hand, citizens with high levels of political knowledge are able to perceive and acquire cues, but these often have little effect on policy preferences. On the other hand, poorly-informed citizens have a difficulty in acquiring cues in the first place and, evidently, they cannot use them as an aid in their decision-making. Thus, contrary to the claims in the literature, Schweider and Quirk argue that those citizens that need cues the most seem the least able to even perceive them. While indeed the first step of this two-step normative model may represent an impediment to the usage of cues for increasing the quality of political decision-making, the current study limits itself in studying only the second step. Thus, it does not question the process of acquiring cues and focuses specifically on how citizens use them as substitutes of full political information.

On the same pessimistic note as the previous scholars, Crampton (2009) shows that the usage of cues is not effective in preventing the consequences of political ignorance. Using data from the 2005 New Zealand Election Survey, the results of his study show that political ignorance is biased and that this bias is strongly correlated with policy and party preferences and with the failure to understand economics, the effects of this bias even canceling the effects of education. Moreover, membership in organizations that might help ignorant voters by giving them cues does not improve decision-making outcomes.

Mondak (1993) argues that while at the individual level survey respondents or experimental subjects might seem to act rationally when using cues for policy evaluations, at the collective level their usage might become problematic since politicians might use them for gaining political support. Thus, political leaders can capitalize on momentary popularity by publicizing their agenda in times when they have high political popularity. Since ignorant citizens that rely on cues might use the politicians' endorsement of that agenda or policy proposal as a cue for their evaluation, at the collective level this might create the illusion of policy support. Thus, Mondak claims that the policy agenda of popular political leaders might benefit from the fact that voters use cognitive shortcuts and might lead to policies that not only would not be actually supported by citizens under other conditions, but that also lack a deliberative foundation.

However, these rather pessimistic findings on the effectiveness of using cognitive heuristics in political decision-making are at odds with the conclusions that other studies reach. Studying the insurance reform ballot in California in 1988, Lupia (1994) tries to provide evidence for the fact that uninformed voters can use cognitive shortcuts to vote as if they were informed. The results of his study show that the behavior of relatively uninformed voters who used a shortcut was different from the one of those who did not, and the behavior of relatively uninformed voters who used a shortcut was similar to the one of relatively informed voters. Thus, these findings support the view that shortcuts help uninformed voters emulate the behavior of informed ones improving the quality of their political decision-making and are in line with my first hypothesis stating that cues can increase the incidence of correct voting in a less complex system.

In a similar vein, Cheryl Boudreau (2009) argues that institutions might enable unsophisticated voters to make more informed decisions. She, thus, designed an experiment in which subjects were asked to solve math problems with different levels of difficulty while they had to rely on the opinion of a speaker for resolving them. Her results show that institutions such as a penalty for lying or a threat of verification can help both sophisticated and unsophisticated voters to make more informed decisions. Moreover, she argues that sometimes it may even bring the level of the unsophisticated citizens closer to the one of the sophisticated ones.

Given the multitude of different heuristics that are available in some political environments, in another study, Boudreau (2006) questions how citizens use heuristics when there is more than one of them available. Thus, she conducts a series of laboratory experiments in which she provides subjects with different types of heuristics that vary in terms of their usefulness. Her results show that the usefulness of a certain heuristics is the reason behind whether subjects rely upon multiple heuristics or a single one. When one of the heuristics is very useful in enabling citizens to achieve large improvements in terms of their decisional ability, subjects seem to use only this particular heuristic and to ignore other less useful ones. However, when two less useful heuristics are present, subjects rely upon multiple heuristics in order to make better decisions. Thus, her results suggest that two heuristics are not necessarily better than one and that sometime having an additional heuristic does not aid subjects very much in taking a good decision. Therefore, in order not to confound the effects of different and multiple heuristics, I chose to use the same cues for all the candidates in all my experimental groups. Fictitious candidates' positions towards taxation and unemployment

benefits were used with the same wording in all groups, the percentages and duration of benefits being the only difference between the descriptions of the several candidates.

Huckfeldt et al. (2005) also question how and under what circumstances citizens use multiple and potentially competing heuristics in making complex decisions. They, thus, conducted a laboratory study with 259 undergraduates in which they employed several experimental manipulations to examine the utility of heuristics in decision-making and how their usage affects both levels of candidate support and the accessibility of judgments regarding particular political candidates. The experimental treatments consisted of various politically congruous and incongruous combinations of cues such as candidates' parties, ideology, and issue positions. These combinations were set up in a partisanship–ideology experiment, partisanship–abortion experiment, and a partisanship–war experiment. The results of the partisanship–ideology experiment suggested that the utility of a simple heuristic depends on its pairing with other simple heuristics, but also with the political orientation of the subject. The subjects, thus, showed a difficulty in disentangling partisan and ideological criteria in the evaluation of candidates. This result rejects a simple linear and additive model of multiple heuristic usage. In addition, the heuristic devices tend to be less helpful in situations that involve combinations of political orientations that are new to the voter (such as conservative Democrat or liberal Republican). Similar results were obtained for the partisanship–abortion experiment and the partisanship–war experiment.

Consequently, Huckfeldt et al. argue that the larger environment of incoming information, such as the specific political debates and environmentally supplied political messages, might



undermine the utility of simple heuristics. Thus, in the context of making many complex political judgments cues might be confused and prove less helpful than others claim. The number of candidates in an election can also be regarded as an increase in the complexity of the political judgement that a voter has to make. Therefore, the results of Huckfeldt et al.'s study could be regarded as in line with my third hypothesis stating that the complexity of the political environment might negatively affect correct voting.

Another important issue in what regards cognitive shortcuts refers to which type of voters is more likely to be helped by them. Using cross-section rolling sample data collected one month before the legislative election in 2008 in Taiwan, Tsai et al. (2008) examine the extent to which the partisan strength of voters and the attention that these pay to news shape their political competence. Since in 2008 a new electoral system, mixed member majoritarian system (MMM), was implemented in Taiwan, the measure of political competence that Tsai et al. used was a knowledge scale composed of four items assessing what voters know about the new electoral system. Their results show that the strength of partisanship and the attention paid to news are strong predictors of political knowledge. Additionally, voter knowledge contributes to political participation by increasing voting intention.

Despite the fact that these results do not tell much about the extent of correct voting and about effective cue usage, the idea that partisanship strength constitutes a good predictor of voter competence offers support to the idea that citizens with stronger political views might be more competent in using cues. While partisanship strength was not measured in the context of this experiment since subjects were exposed to fictitious candidates of a fictitious

country, subjects extremism on a left-right self-positioning scale was used as a measure of control in several of the tests that were run.

Regarding the types of voters that are most likely to be helped by heuristics, Huckfeldt et al. (1999) examine the extent to which the utility of partisan and ideological reasoning is contingent on the accessibility of an individual's own self-identifications. In particular, they ask if people with accessible points of ideological and partisan orientation are more likely to use these as cues in political decision-making. Using data from a survey conducted during the 1996 American election campaign, they measure the accessibility of respondents' partisan and ideological self-identifications by the time required for respondents to answer particular questions, or by what they call latency. Their results show that the utility of partisan and ideological self-identifications is directly related to their accessibility in the memory of the individual.

### ***1.3 Democratic competence in a European setting. Cognitive heuristics and environment complexity***

The way in which people are forming their opinions in European elections, although considerably less studied than issues concerning American elections, interested a series of researchers. As in the case of the US, low levels of political knowledge, low awareness of institutions and policies, disinterest among the electorate, and low turnout rates raise a democratic competence dilemma. Thus, one of the competing theories regarding citizen decision making in European elections argues that, instead of having thorough information

and knowledge of the political environment, people use cognitive heuristics and informational shortcuts as aids in making their political choices.

However, there are several objections to this view. Firstly, there is the danger identified by Kuklinski and Quirk (2000) that if election campaigns tend to be rather superficial and uninformative they might not provide citizens with readily available cues. Secondly, stable and well-organized belief and attitude-systems are required for cognitive heuristics to work. It is, thus, argued that what actually happens in the decision-making process is that these "primordial" beliefs and attitudes are only activated by cues in electoral campaigns (Baden and de Vreese 2008). However, low knowledge levels together with the continuous changes in the European political arenas might suggest that it is difficult to have such a stable attitude system in some of the European political systems. The present experiment, thus, tests the effectiveness of cognitive heuristics in the case of voters coming from such a political environment (Hungary) that is less likely to have a well-organized belief and attitude-system comparable to the US one. Finally, along the lines of Tversky and Kahneman (1974), heuristic inferences can lead to biased, unstable, and potentially contradictory conclusions especially when based on poor prior knowledge. For example, multiple cues can lead to contrary decisions that need to be reconciled in order to lead to an overall judgement on which decision is made (Popkin, 1991).

Analyzing the Dutch EU constitutional referendum, Baden and de Vreese (2008) noticed that there were several, conflicting ways in which citizens could make sense of the issues at stake and that this forced people to decide which are the most plausible perspectives, which cues

are more important than others, and which issues are peripheral to the main point of the election. Methodologically, after criticizing survey research's dependency on having selected the right scales to measure heuristic reasoning, they propose using an ethnomethodological stance of inductive analysis. This consisted of several focus groups that, on the one hand, allowed the gathering of qualitative data and, on the other, constituted a more systematic analysis than other ethnographic methods. They, thus, argue that this approach has several advantages for studying citizens' opinion formation because of the fact that it does not rely on deducted expectations or evaluations of people's reasoning and it makes assumptions only with regard to the formal properties of reasoning. However, the measure of correct voting used in this study, though not an ethnographic one, does not make deducted expectations of people's reasoning either, since it relies on their own decisions under a full information situation. Furthermore, the results of Baden and de Vreese's study suggest that people derive meaningful cues despite the campaign's superficiality and that they manage to integrate these cues into meaningful narratives despite their lack of prior knowledge and the "messiness" of the political arena. These results go against *Hypothesis 2* and *3* that state that the complexity of the political arena does affect effective cue usage.

