

COUNTING OPINIONS: A CROSS NATIONAL STUDY ON HOW THE POLITICAL ENVIRONMENT AFFECTS VOTERS' COGNITION

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NOTE: Dear Comparativists: Thank you for taking time to read my paper. This paper represents ongoing research related to my dissertation. As it is, this is a first version of the current paper so please be aware that there are many rough spots and things yet to add. All comments are more than welcome. In fact, I'm really interested in ALL possible issues you can think about: theory, measurement, statistical models, etc. The more the better. Thanks again!

1 Introduction

A widespread belief among political scientists is that voters -despite their widely observed informational shortcomings-, are able to survive in the political arena thanks to the availability of political cues (Sniderman et al., 1991; Lupia, 1994; Lupia & McCubbins, 1998). Whether it is the party or social group membership of a candidate, a political campaign label or some other element, voters can efficiently, and at a low cost, approximate the policy preferences of competing candidates and decide whom to support accordingly. Underlying this claim lies a simple, but critical, assumption that needs to be examined. That is, political shortcuts are -presumably- constantly available to voters, and highly informative. But is this universally tenable? What would happen if such cognitive shortcuts were not present in the political environment? Can we expect to see systematic differences in the nature of mass opinion according to the availability of political cues, or more broadly, according to the informational richness of the political environment?

The following article addresses a subset of these more general theoretical concerns. The

specific question it seeks to address is what makes individuals have opinions about political issues, that is, under what conditions will individuals' increase their opinion holding rates. My main argument is that the opinion formation process can be better understood as an interactive process between, on one hand, individuals' dispositions and political awareness, and on the other, the nature of the political environment in which they are located. I argue that as the political environment becomes progressively complex -by which I mean it will contain less accessible and easy-to-use political information- it will increase the effort voters have to make to form their opinions about political issues, and thus, should condition their emergence. Further, by modifying the accessibility and easiness of available political information, the political environment is also expected to moderate the effect that individual level resources (i.e. education) have on individuals opinion holding rates. To test these hypothesis I draw from the comparative literature on party systems and institutional design, and identify a set of key attributes that can approximate the richness and availability of information to which an average citizen is exposed given a particular political setting. Linear hierarchical models with cross-national survey data are estimated to test the model.

The article is organized as follows. The next section provides an in-depth view of the main theoretical concepts and deduces expected behavioral patterns. The following section details all relevant information about measurement and data sources. Continued by this, I specify estimation strategies and results from the empirical models. The final section concludes.

2 Theoretical Approach: Conceptualizing Opinions and Contexts

2.1 The Opinion Formation Process

The starting point of this paper is the common citizen and his or her relatively low level of cognitive engagement in politics. As commonly argued and widely confirmed (Downs, 1957; Converse, 1964; Bartels, 1996; Carpini & Keeter, 1996), voters -unless unusually motivated- do not invest much cognitive effort in developing strong and coherent belief systems. As Kuklinski & Quirk (2000) put it: *“The structure of modern democracy give ordinary citizens almost no*

incentive to think carefully about politics. Because informed deliberation is a collective good, individuals lack not only the incentive to be well informed, but even the incentive to use their limited information in thoughtful ways.” In other words, active political cognition, which implies categorization of political objects and ordering of political beliefs, is not a day to day activity (Bartels & Achen, 2006).

Holding this assertion as a background assumption, the main question this paper seeks to address is what makes individuals have opinions about political issues. To respond this question from a theoretical perspective, I will start by simplifying matters and concentrate only on a few key elements we need to identify. Considering this, the opinion formation process can be structured around three elements: political dispositions, political awareness and the political environment of voters.¹ My main theoretical premise is that the opinion formation process can be better understood as an interactive process between the two first individual level elements -dispositions and political knowledge-, and the nature of the environment in which they are located. To fully capture this joint interaction, I will first describe each element separately.

I define political dispositions following Zaller’s (1992) conceptualization, that is, as “individual level traits that regulate the acceptance or non acceptance of political communications the person receives” (22). Political dispositions can come in many ways and shapes, but most commonly refer to some broad ideology or value schema that provides some evaluative criteria that defines what is preferred and desirable. In this cross-national study I use the left-right ideological continuum as the key predisposition of analysis.

By political awareness I refer to the common notion of cumulative factual knowledge about political issues (Bartels, 1996; Carpini & Keeter, 1996; Kuklinski et al., 2001; Mondak, 2001; Sniderman & Bullock, 2006; Zaller, 1992). Among many other things, such knowledge has proven to be very effective allowing individuals a better comprehension of new incoming messages and events from the political information flows. While commonly captured by factual knowledge questions, many times such measures are not available, as in the present case. Common proxies are individuals education level, as well as subjective indicators of

¹By which I refer to the national political arena along which political actors compete for political support (elections, campaigns, rallies), policy, policy implementation and private gains.

engagement and interest in political affairs.

Both of these elements -dispositions and political awareness- are defined as opinion holding boosters, that is, as elements that increase individuals' propensity to form opinions on political issues. In the case of political predispositions the reason is that they provide a broad cognitive filter through which individuals can interpret and process diverse political information in an effective manner. In the absence of an encompassing evaluative criteria, a common citizen -with a most likely low level of interest in political affairs- will have trouble evaluating political information and deciding whether to accept it, reject it or simply not process it. Ultimately, an increase in the necessary cost to fully understand the different issues will overcome the low motivation to engage in them, and thus the probability of not processing (that is, understand and decide whether to accept or reject) the issues in question increases rapidly. In this sense political dispositions have an important orientational function. On the other hand, increasing levels of political awareness also increases the propensity of having opinions on issues as it provides contextual