However, Baden and de Vreese are not the only ones proposing alternative methods for the study of European voting. Lefevere (2009) criticizes behaviorist methods for the fact that they equate the use of cues with the information gathering strategies used by voters, making it difficult to differentiate between effective cue usage and the behavior of knowledgeable voters that use information gathering strategies. He, thus, proposes a method that can map the motives reported by voters on a typology of heuristics combined with information exposure measurements that could provide a better way to analyze the effect of electoral campaigns

upon the use of heuristics. He plans to apply this method to a panel survey among Belgian voters in 2009 that included open-ended questions in which the motives behind voting were asked. However, the present study does not equate the use of cues with the information gathering strategies used by voters, since it makes a clear differentiation between the cue condition of the experiment and the full information condition.

The diversity of electoral systems in Europe also gives room for studying different patterns of heuristic usage than the ones in the US. Schmitt (2012), thus, analyses the German federal election of 2009 and questions whether local candidates send the stronger cues for voting decisions, or whether the party that endorses them constitutes the more powerful cue. Such a comparative analysis of heuristics concerning the issue positions of local candidates and those of national parties is made available considering the German mixed-member electoral system with its dual ballot.

Heuristic patterns in European voting constituted the topic of several studies. The specificity of European elections comes from the fact that these can include cues from both the national and the European political arena. One view of the European elections, called the second-order national election perspective, claims that voters resort to available cues from the familiar domestic political arena whenever they lack more specific information (Hix and Marsh 2007). Thus, endorsements by the domestic parties can be regarded as the main cue behind European support. Others take an opposite stance and consider European politics sufficiently salient to motivate voters to get their cues from the European arena for their decision-making (Svensson 2002). The main sources of cues according to this view are general attitudes

towards market unification, attitudes towards specific issue domains such as policy innovations, or attitudes towards distinct issues such as immigration. Thus, according to this view, domestic considerations do not colonize European voting (Baden 2008).

As far as voting in direct democracies is concerned, Alessandro Nai (2010) aims to show that correct voting is enhanced not only by individual assets such as political sophistication or the use of cognitive heuristics, but also by the dynamics at the contextual level such as the characteristics of the political campaigns or levels of information that the voters are exposed to. In order to do this, Nai measured the presence of correct voting as being the imitation of the behavior of those citizens that formed their opinion through *systematic* reasoning, rather than taking into account just the amount of information or factual knowledge that people have on the specific issues on which they have to decide. Thus, he argues that, for assessing whether or not a citizen has actually arrived to a decision using systematic reasoning, both the amount of information and the ability to assimilate the arguments presented in the information needs to be taken into account. As an indicator of systematic behavior or of the ability to assimilate information, Nai assumed that those citizens who have a strong positioning toward arguments on which they have information have been more able to comprehend and assimilate them. Therefore, a "systematic correct voter" was one that both consulted a higher amount of information and was able to strongly position himself toward the main arguments in the campaign. This view, however, conflates strong positioning towards arguments to information assimilation. In order to avoid this, the current study will try to separate the two by first giving a simple, easily assimilable cue (position towards taxation and unemployment benefits) and measuring subjects positioning on the left-right scale separately.

As far as the individual and contextual level characteristics that influence correct voting are concerned, Nai hypothesizes that correct voting is enhanced by higher political sophistication measured both through the level of factual knowledge on the issues related to the ballot and through the level of political motivation. Furthermore, it is also enhanced by the activation of cognitive shortcuts especially for those citizens with higher political sophistication. At the contextual level, Nai expects correct voting to be enhanced by intense campaigns, high priming, high variety of arguments and high justification, and to diminish with higher negative campaigning and higher complexity of the topic. He test these hypothesis through a series of hierarchical generalized linear models (HGLM) using data coming from surveys made after Swiss federal ballots between 1999 and 2005. His results show that 24.3% of citizens used systematic reasoning overall and that sophistication had a direct effect on correct voting (non-systematic individuals that were particularly motivated had a higher chance to cast a correct vote). Furthermore, the results of the study also show that partisanship as a cue helps all citizens to form their opinion and to mimic a systematic behavior. As far as the contextual level is concerned, a less intense campaign actually enhances correct voting and so do easier but varied arguments. Contrary to other claims in the literature, Nai's results indicate that negative campaigning seems to stimulate correct voting rather than impede it.

On the one hand, these results provide support for the cognitive heuristic stand to democratic competence since these prove to be strong predictors of correct voting even in a direct democracy where party affiliation should not matter as much as in regular elections. On the other hand, the results show that the complexity of the context in which citizens have to take

their decisions influences their quality. Both *Hypothesis 1* and *Hypothesis 2* and *3* are supported by this view. While cues might indeed work and enhance citizens' capability of casting a correct vote, the complexity of the system might intervene in this relationship. Thus, when casting a vote in a system in which the number of choices, candidates in this case, is higher and where candidates are not well differentiated ideologically, cues might not prove as helpful as in a less complex system regarding the number of candidates and their ideological differentiation.

Taking a more general approach regarding the environment in which decisions are made, Kuklinski et al. (2001) argue, in their turn, that this can shape the performance of decision making through the interaction of two factors: information and motivation. Thus, they test citizens' ability to make tradeoffs in what regards healthcare reform policy through a survey experiment and conclude that environmental conditions shape performance in such a way that a combination of general information with increased motivation to act responsibly improves aggregate performance. Moreover, an environment that is favorable in what regards information eliminates the effects of individual differences regarding political sophistication. These results are in favor of the idea that the number of candidates between which subjects have to choose and the level of ideological differentiation between them might affect heuristics' usage, since it affects the informational favorability of the political environment.

In line with the research conducted by Kuklinski et al. and Nai, this study aims at analyzing the effects that the political environment has on the effective usage of cues. Following their results, the complexity of the political environment might affect their informational



favorability and, thus, the performance of decision-makers. For the purpose of this study, system complexity will be defined in terms of the number of candidates that the subjects are exposed to and the level of ideological differentiation between them. Thus, political environments of different complexity levels will be simulated in this experiment in order to analyze how these differences affect the capability of subjects to make a correct voting choice while using cues. These simulated political decision-making settings will be applied on a sample of Hungarian citizens. Despite shedding light on the effectiveness of using heuristics for systems of different complexity, these differences in complexity might also reflect at some level differences between the generic American political setting characterized by a two-party systems and some continental European political settings with multi-party systems and less clearly defined ideological positions between some of the candidates.

Thus, the research questions that I plan to address in my thesis are:

*A. Can voters use cues and heuristics as substitutes for "full" political information and can these increase the quality of political decision making?*

*B. What are the differences in cue usage between a two-candidate system that is ideologically polarized and a multiple candidate system in which candidates are less differentiated ideologically?*

## Chapter 2. Methodology

### *2.1 Conceptualization and Measurement: Measuring Correct Voting*

Classic democratic theory usually states that in order for citizens to take a "correct" voting decision they have to be actively attentive to politics and pay close scrutiny to the policy issues that affect them. Thus, close attention and full information are regarded by classic theorists as necessary conditions for "correct voting". Subsequently, democracy is considered to function properly only if these conditions are fulfilled. Thus, A (an attentive and fully informed public) is a necessary condition for B (democracy) (Lau and Redlawsk 1997, 586).

Nevertheless, as seen in the previous chapter, there is a discrepancy between classic normative theory's requirements of citizens and the empirical reality since the standards imposed by the first are too high for the second. Accordingly, citizens are rarely informed and attentive to politics at the levels that classic democratic theory considers necessary. Does this however mean that democracy cannot work with an apathetic or ignorant citizenry? Is information a necessary condition for correct voting and, consequently, democracy?

In trying to answer these questions, Lau and Redlawsk (1997) argue that what is actually crucial regarding the democratic nature of different forms of government is not the way in which decisions are reached, but the content of these decisions. In other words, what matters is the proportion of citizens "voting correctly", rather than the mechanism through which they

arrive to their particular voting decision. Nevertheless, by taking this view another question arises: what is correct voting?

On the one hand, because of obvious normative implications, "correct voting" cannot be defined according to "any particular ideology that presumes the values and preferences which ought to be held by members of different social classes, for instance, and not on any larger social goods or universal values" (Lau and Redlawsk 1997, 586). On the other hand, due to the cognitive limitations that individuals have, it is also hard to consider any free voting choice as a correct choice, since citizens might not invest their time and attention in their political decision and might make them hastily and rather ignorantly. Lau and Redlawsk, thus, adopt the definition of a "correct vote decision" as that decision that is the same with the decision that the voter would have taken under conditions of full information. Thus "correct voting" is based on the values and beliefs of the individual voter.

Nevertheless, in trying to develop a measure of correct voting several ideas have been used more or less successfully. The first way of measuring correct voting is usually encountered in analyses of "class voting". Correct voting in this type of analysis is usually determined by an observer who both analyzes the interests and attributes of the voter, and tries to determine what vote would the citizen have chosen given these interests. However, this view raises concerns about the observer's ability to identify the interests of the voter in an objective manner. In addition, this measure does not work if the political environment is not highly polarized and allows for the identification of a vote with a certain class. Neither does it work

if the decision that the voter has to take is a complex one and regards issues that involve trade-offs and that do not have clear-cut implications for the voters interests.

The second way of measuring correct voting that was extensively used in survey studies and in analyses of issue voting (Lupia 1994) considers a correct vote as being the "vote for the electoral alternative that was actually closer (*ex post*) to the voter's ideal point" (Lupia 1994: 79). This ideal point is defined as being "the location of the voter's preferences in a multidimensional policy space that the analyst considers relevant for the given choice situation" (Toka 2012). The second way of measuring correct voting is also used by Lau and Redlawsk (1997) in the form of what they call a "normative measure" that uses the voter's own values, but combines these with expert assessments. Thus, in their experimental study a pre-election questionnaire was used to determine subjects' political preferences and policy stands. This questionnaire is later used for determining whom the subject should have voted for. Despite the advantages that this normative measure has (coming from the fact that the voter's preferences are actually measured), this way of calculating correct voting can also have its drawbacks. As it was the case with the first measure, due to the increased levels of complexity of some political environments or electoral situations it might be difficult to estimate which electoral alternative is actually closer to the voter's ideal point.

The third way of measuring correct voting, and possibly the least problematic one, takes as a starting point the basic definition of correct voting as being the same vote that the voter would cast if she was perfectly informed. Since in a democracy citizens should be able to take their decisions freely and the quality of a decision should not depend on any particular

ideology or values, except for the ones shared by the voter, it is rather problematic to assess decisions normatively. Nevertheless, one can still refer to the quality of a decision in terms of the information that was available to the decision maker. Therefore, "correct voting refers to the likelihood that citizens, under conditions of incomplete information, nonetheless vote for the candidate or party they would have voted for had they had full information about those same candidates and/or parties" (Lau et al. 2008, 396).

Developed by Lau and Redlawsk (2001), this way of measuring correct voting is mostly used in experimental studies since experimental manipulation allows for people to get access to full information about the range of choices that they have and compare it to situations in which they lack such information. Despite concerns regarding the cognitive capabilities of the subjects to process the full information that is given to them, this way of measuring correct voting might be the most defensible one since the operationalization in this case follows the definition of the background concept closely. Moreover, even when taking into account the cognitive abilities of the actors, one can argue that the same problems are encountered in reality and not only in experimental situations. If one denies the possibility that the voter can know what is best for him, the only alternative remaining is one with doubtful normative consequences since it implies either that someone else might know what is best for him or that correct voting is to be derived from particular ideologies, universal values or conceptions of the common good. Therefore, a definition of what a correct decision is should be based "on the values and beliefs of the individual voter, not on any particular ideology" (Lau and Redlawsk 1997, 586).

Nevertheless, this third way of defining and measuring correct voting has been in its turn criticized. Kuklinski and Quirk (2001) argue, in this sense, that this definition of correct voting presupposes that one knows what good knowledge on an issue is. They, thus, claim that there is no explicit link between the level of factual knowledge about an issue and the attention that one pays on the issue. Measuring correct voting only by measuring the level of factual knowledge is, therefore, problematic since it might not indicate effectively if that person is really informed or not. Taking a correct vote does not mean only being able to take a decision in an informed way, but also being able to take a decision in a capable way (Nai 2010). The literature on the third way of measuring correct voting (Lupia 1994, Lau and Redlawsk 2006), thus, took into consideration only the first dimension of the concept, the level of factual knowledge, and neglected a second dimension, the level of decisional ability.

In order to measure whether a decision has been taken in a capable way, Nai (2010) proposes looking at the level of cognitive engagement during the opinion formation process. This strategy has at its basis the Heuristic-Systematic Model (HSM) of decision making (Chaiken 1980), that argues for the existence of two cognitive strategies in the process of taking a decision: heuristic and systematic. If the heuristic process does not require a large amount of information, the systematic processing is "an analytic orientation to information processing in which individuals access and scrutinize a great amount of information on its relevance to their judgemental task" (Eagly and Chaiken 1993, 326). Thus, the extent of systematic reasoning can constitute a new way of measuring the dimension of decisional ability in correct voting. Under Nai's view, "correct voting exists when a citizen who has not activated a systematic reasoning takes the very same decision than those who had a higher cognitive engagement during opinion formation" (Nai 2010, 9).

Despite the sound theoretical justification for adding this second dimension of correct voting, in practice it is rather difficult to measure the extent of systematic reasoning. Firstly, in his research on the Swiss federal ballots (see section 1.3), Nai (2010) measures the level of cognitive engagement by assuming that citizens who have a strong positioning toward arguments that they could recall from the campaign have been more able to comprehend and assimilate them, which in its turn is an indicator of systematic behavior. However, this is rather problematic since extremist voters or voters that used heuristics effectively might also take strong positions towards arguments. Thus, the link between using systematic reasoning and having strong positions on arguments is rather unclear and is certainly not a direct one. Secondly, in order to measure correct voting in this way, subjects/respondents are usually split into two groups, one that uses correct voting and one that doesn't and the two groups are matched based on ideological positioning. However, this brings the Nai's model very close to the second model (the ideal point model) since in the end the ideological positioning of voters is the main consideration when determining their correct vote (in this situation, their matching pair of a correct voter). Thus, as mentioned in the case of the ideal point model, this method of measuring correct voting might be problematic since, on the one hand, it is very difficult to control for everything especially in a complex system and, on the other hand, it does not refer to the decision that the *same* voter would have taken in a full information situation.

Thereupon, in the present research I plan to use as my main measure of correct voting the third one and manipulate the "full information" condition in my experimental study. Correct voting will be, thus, measured by calculating the deviation from the vote choice in the full-

information situation. If subjects cast the same vote by being given a cue that they cast by being given full information, that vote is considered to be a correct one.

## ***2.2 Experimental design***

Studying through surveys the way in which cognitive shortcuts work is rather difficult due to the limited degree of control that these allow on the information that voters get and on how they actually use this information. For example, the 1988 insurance reform ballot exit poll in California that Lupia analyzed in his study was very specific since there were no partisan cues that voters got, there was no possible retrospective evaluations of similar events, and there were quite little incentives to get informed. This, in addition to the fact that the information that voters got on the insurance reform permitted a higher degree of control since it was provided only by one party, allowed for limiting the bias in results. Nevertheless, except for the case in which data from such a specific kind of election is available that would allow a tighter degree of control on the way voters get their information, experimental settings could be more appropriate in tackling these issues.

Most experiments that have been done for studying the effect of different heuristics in political decision-making require to some extent a form of identifying what the "correct" vote of a certain citizen would be or, as previously mentioned, what would be one's vote if one were fully informed. Thus, as previously mentioned, in this experiment I plan to use the third form of measuring "correct voting". In this respect, the experimental design will simulate the full-information situation in order to measure correct voting as the difference in candidate



evaluation (or vote) between this condition and the less informed conditions (basic information or just cues).

Since my research aims at providing empirical evidence on the political ignorance of voters that have to take political decisions in more or less complex political systems regarding the number of candidates and the ideological differences between them, the specific experimental design should emulate these specificities of the political settings. In this sense, subjects will be exposed to a higher number of fictitious candidates in one setting in order to see how heuristics work in a more complex system. Moreover, differentiations between different types of voters can be introduced (e.g. extremists or moderates, highly interested in politics or not) that will allow me to analyze how heuristics and cues work for these specific groups.

Thus, in order to emulate the specificities of two political environments that differ in their levels of complexity understood in terms of the number of candidates and their ideological differentiation, two basic experimental settings are needed. One of the experimental settings (Setting A) will emulate a two-candidate election in which the candidates are ideologically polarized (close to the American presidential elections) and the other (Setting B) will emulate the specificities of a multiple candidate election in which runners are not well differentiated ideologically (close to some European elections). This will allow me to study differences in how cues work within systems of different complexity and to see if complexity in terms of candidate number and ideological differentiation affects cue usage in what regards correct voting.

In order to see how cues function in these different settings, I had two experimental groups in each setting. One Control group (a) and one Treatment group (A) for the first experimental setting, and one Control group (b) and one Treatment group (B) for the second experimental setting. In both Settings A and B, the two Control groups received information leaflets that contained very basic information about candidates. These information leaflets contained non-heuristic information in what regards ideology and, thus, consisted mostly of demographic and personality descriptions. The candidates in both settings were described as being very similar to each other in what regards this non-heuristic information (age, children, studies). The Treatment groups in both settings got both this basic information and a set of ideological cues regarding the candidates' positions toward taxation and towards unemployment benefits.

After this initial phase, all the four groups had to evaluate all the candidates and finally vote for one of them. The subjects were subsequently presented with "full information" on the candidates. While indeed emulating full information in the proper (or exhaustive) sense of the word is virtually impossible in an experiment because of the time constraints and because of the fictitious nature of the candidates, the "full information" phase actually means a more/very informed phase in what regards ideology. Since even in real-life situations complete information on specific candidates rarely reaches the citizens, the fact that the full information phase did not contain exhaustive information on every candidate is not expected to pose serious problems. Despite the fact that the phase did not contain "full information" in the exhaustive sense of the word, the high increase in ideological information that this phase brought is expected to provide a consistent enough basis for the measurement of a (more) "correct voting".

For the Treatment group in Setting A the discrepancies in evaluating the candidates with cues and "full information" are expected to be less big than the discrepancies in the Control group between the basic information phase and the full information phase. Evidence for lower discrepancies in the Treatment group will be, thus, considered as evidence that the cues were helpful. In order to see how cues work in the two experimental settings that simulate political systems that are different in their complexity, these discrepancies will be further compared. Thus the difference in discrepancies in correct voting between the Treatment group and the Control group in Setting A will be compared to the same difference in Setting B. Low differences will be interpreted as evidence that the change in the level of complexity between the two settings does not affect effective cue usage and high differences will be considered as evidence that the level of complexity affects cue usage and that cues were more helpful in one of the two environments.

A pre-test survey will also allow me to further analyze the data from the experiment. In this sense, the questionnaire will help in differentiating between types of voters, such as extremist voters and moderate, and will allow me to analyze how heuristics and cues work for these different groups.

To sum up, the experiment I conducted consisted of seven stages:

*1) Pre-test ideological questionnaire:* This measured subjects' general political preferences through a series of short questions and served as a measure of differentiating between different types of voters such as extremists or moderates.

2) *Basic Information Leaflet*: This was provided in two different forms for both Settings A and B. In Setting A, only two candidates and their views on a specific policy issue was presented. The Control group got no information on the policy positions of the candidates, while the Treatment group got a series of cues regarding the ideological standing of the candidate. In Setting B, four candidates and their views on a specific policy issue were presented with the same difference between the Control group and the Treatment group as in Setting A. The cues in both settings consisted of the candidates attitudes towards taxation and unemployment benefits.

3) *Candidate Evaluation*: In this phase subjects in all four experimental groups had to assess the candidates on a 7-point scale. The rationale behind choosing a 7-point scale lies in the fact that this strikes a balance between having enough points of discrimination and having a scale length that the subjects will be able to process in order to differentiate attribute levels. Measuring correct voting by taking into account both candidate evaluations and vote choice (rather than using only a simple vote choice) will allow for better understanding the deviations that the specific cues used might induce.

4) *Vote*: In addition to evaluating candidates, subjects also had to pick the best candidate in their opinion.

5) *Complete Information*: The complete information phase was introduced as the main way of measuring correct voting. Thus, all the subjects were provided with "complete" ideological information regarding the candidates. Moreover, this information was provided in a clear and concise way in order not to run into problems related to the cognitive capacities of the subjects. The full information phase consisted, thus, of information regarding candidates' positions towards immigration, taxation, spending for the environment, spending on security, and welfare.

6) *Final Candidate Evaluation*: Like in phase 3, in this phase subjects in all four experimental groups had to assess the candidates on a 7-point scale. The difference between the evaluation in phase 6 and the evaluation in phase 3 will represent my main measure of correct voting for all experimental groups.

7) *Final Vote*.

*Table 1. Experimental Design*

<b>Phase:</b>	<i>Setting A (two candidates)</i>		<i>Setting B (four candidates)</i>	
<b>1)</b>	Pre-test Questionnaire		Pre-test Questionnaire	
<b>2)</b>	Control (Basic Information)	Treatment (Basic Information + Cues)	Control (Basic Information)	Treatment (Basic Information + Cues)
<b>3) and 4)</b>	Candidate Evaluation + Vote		Candidate Evaluation + Vote	
<b>5)</b>	"Complete" ideological information on both candidates		"Complete" ideological information on all candidates	
<b>6) and 7)</b>	Final Candidate Evaluation + Final Vote		Final Candidate Evaluation + Final Vote	

### ***2.3 Expectations and hypotheses***

As far as my preliminary expectations are concerned, in line with the research conducted by Kuklinski and Quirk (2001) and Nai (2010), I anticipate that the more complex the political spectrum is, the less helpful cues are. This means that in a political environment with a higher number of candidates with less sharp ideologically differentiated positions, heuristics might

help voters less in emulating the behavior of a fully-informed voter. This can be justified by the fact that in such an environment a simple cue might not be able to help voters in assessing candidates that are differentiated only slightly in terms of ideological positioning. Thus, more complex and nuanced information might be needed in order to help voters choose effectively.

Thus my three main hypotheses are:

*H1: Cues have a positive effect on correct voting in Setting A.*

This hypothesis will be tested in Setting A by comparing the extent of correct voting in the Control group with the extent of correct voting in the Treatment group.

$af - al$  - The extent of correct voting in the Control group a;

$Af - Al$  - The extent of correct voting in the Treatment group A;

$(af - al) - (Af - Al)$  - The effect that cues have in Setting A;

Where, f refers to the full information phase and l refers to the less informed phase.

*H2: Cues do not have an effect on correct voting in Setting B.*

$bf - bl$  - The extent of correct voting in the Control group b;

$Bf - Bl$  - The extent of correct voting in the Treatment group B;

$(bf - bl) - (Bf - Bl)$  - The effect that cues have in Setting B;

Where, f refers to the full information phase and l refers to the less informed phase.

*H3: Increasing the complexity of the political environment in terms of the number of candidates and their ideological differentiation has a negative effect on correct voting.*

This hypothesis refers specifically to the effect of the political environment on effective cue usage. It, thus, states that correct voting will decrease when changing from Setting A to Setting B. As far as this hypothesis is concerned, two approaches can be taken. First of all, we can test the difference in overall correct voting between Setting A and Setting B by conflating the amount of correct voting in the Control and the Treatment groups in the two settings  $[(af - al) + (Af - Al)] - [(bf - bl) + (Bf - Bl)]$ . Secondly, we can test the difference in correct voting only between the Cue (Treatment) groups of the two settings, thus determining whether there was any difference between the effect of cues in the two and four candidates settings  $(Af - Al) - (Bf - Bl)$ .

## ***2.4 Issues of validity***

The advantages of experiments lie in their ability to better derive causal inferences about the relationships between the variables that are of interest for a particular research, due to high level of transparency of procedures and to the high degree of control that the experimenter has over the treatment and measurement of the variables. In an experiment one can better

look at the details of causal processes by holding constant variables that might intervene in a specific relationship and that might take the form of confounding factors in observational studies (McDermott 2002). However, despite their comparative advantages, experiments also raise concerns regarding external and internal validity and the application of findings resulted from such a research to real world phenomena.

Internal validity is commonly defined by the question: "did in fact the experimental stimulus make some significant difference in this specific instance?" (Campbell 1957, 297). Thus, for an experiment to have internal validity it must measure what it sets up to measure. Experimental research must safe-guard itself against confounding factors such as variables that have not been controlled for that might produce systematic bias, or against giving an involuntary treatment to the control group (McDermott 2011). In the case of the present experiment, measuring correct voting through both evaluations of candidates and votes on candidates can be considered a safe-guard against internal validity problems. Using only one measure alone might lead to overlooking confounding factors since the effect of cues might not be sensitively measured. Moreover, giving precisely the same information, with the same wording, to both the Control and Treatment group (the only difference being the cue) safe-guards against giving an involuntary treatment to the Control groups and helps in observing if that specific cue was the one producing the effect.

External validity raises questions regarding the application of findings resulted from an experimental research to real-world phenomena. Shadish et al. (2002) argue that external validity deals with four aspects of experimental design: whether the subjects resemble the



actors in the real world, whether the context within which actors operate is similar to the context in real-world situations, whether the stimulus used in the study resembles the stimulus that can be found outside the laboratory, and whether the outcome measures resemble the actual outcomes of interest.

As far as external validity is concerned the current experiment tries to deal with some of the previously mentioned issues in light of resource constraints. Thus, on the one hand, this study might fall short with regard to the first aspect because it will use a sample of convenience, since it is very difficult to have a random sample of the voting population in the two political environments. On the other hand, the study scores better on the other three issues related to external validity. The experimental settings in which the subjects are put will thus try to replicate a real-world political situation in which voters are exposed to several political candidates that have different positions on specific policy issues. Moreover, the stimulus used in the study will resemble the stimulus that can be found outside the laboratory, since the cues that are given to subjects will resemble the cues and heuristics that they usually have easy access to in real-world situations (candidates' positions towards taxation and unemployment benefits). Lastly, since what I try to measure is the specific effect of different cues against what a fully-informed political choice would be, the different phases of the experimental design and the fact that the candidates are fictional (hence subjects do not have any prior knowledge about their positions) help in measuring precisely this.

## Chapter 3. The Experiment

### 3.1 The data

The data for this study was collected thorough a laboratory experiment using paid subjects (the subjects received around 2500 HUF for a two-hours session) contacted with the help of a recruitment agency. All the subjects had to be eligible voters (Hungarian citizens with the age above 18) and most of them were college students. The experiment was part of a series of studies conducted between the 8th of April and the 19th of April, 2013 at Central European University in Budapest. While the four experiments, of which this particular one was part, used the same subjects, the tests were randomized for each participant in order to minimize potential systematic biases induced by one study to the other.

The 198 subjects on which data was collected were assigned randomly to one of the four experimental groups (Control and Treatment in Setting A, and Control and Treatment in Setting B). Thus, 48 participants were assigned to the Control group A, 45 participants to the Treatment group A, 55 participants to the Control group B, and finally, 50 participants to the Treatment group B. Out of the 198 subjects aged between 18 and 31 years, 103 were male and 95 were female. In terms of education level, 9.1% of the subjects were elementary and vocational school graduates, 62% were high school or vocational high school graduates, 11.7% finished tertiary vocational education, while 17.3% were higher education graduates. *Table 2* below includes descriptive data on subjects self-positioning on a left-right ideological scale, interest in politics, and self-positioning on a social status ladder.

Table 2. Left-right self positioning, political interest, and social status

	<i>Mean</i>	<i>SD</i>	<i>Valid N</i>	<i>Scale</i>
<b>Left-Right</b>	4.64	1.23	162	1-left; 7-right;
<b>Political Interest</b>	2.65	0.74	194	1-very; 4-not at all;
<b>Social Status</b>	3.88	1.01	193	1-lowest; 7-highest;

### 3.2 The information leaflets

All the subjects were presented with the following text: *"Pretend the following fictitious individuals are seeking election as President of Country Z. Please read carefully the material about the candidates presented below."*

As previously mentioned, the subjects in Setting A were given information on two candidates (Candidate 1 and 2, see *Appendix 1*). While in the first phase the Control group was presented only with basic information consisting of the demographic and personality characteristics of the candidates, the Treatment group was provided both with this basic information and with an ideology cue. In the full information phase, both groups were given all the information available on candidates. In Setting B subjects were exposed to four candidates instead of two and the Control and Treatment groups were treated in the same manner as in Setting A. Thus, in addition to the two candidates in Setting A, subjects were also presented with other two candidates (Candidate 3 and 4, see *Appendix 1*). While in Setting A the candidates were ideologically polarized, in Setting B the candidates were not well differentiated as far as the

ideological cues are concerned (Candidate 1 is close to Candidate 3, and Candidate 2 to Candidate 4).

Finally the subjects were shown the following questions through which they had to evaluate the candidates and vote for one of them. While in the conceptualization of correct voting, I discussed it as being the same vote that the voter would cast if she was perfectly informed and being measured by calculating the deviation from the vote choice in the full-information situation, correct voting need not be measured only in the form of voting *per se*. Thus, in the present experiment subjects were not only asked to vote for one of the candidates which they were presented with, but also to evaluate them on a 7-point scale. Correct evaluations will, thus, provide an alternative (and more sensitive) measure of correct voting.

*"Now rate each of the above candidate on the scales shown below by circling the number which best represents your opinion of each one*

*1 (poor candidate) 1 2 3 4 5 6 7 (excellent candidate)*

*Which of these candidates would you vote for? \_\_\_\_\_"*

### **3.3 Results**

#### **3.3.1 Analysis of Correct Voting**

A first way to test my hypotheses is by using deviations in the votes that subjects casted for each candidate in the four experimental groups. Looking at the votes each candidate received in the four experimental groups (*Table 3*), we find mixed results. For the two-candidate

setting (Setting A), the difference in vote change between the control and the Treatment group is visible. Thus, in the Treatment group only 5 subjects voted for Candidate 1 in the basic phase, while 16 of them voted for the same candidate in the Full information phase. The same ratio in the Control group is 24/23. For the four-candidate setting (Setting B), the difference in vote change between the Control and the Treatment group is more difficult to analyze by simple cross-tabulation. Vote maintenance rates can, thus, be calculated in order to see more clearly the voting patterns for the candidates in the two settings.

*Table 3. Frequencies of votes for each candidate in all experimental groups*

	<i>Control Setting A</i>		<i>Treatment Setting A</i>		<i>Control Setting B</i>				<i>Treatment Setting B</i>			
<b>Basic/Cue Phase</b>	<i>C1</i>	<i>C2</i>	<i>C1</i>	<i>C2</i>	<i>C1</i>	<i>C2</i>	<i>C3</i>	<i>C4</i>	<i>C1</i>	<i>C2</i>	<i>C3</i>	<i>C4</i>
	24	18	5	39	22	12	6	7	-	22	16	7
<b>Full Information Phase</b>	<i>C1</i>	<i>C2</i>	<i>C1</i>	<i>C2</i>	<i>C1</i>	<i>C2</i>	<i>C3</i>	<i>C4</i>	<i>C1</i>	<i>C2</i>	<i>C3</i>	<i>C4</i>
	23	20	16	23	10	14	12	11	5	9	17	12

*Table 4* below presents the number of people who maintained their votes between the basic/cue phase and the full information phase in all four experimental groups. Since maintaining the vote in the full information phase is interpreted as correct voting, the maintenance rates below can be interpreted as correct voting rates (the higher they are, the larger the extent of correct voting). We can, thus, see that the correct voting rates were higher in both Setting A and Setting B for the Treatment groups. This suggests that cues might have

had an effect and raised the incidence of correct voting in both settings irrespective of their complexity. When comparing the two settings between them, we can see that correct voting rates are higher with almost 20 percentage points in Setting A for the Treatment group, and with almost 7 percentage points for the Control group. This suggests, in its turn, that subjects were able to use cues more effectively (the incidence of correct voting was higher) in the less complex environment with regard to the number of candidates and their ideological differentiation (*Hypothesis 3*).

*Table 4. Votes maintained in all groups*

	<i>Control Setting A</i>	<i>Treatment Setting A</i>	<i>Control Setting B</i>	<i>Treatment Setting B</i>
<b>Number of votes maintained/ total number of votes</b>	16 out of 40	25 out of 38	15 out of 45	19 out of 41
<b>Maintenance rate</b>	40 %	65.78 %	33.33 %	46.34 %

Nevertheless, in order to test if these differences between groups are statistically significant, I run several Chi-Square tests which will help me determine if the change or maintenance in the votes cast is independent of the group in which subjects were assigned to. Otherwise said, this will help me determine whether cues affected maintenance rates and whether maintenance rates are independent of the number of candidates in a group. Thus, *Table 5* below presents the frequency distribution of vote change or maintenance in the two experimental groups (Control and Treatment) in Setting A (the less complex setting). We can see that the expected frequencies in each cell of the contingency table is higher than 5, which means a Chi-Square test for *Hypothesis 1* stating whether cues have an effect in the two-

candidate setting can be run. The null hypothesis stating the independence between vote change or maintenance and experimental groups was rejected at the 95% significance level using both a Chi-Square test and a Likelihood-ratio test (Chi-Square=4.21, p-value=0.04; Likelihood=5.36, p-value=0.02). These results suggest that cues had an effect on correct voting in the two-candidate ideologically polarized setting (*Hypothesis 1*). Thus, cues can help voters emulate a fully informed decision in a system with a low level of complexity in terms of the number of candidates and their ideological differentiation.

Table 5. Contingency table for Setting A

	Control A	Treatment A	Row Total
<b>Vote Change</b>	24 ( <i>Exp. 18.97</i> )	13 ( <i>Exp. 18.02</i> )	37
<b>Vote Maintenance</b>	16 ( <i>Exp. 21.02</i> )	25 ( <i>Exp. 19.97</i> )	41
Column Total	40	38	78

Since the expected frequencies are higher than 5 for each cell in the contingency table for Setting B (Table 6), we can run a Chi-Square test to determine whether cues had an effect in the four-candidate system. The results for both the Chi-Square test and the Likelihood-ratio test (Chi-Square=1.02, p-value=0.31; Likelihood=1.52, p-value=0.21) could not reject the null hypothesis of independence. This suggests that maintenance in votes cast are independent of whether subjects got an ideological cue or not and, consequently, that cues did not have an effect in the four-candidate setting. This result supports *Hypothesis 2* stating that cues don't have an effect in Setting B and suggests that these do not help raise the incidence of correct voting in a more complex system.

Table 6. Contingency table for Setting B

	<b>Control B</b>	<b>Treatment B</b>	Row Total
<b>Vote Change</b>	30 ( <i>Exp. 27.20</i> )	22 ( <i>Exp. 24.79</i> )	52
<b>Vote Maintenance</b>	15 ( <i>Exp. 17.79</i> )	19 ( <i>Exp. 16.20</i> )	34
Column Total	45	41	86

As far as the third hypothesis is concerned, two approaches can be taken. First of all, we can test the difference in overall vote maintenance rates between Setting A (less complex) and Setting B (more complex) by computing the sum of votes maintained in both the Control and the Treatment groups in each of the two settings. Secondly, we can test the difference in maintenance rates only between the cue groups of the two settings, thus determining whether there was any difference in the effect of cues in the two and four candidates settings. Since the expected frequency in all cells is higher than 5 (*Tables 7 and 8*), we can run Chi-Square tests for both these situations. As far as overall vote maintenance rates are concerned, the results of the Chi-Square test suggest that correct voting is independent of the setting in which subjects were assigned to, while the results of the Likelihood-ratio test reject the independence hypothesis at the 90% level of significance (Chi-Square=2.29, p-value=0.13; Likelihood=2.80, p-value=0.09). The results of the Likelihood test, thus, suggest that subjects were indeed able to vote more correctly in a less complex system with regard to the number of candidates and their ideological differentiation (Setting A).



However, overall maintenance rates conflate the amount of correct voting in the Control and the Treatment group for the two settings. Thus, a test for the independence between correct voting in the Treatment groups will help better isolate the specific difference in the effect of cues on correct voting between the two settings. While using a Chi-Square test the null hypothesis of independence was not rejected, a Likelihood-ratio test supports *Hypothesis 3* stating that the amount of correct voting is dependent on the number of candidates in the setting (Chi-Square=2.28, p-value=0.13; Likelihood=3.04, p-value=0.08). Thus, the test suggests that there is a difference in the effect of cues on correct voting between a two-candidate ideologically polarized system and a four-candidate system with less differentiated ideological positions between candidates.

*Table 7. Contingency table of overall vote maintenance in Setting A and B*

	<b>Setting A</b>	<b>Setting B</b>	Row Total
<b>Vote Change</b>	37 ( <i>Exp. 42.32</i> )	52 ( <i>Exp. 46.67</i> )	89
<b>Vote Maintenance</b>	41 ( <i>Exp. 35.67</i> )	34 ( <i>Exp. 39.32</i> )	75
Column Total	78	86	164

*Table 8. Contingency table of vote maintenance in the cue groups of Setting A and B*

	<b>Treatment A</b>	<b>Treatment B</b>	Row Total
<b>Vote Change</b>	13 ( <i>Exp. 16.83</i> )	22 ( <i>Exp. 18.16</i> )	35
<b>Vote Maintenance</b>	25 ( <i>Exp. 21.16</i> )	19 ( <i>Exp. 22.83</i> )	44
Column Total	38	41	79

### 3.3.2 Analysis of Correct Candidate Evaluations

Though voting can be used as a measure of correct voting alone, the present experiment also included evaluations of candidates on 7-point scales in order to increase the sensitivity of the correct voting measurement. Tables 9, 10, and 11 below present the results of the evaluations of each candidate in the four experimental groups. Looking at Setting A in the Control group (Table 9), the difference in evaluation means between the full information phase and the basic phase (the basis for calculating correct voting) for Candidate 1 is around 0.64. The same difference in the Treatment group is considerably lower (around 0.42), thus suggesting a higher amount of correct voting. However, looking at the same differences between the mean for Candidate 2, the results show a decrease in correct voting in the cue phase.

*Table 9. Evaluation descriptives for each candidate in Setting A*

<b>Setting A</b>	<i>Control</i> <i>Candidate 1</i>		<i>Control</i> <i>Candidate 2</i>		<i>Treatment</i> <i>Candidate 1</i>		<i>Treatment</i> <i>Candidate 2</i>	
<i>Basic/Cue Phase</i>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
	5.40	1.13	5.14	1.13	3.80	1.22	5.60	0.83
<i>Full Information Phase</i>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
	4.73	1.33	4.64	1.36	4.22	1.49	4.80	1.53

Looking at Setting B (Tables 10 and 11), the results are mixed. While for Candidate 1 the difference in mean evaluation between the Basic and the Full information phase is considerably larger in the Control group than in the Treatment group (5.44/4.23 compared to

3.67/3.83), for the other three candidates the differences have closer values to each other. This suggests that for Candidate 1 correct voting has increased once the subjects were given a cue, while for the other three candidates it has remained about the same despite the fact that they were given an ideological cue.

*Table 10. Evaluation descriptives for each candidate in the Control group Setting B*

<b>Setting B</b>	<i>Control Candidate 1</i>		<i>Control Candidate 2</i>		<i>Control Candidate 3</i>		<i>Control Candidate 4</i>	
<i>Basic/Cue Phase</i>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
	5.44	1.35	4.74	1.44	4.83	1.35	4.50	1.41
<i>Full Information Phase</i>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
	4.23	1.60	4.46	1.45	4.45	1.50	4.55	1.37

*Table 11. Evaluation descriptives for each candidate in the Treatment group in Setting B*

<b>Setting B</b>	<i>Treatment Candidate 1</i>		<i>Treatment Candidate 2</i>		<i>Treatment Candidate 3</i>		<i>Treatment Candidate 4</i>	
<i>Basic/Cue Phase</i>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
	3.67	1.41	4.85	1.46	5.06	1.24	4.00	1.47
<i>Full Information Phase</i>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
	3.83	1.49	4.29	1.57	4.52	1.57	4.36	1.32

*Table 12* summarizes the absolute deviations for the evaluations of each candidate in each group between the basic/cue phase and the full information phase. These deviations represent a measure of correct voting, higher deviations meaning that the subjects were less able to emulate a fully informed behavior. We can see that for Setting A the absolute deviations were smaller for the Treatment group than for the Control group. This suggests that cues might have had a positive effect on correct voting in the less complex system. However, for Setting B the deviations for candidates 2 and 3 were considerably larger, while the ones for candidates 1 and 4 were smaller. Although these results are mixed, the lower deviations in the Treatment group of Setting A somehow point in favor of *Hypothesis 3* stating that cues function better in less complex systems.

*Table 12. Absolute deviations for the evaluations of each candidate in each group*

	<i>Candidate</i>	<i>Mean</i>	<i>SD</i>
<b>Control Setting A</b>	<i>Candidate 1</i>	1.10	1.11
	<i>Candidate 2</i>	1.29	1.14
	<i>Candidate 1</i>	1.00	1.00
<b>Treatment Setting A</b>	<i>Candidate 2</i>	1.06	1.23
	<i>Candidate 1</i>	1.41	1.52
	<i>Candidate 2</i>	1.24	1.17
<b>Control Setting B</b>	<i>Candidate 3</i>	1.24	1.33
	<i>Candidate 4</i>	1.55	1.06
	<i>Candidate 1</i>	1.02	1.05
	<i>Candidate 2</i>	1.56	1.22
<b>Treatment Setting B</b>	<i>Candidate 3</i>	1.45	1.41
	<i>Candidate 4</i>	1.36	1.17

Since the absolute deviations for the evaluations of each candidate in each group represent measures of (in)correct voting (higher deviations are interpreted as lower levels of correct voting), we can treat this case as a case in which we have multiple dependent variables that are related conceptually and can be analyzed together. Taking a multivariate approach to this repeated-measures dependent variable (incorrect voting), we can run MANOVAs (multivariate analysis of variance) for both Setting A and Setting B in order to test if cues had an effect on correct voting. Thus, the MANOVA tests if the means for the absolute deviations of the evaluations of each candidate (representing correct voting which is the dependent variable) vary across the groups in which subjects were assigned (Control or Treatment).

To begin with, even if the dependent variables should be related conceptually to each other, they should be correlated only to a low or moderate level in order not to run into problems of multicollinearity. *Tables 13 and 14* bellow present Pearson product-moment correlation coefficients for the absolute deviations in the evaluation of each candidate in Setting A and Setting B. It can be seen that all correlations between the dependent variables are low to moderate, the highest correlation coefficients having values around 0.2.

*Table 13. Correlations of the absolute deviations in the evaluation of candidates in Setting A*

<b>Setting A</b>	<i>Incorrect Voting Candidate 1</i>	<i>Incorrect Voting Candidate 2</i>
<i>Incorrect Voting Candidate 1</i>	1	0.2
<i>Incorrect Voting Candidate 2</i>	0.2	1

Table 14. Correlations of the absolute deviations in the evaluation of candidates in Setting B

<b>Setting B</b>	<i>Incorrect Voting Candidate 1</i>	<i>Incorrect Voting Candidate 2</i>	<i>Incorrect Voting Candidate 3</i>	<i>Incorrect Voting Candidate 4</i>
<i>Incorrect Voting Candidate 1</i>	1	0.03	0.13	0.12
<i>Incorrect Voting Candidate 2</i>	0.03	1	0.27	0.21
<i>Incorrect Voting Candidate 3</i>	0.13	0.27	1	0.22
<i>Incorrect Voting Candidate 4</i>	0.12	0.21	0.22	1

Running Pillai's multivariate test in Setting A for testing the null hypothesis that the mean of the composite variable of the incorrect voting of candidates is the same across the Control and the Treatment group, we get a p-value=0.743. The null hypothesis was not rejected, suggesting that the groups in which subjects were assigned did not have an effect on their voting (in)correctly. Since this means that absolute deviations of candidates evaluations were the same across the two groups, the test suggests that giving some subjects ideological cues did not help them in approximating a more informed vote. Looking specifically at which of the dimensions that form the response variable might be different (*Table 16*) we see that none of the results prove significant at the 95% significance level meaning that incorrect voting for each separate candidate is mostly the same across the Control and the Treatment group. Looking at the same results for Setting B (p-value=0.169, see *Table 17*), the tests cannot reject the null hypothesis that the mean of the composite variable of the incorrect voting of candidates is the same across the Control and the Treatment group, suggesting in this case as well that cues did not have an effect on the levels of correct voting. Thus, the MANOVA

results indicate that cues cannot help voters emulate a fully informed behavior independent of the setting in which these have to make their decisions.

These results go against the results obtained using the first measure of correct voting (vote deviations). When using deviations in votes, the results suggested that cues did have an effect in the two-candidate setting (*Hypothesis 1*) and did not have an effect in the four-candidate setting (*Hypothesis 2*). However, when using evaluations of candidates, the results suggested that cues had no effect on correct voting in neither of the settings. On the one hand, this could be due to the higher sensitivity of the evaluation of candidates measure that makes finding an effect more difficult. On the other hand, this could also be caused by the difference in how the experimental subjects perceived the two measures. While voting implies a clear choice of candidate making, thus, the participant compare the two candidates and decide which one is better, separate candidate evaluations may not have been interpreted by subjects in such a "comparative" manner.

Table 15. MANOVA results for Setting A

Pillai approx	F	num Df	den Df	p-value
0.0066524	0.29801	2	89	0.743

Table 16. Results for each dimension of the DV in Setting A

Setting A	Sum Sq	Mean Sq	F value	p-value
Incorrect Candidate 1	0.26	0.26018	0.2331	0.6304
Incorrect Candidate 2	0.644	0.64403	0.4781	0.491

Table 17. MANOVA results for Setting B

Pillai approx	F	num Df	den Df	p-value
0.066853	1.6478	4	92	0.169

Table 18. Results for each dimension of the DV in Setting B

Setting B	Sum Sq	Mean Sq	F value	p-value
<i>Incorrect Candidate 1</i>	4.656	4.6558	2.6343	0.1079
<i>Incorrect Candidate 2</i>	2.498	2.4981	1.7996	0.183
<i>Incorrect Candidate 3</i>	0.18	0.17977	0.1064	0.745
<i>Incorrect Candidate 4</i>	1.743	1.7431	1.5322	0.2188

Nevertheless, taking a multivariate approach to this repeated-measures dependent variable (correct voting on each candidate in part) is only one of the several ways in which we can test the effect of cues in the two settings. Thus, in order to see more precisely the overall extent of correct voting in each group, the absolute deviations between the basic phase and the full information phase for all the candidates in the respective group can be added (for candidates 1 and 2 in Setting A and 1, 2, 3, and 4 in Setting B) and then divided by the number of candidates in the setting (two or four). This will give us a measure of the overall mean deviation for all the candidates in the group. Thus, it will indicate the overall amount of incorrect voting in each of the four experimental groups. Since a correct initial evaluation would mean a low deviation between the basic/cue phase and the full information phase, higher mean deviations are to be interpreted as indicating lower levels of correct voting. We can see that generally, as hypothesized, the extent of correct voting is higher in Setting A, the less complex setting, than in Setting B, the more complex setting (*Table 19*). Additionally,



the difference in correct voting between the Treatment group and the Control group is higher in Setting A (0.14 deviation points), than in Setting B (0.7 deviation points). This also points to the fact that cues might have been more helpful in the less complex setting (Setting A) which is in line with my third hypothesis.

*Table 19. The extent of (in)correct voting in each group using evaluations of candidates*

	<i>Mean</i>	<i>SD</i>	<i>Valid N</i>
<b><i>Incorrect Voting Control A</i></b>	1.17	0.85	47
<b><i>Incorrect Voting Treatment A</i></b>	1.03	0.87	45
<b><i>Incorrect Voting Control B</i></b>	1.37	0.77	52
<b><i>Incorrect Voting Treatment B</i></b>	1.30	0.68	45

However, in order to see if these differences between the Treatment groups and the Control groups are significant, I run a Welch two-sample t test (adaptation of Student's t-test used for two samples having possibly unequal variances) for each setting. *Tables 20 and 21* summarize the results of these tests. In both tests the null hypothesis that the difference in means is 0 could not be rejected ( $p=0.44$  in Setting A and  $p=0.61$  in Setting B). This means that the effect of cues on correct voting was not significantly different from 0. Thus, the results do not support *Hypothesis 1* stating that cues have an effect in the less complex setting (Setting A), but do support *Hypothesis 2* indicating that cues are not of much help in what regards correct voting in a complex system. However, as far as *Hypothesis 3* is concerned, we can see, as before, a rather high difference between Setting A and Setting B (the mean difference in correct voting in Setting A is more than double the same difference in setting

B). This could mean that increasing the complexity of the political environment does indeed affect the way in which voters can emulate a fully informed behavior.

Table 20. The effect of cues in Setting A using the Welch two-sample *t* test

	<i>Mean Difference</i>	<i>t value</i>	<i>df</i>	<i>p value</i>
<b>Incorrect Voting Setting A</b>	0.27 (0.14 if divided by the number of candidates)	0.76	90	0.44

Table 21. The effect of cues in Setting B using the Welch two-sample *t* test

	<i>Mean Difference</i>	<i>t value</i>	<i>df</i>	<i>p value</i>
<b>Incorrect Voting Setting B</b>	0.3 (0.075 if divided by the number of candidates)	0.50	95	0.61

In order to test this third hypothesis and to see if the differences between Setting A and B are significant, one option is to analyze the overall difference in correct voting between the two settings (irrespective of the difference between the Control and the Treatment groups). For calculating the overall difference in correct voting between the two settings, I added up the extent of incorrect voting for both the Control and the Treatment group for all the candidates and divide it by the number of candidates in the setting (*Overall Incorrect Voting Setting A = (Incorrect Voting Control A + Incorrect Voting Treatment A)/2*; *Overall Incorrect Voting Setting B = (Incorrect Voting Control B + Incorrect Voting Treatment B)/4*). As previously mentioned, higher mean values are interpreted as indicating lower levels of correct voting. In this case the results of the test reject the null hypothesis that the overall difference in correct

voting is 0 ( $p=0.04$ ) (*Table 22* - Overall difference in incorrect voting). We can, thus, say with 95% confidence that the difference in correct voting between the two settings is different than 0. The negative value of the  $t$  statistics also suggests that on average subjects rated candidates more correctly in Setting A. The evidence, thus, supports the idea that an increase in the complexity level of the environment understood in terms of the number of candidates and their ideological differentiation affects correct voting in a negative way (*Hypothesis 3*).

A second option for testing *Hypothesis 3* is analyzing only the difference between the groups that were given the ideology cue (*Table 22* - Difference between Cue Groups). Again, when using this second option, the null hypothesis is rejected (though at the 90% significance level,  $p\text{-value}=0.10$ ). This suggests that the Cue group in Setting A managed to approximate a more informed evaluation of candidates than the Cue group in Setting B. Thus, subjects in less complex systems with regard to the number of candidates and their ideological differentiation manage, on average, to evaluate candidates more correctly when given an ideology cue than subjects in more complex political environments.

*Table 22. Difference in (in)correct voting between Setting A and Setting B*

	<i>Mean Correct Voting for Setting A</i>	<i>Mean Correct Voting for Setting B</i>	<i>Mean Difference</i>	<i>t value</i>	<i>df</i>	<i>p-value</i>
<b>Overall Difference in Incorrect Voting</b>	1.10	1.34	-0.23	-2.04	179	0.04*
<b>Difference between Cue Groups</b>	1.03	1.30	-0.26	-1.62	83.29	0.10

\*  $p<0.05$ , \*\*  $p<0.01$ , \*\*\*  $p<0.001$

While a randomized block design was not feasible as a means of controlling for demographic and ideological positioning factors due to the fact that this experiment was part of a series of experiments that were randomized between them, the results of the t tests could be improved by subsetting. Subjects' self-positioning on a left-right ideological scale, subjects' interest in politics, gender, and education could be factors that might interfere with the way in which they process cues and, consequently, with how these help them vote more correctly. The t test analyses could, thus, be run separately on subgroups of subjects created according to these factors.

Running a series of Welch two-sample t tests after subsetting for all of these factors in Setting A, only two tests proved to be statistically significant (*Table 23*). Cues, thus, had an effect on the extent of correct voting in the case of subjects who considered themselves leftists on a 7-point ideological positioning scale (choosing levels 1,2, and 3) and in the case of extremist females (females choosing levels 1,2,6, and 7 on the ideological scale). Moreover, these two effects were in the expected direction since the mean difference between the Treatment (Cue) group and the Control group has a positive value indicating that the levels of incorrect voting were higher in the Control group. This suggests that both leftists and extremist females were helped by cues to improve their candidate evaluations in the two-candidate ideologically polarized system.

As far as leftists voters are concerned, the results could indicate, on the one hand, that these are able to identify their preferred candidate easier than rightists in a two-candidate polarized system. On the other hand, it could also indicate that taxation and unemployment benefit cues

are not of great help for rightists in a two-candidate system, since they couldn't aid the subjects in identifying their preferred candidate. Nevertheless, these results are rather inconclusive since they might have been affected by the low number of subjects in the subsets.

*Table 23. The effect of cues in Setting A using the Welch two-sample t test after subsetting*

<b>Setting A</b>	<i>Mean Difference</i>	<i>t value</i>	<i>df</i>	<i>p-value</i>
<b>Rightists</b>	0.03	0.15	38.8	0.88
<b>Leftists</b>	0.92	2.34	9.7	0.04*
<b>Extremists</b>	0.41	1.45	21.5	0.16
<b>Moderates</b>	-0.07	-0.33	50.24	0.74
<b>Female</b>	0.17	0.76	33.97	0.56
<b>Male</b>	0.19	0.67	32.00	0.42
<b>High Interest in Politics</b>	0.19	0.66	35.38	0.51
<b>Highly Educated</b>	0.43	0.77	13.81	0.45
<b>Extremist Male</b>	0.07	0.15	8.74	0.88
<b>Extremist Female</b>	0.73	2.13	9.86	0.05*
<b>Interested Extremists</b>	0.48	1.12	10.39	0.28

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Running the same Welch two-sample t tests in Setting B (*Table 24*), no test proved to be statistically significant. These results confirm the initial t test results without subsetting and

the MANOVA results and suggest that cues did not have an effect on correct voting in Setting B. These results support *Hypothesis 2* stating that cues do not have an effect on correct voting in a multiple candidate system with less well differentiated ideological positions. Moreover, they indicate that not even small subgroups of subjects, such as extremists or subjects highly interested in politics which are usually considered in the literature more likely to vote correctly, could be helped by cues in emulating a fully informed behavior in a more complex environment.

*Table 24. The effect of cues in Setting B using the Welch two-sample t test after subsetting*

<b><i>Setting B</i></b>	<b><i>Mean Difference</i></b>	<b><i>t value</i></b>	<b><i>df</i></b>	<b><i>p value</i></b>
<b>Rightists</b>	0.15	0.65	35.29	0.52
<b>Leftists</b>	-0.00	-0.01	12.74	0.99
<b>Extremists</b>	-0.14	-0.45	19.32	0.65
<b>Moderates</b>	0.19	1.085	55.89	0.28
<b>Female</b>	-0.16	-0.73	36.43	0.47
<b>Male</b>	0.27	1.35	48.38	0.18
<b>High Interest in Politics</b>	-0.03	-0.12	34.72	0.90
<b>Highly Educated</b>	0.58	1.19	6.41	0.27
<b>Extremist Male</b>	0.12	0.40	8.99	0.69
<b>Extremist Female</b>	0.49	-0.77	4.39	0.47
<b>Interested Extremists</b>	-0.47	-0.88	6.91	0.40

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

When testing *Hypothesis 3* after subsetting for subjects self-positioning on a left-right ideological scale, subjects interest in politics, gender and education, we again face the same two options as for the initial t tests. On the one hand, we can test the overall difference in correct voting between Setting A and Setting B by conflating the amount of incorrect voting in the Control group with the one in the Treatment group. On the other hand, we can just test the difference in correct voting between the cue groups in the two settings.

*Table 25. Overall difference in correct voting between Setting A and Setting B after subsetting*

<i>Setting A vs. B</i>	<i>Mean Difference</i>	<i>t value</i>	<i>df</i>	<i>p value</i>
<b>Rightists</b>	-0.23	-1.49	86.23	0.14
<b>Leftists</b>	-0.57	-1.84	26.61	0.07
<b>Extremists</b>	-0.49	-2.26	43.16	0.02*
<b>Moderates</b>	-0.15	-1.02	103.51	0.13
<b>Female</b>	-0.10	-0.59	82.88	0.24
<b>Male</b>	-0.35	-2.34	94.83	0.02*
<b>High Interest in Politics</b>	-0.28	-1.43	72.87	0.15
<b>Highly Educated</b>	0.37	1.08	27.66	0.28
<b>Extremist Male</b>	-0.36	-1.24	20.97	0.22
<b>Extremist Female</b>	-0.62	-1.87	19.35	0.07
<b>Interested Extremists</b>	-0.72	-2.14	20.52	0.04*

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

As far as the first option is concerned, several of the subsetted Welch two-sample t tests proved significant (*Table 25*). We can say with 95% confidence that there is a difference in overall correct voting between the two settings in the case of extremists and males. Moreover, this effect is in the direction specified by *Hypothesis 3*. Thus, extremists and males rated candidates on average more correctly in two-candidate ideologically polarized setting, than in the more complex setting. In addition, leftists also rated candidates more correctly in Setting A than in Setting B (p-value=0.07). This suggests that a change in the complexity of the political environment affects correct voting negatively for extremists, males and leftists, decreasing the degree to which they are able to emulate a fully informed behavior.

As far as the difference in correct evaluations between the two cue groups is concerned, similar results were obtained (*Table 26*). The difference in correct voting between the Treatment group A and the Treatment group B proved statistically significant at the 95% level in the case of extremist voters and at the 99% level in the case of leftist voters. However, the effect found when subsetting for males in the first case was not encountered when testing only the Treatment groups. This means that extremists and leftists who got an ideological cue rated candidates more correctly in the two-candidate ideologically polarized setting (Setting A), than in a more complex setting (Setting B). The case of extremist voters could be interpreted as being in line with some claims in the literature stating that citizens with stronger political positions are able to vote more correctly. However, these results show that while being an extremist in a polarized setting helps, it does not mean much in a system where candidates are close ideologically to one another.



Table 26. Difference in correct voting between the cue (Treatment) groups in Setting A and Setting B after subsetting

<i><b>Treatment A vs. B</b></i>	<i>Mean Difference</i>	<i>t value</i>	<i>df</i>	<i>p value</i>
<b>Rightists</b>	-0.18	-0.68	36.97	0.49
<b>Leftists</b>	-1.04	-2.87	11.92	0.01**
<b>Extremists</b>	-0.77	-2.29	21.43	0.03*
<b>Moderates</b>	-0.01	-0.03	43.28	0.97
<b>Female</b>	-0.26	-1.07	43.37	0.28
<b>Male</b>	-0.33	-1.46	29.09	0.15
<b>High Interest in Politics</b>	-0.39	-1.43	36.99	0.16
<b>Highly Educated</b>	0.37	0.91	9.87	0.38
<b>Extremist Male</b>	-0.37	-0.83	8.53	0.42
<b>Extremist Female</b>	-1.24	-1.95	4.44	0.11
<b>Interested Extremists</b>	-1.10	-2.53	11.76	0.02*

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

## Conclusions

This research aimed at bringing empirical evidence to the study of the political ignorance of citizens that tries to determine how competent voters are in their political decision-making and the degree to which they (need to) live up to the standards that are imposed on them by classic democratic theory. In particular, being concerned specifically with the view of cues and cognitive heuristics as aids in decision-making, this paper brought evidence concerning the effective usage of cues in a more direct and extensive way than previous research. Thus, in addition to previous studies, this research dealt both with how cues work in political systems of different levels of complexity with regard to the number of candidates in the system and their ideological differentiation, and with how different types of voters, such as extremists or moderates, can be helped by cues. Moreover, in line with Lau and Redlawsk's (2001) analyses, this study measured correct voting as being the same decision that the voter would have taken under conditions of full information, thus avoiding debatable normative implications. Consequently, the present experiment simulated a full-information condition and effective cue usage was measured by calculating the deviation from this condition.

Thus, the main research questions that this thesis addressed are:

*A. Can voters use cues and heuristics as substitutes for "full" political information and can these increase the quality of political decision making?*

*B. What are the differences in cue usage between a two-candidate system that is ideologically polarized and a multiple candidate system in which candidates are less differentiated ideologically?*

The main hypotheses formulated in line with these two research questions were:

*H1: Cues have a positive effect on correct voting in a two-candidate system that is ideologically polarized.*

*H2: Cues do not have an effect on correct voting in a multiple candidate system with less differentiated ideological positions between candidates.*

*H3: Increasing the complexity of the political environment in terms of the number of candidates and their ideological differentiation has a negative effect on correct voting.*

The analysis of cue usage in political systems of different complexity with regard to the number of candidates in the system and their ideological differentiation took two forms. First, a standard analysis of correct voting understood as maintenance of a vote from a basic information phase to a full information phase was performed. Second, a more sensitive analysis of correct evaluations of candidates on 7-point scales understood as evaluation deviations between the same two phases was run.

As far as the analysis of correct voting is concerned, the results of several Chi-Square tests supported my three hypotheses. Firstly, ideological cues were shown to have an effect on correct voting in a two-candidate ideologically polarized setting (*Hypothesis 1*). Secondly, as

expected, maintenance in votes cast by the experimental subjects was independent of whether subjects got an ideological cue or not in the more complex setting (*Hypothesis 2*). Finally, the results supported the idea that the complexity of the political environment has an effect on how voters can use cues for simulating a more informed political decision. Both the overall vote maintenance (conflating all voters in both environments) and the vote maintenance only for the subjects that received cues was shown to be dependent on the political environment in which the voters had to take their political decision (*Hypothesis 3*).

Nevertheless, the results for the more sensitive measure of effective cue usage involving correct evaluations of candidates were mixed. Firstly, a multivariate approach was taken to the dependent variable decomposed for each candidate that was presented to voters in the two political environments. MANOVA analyses supported only *Hypothesis 2* stating that cues do not improve subjects correct evaluations of candidates in the more complex system, while not supporting the idea that cues work effectively in a simple two-candidate ideologically polarized system. Secondly, computing the mean correct evaluations that the subjects gave on all the candidates, several t-test were run. Again, the results did not support *Hypothesis 1* stating that cues have an effect in less complex setting, but did support the lack of effective cue usage in the more complex setting. However, when comparing the two political environments the results shown that on average subjects rated candidates more correctly in the two-candidate ideologically polarized setting, thus supporting *Hypothesis 3*. Thus, subjects in less complex systems with regard to the number of candidates and their ideological differentiation manage on average both to evaluate candidates more correctly and to vote more correctly.

While a randomized block design was not feasible as a means of controlling for demographic and ideological positioning factors due to the fact that this experiment was part of a series of experiments that were randomized between them, the results of the t-test were improved by subsetting for some factors as a means of control. Subjects' self-positioning on a left-right ideological scale, subjects' interest in politics, gender and education were studied in order to see the way in which they interfere with effective cue usage and, consequently, with correct voting. In this sense, all the three hypothesis were supported for subjects who positioned themselves as leftist on an ideological self-positioning scale. This could indicate, on the one hand, that leftists are able to identify their preferred candidate easier than rightists in a two-candidate polarized system. On the other hand, it could also indicate that taxation and unemployment benefit cues are not of great help for rightists in a two-candidate system, since they couldn't aid the subjects in identifying their preferred candidate. As far as the difference between the two settings is concerned, extremists were shown to vote more correctly in the ideologically polarized setting. These results could be interpreted as being in line with some claims in the literature stating that citizens with stronger political positions are able to vote more correctly. However, these results also show that while being an extremist in a polarized setting helps in terms of correct voting, it does not mean much in a system where some candidates are close ideologically to one another.

While the results on the correct evaluations of candidates were in line with the results on correct voting after subsetting, the question remains on why do the overall sample results disconfirm the first hypothesis stating effective cue usage in the less complex setting. On the one hand, this could be due to the higher sensitivity of the evaluation of candidates measure that makes finding an effect more difficult. On the other hand, this could also be caused by the difference in how the experimental subjects perceived the two measures. While voting

implies a clear choice of candidate making, thus, the participant compare the two candidates and decide which one is better, separate candidate evaluations may not have been interpreted by subjects in such a "comparative" manner.

Despite the new evidence that it brings to the study of cognitive heuristics, resource constraints posed several limitations to this study that reduced its initially proposed aims. Firstly, one limitation comes from the fact that this research used a sample of convenience that consisted mostly of undergraduate students, sample which might differ systematically from the whole population of voters and might restrict the generalizability of results. Secondly, despite the fact that this research had a comparative aim in what regards cue usage in different political environments, the sample used consisted only of Hungarian voters. While generic differences in terms of complexity between political environments were simulated in the experimental study, using only Hungarian subjects might restrict the generalizability of results for other political cultures with different belief and attitude systems. Finally, the size of the sample made subsetting (for example splitting the sample into subjects that are politically interested or not) rather difficult and might have affected the results obtained for some of the sub-groups.

Nevertheless, this study can still provide a baseline for future research that could aim at further analyzing the way in which cues work in different political environments. Along these lines, a similar study run on a sample of US voters, for example, will further help in comparing cue effectiveness in different political environments. Furthermore, a larger and more representative sample of voters would help not only in improving overall results and make generalizability more easy, but will also allow studying more in depth differences in

cue usage between different types of voters in terms of demographic and ideological characteristics. Finally, further research could also be done regarding the robustness of results obtained using different measures of correct voting or correct evaluations of candidates. In this sense, the "full information" measure used in the present experiment could be supplemented with a normative measure based on a pre-test ideological questionnaire that would allow studying the convergence or divergence of results using these different measures.

## Appendices

### *Appendix 1. Information provided on the four candidates*

"**Candidate 1** is 45 years old and studied business at University X. He is now an entrepreneur, founder of the local company Allsort Inc. Despite a busy schedule Candidate 1 still finds time to volunteer with a number of organizations, including Kids Help Phone, and served as Vice Chair of the Municipal Safety Committee. He has 2 children and a wife who is a primary school teacher. Candidate 1 is cheerful, has a good sense of humor and is also dependable.

**Cue:** Candidate 1 would like to increase the unemployment benefit duration from 6 months to 1 year and raise taxes.

**Full information:** Candidate would like to raise taxes on the wealthy and ensure they pay 37 percent of their income at minimum. He also supports raising rates on capital gains and dividends for the wealthy. He supports government spending as a means of promoting economic growth. He would like to increase both the unemployment benefit duration and level, and the pension levels for higher social security. He also promotes spending for the environment and protecting air quality. Candidate 1 would also like to reduce security spending.

**Candidate 2** is 49 years old and an active local businessman, who was recently honoured as the Businessman of the Year for his many contributions. A strong believer in volunteering, Candidate 2 is a volunteer sports coach, and is the fundraising Chair for the Hospital Foundation. Candidate 2 has 3 children and a wife who is a nurse in the local hospital. He is easy going, a good listener and responsible.

**Cue:** Candidate 2 would like to keep the unemployment benefit period to the current levels, while cutting taxes and government spending as a means of promoting economic growth.

**Full information:** Candidate 2 believes no one with gross income under HUF200,000/month should be taxed on interest, dividends or capital gains. He wants to cut corporate tax rate to 25 percent from a high of 35 percent. He opposes proposals to introduce a national sales tax because it raises taxes on middle class while lowering them for rich and poor. He also wants to eliminate estate tax. He supports increased security spending and does not feel that the economy is ready to invest into a full blown environmental protection program.



**Candidate 3** is 50 years old, and was born and brought up in city X, before going to university to study for a degree in finance. After university Candidate 3 set up his own successful business consulting company and volunteers for the Children's Charity Association. Candidate 3 is married with three children and is involved in the local school board. He is approachable, friendly and reliable.

**Cue:** Candidate 3 would like to increase social security spending in order to increase the unemployment benefit duration from 6 months to a maximum of 13 months depending on the contribution period and would like to raise taxes for the wealthy.

**Full information:** Candidate 3 would like to rewrite the entire tax code to be truly progressive with tax cuts for working families, the poor and middle class, and higher taxes for the richest citizens. He would like to stop draining the non-profit sectors of our economy just for giving tax cuts to the for-profit sectors. He would like to increase the national minimum wage. Candidate 3 thinks that illegal immigrants should be given access to government subsidized healthcare.

**Candidate 4** is 47 years old and studied business at University X. He is resident of City X and father to two daughters enrolled in the local school. He is now an accountant running a busy local practice. His wife works as a physician's assistant in a small dental practice. He volunteers for the Children in Need Association and is cheerful, responsible and easy going.

**Cue:** Candidate 4 would like to reduce spending and eliminate business taxes in order to stimulate economic development, while keeping the unemployment benefit period to maximum of 7 months depending on the insurance contribution period.

**Full information:** Candidate 4 thinks government spending should be reduced. Instead of increased social security spending, Candidate 4 supports promoting long-term economic growth and private sector jobs, including revitalizing the country's innovative edge, educating the next generation of innovators, opening up new markets abroad for national producers, developing homegrown energy, and reducing the nation's debt in a balanced way. He also thinks illegal immigrants should not be given access to government subsidized healthcare and that children of illegal immigrants should not be offered citizenship."

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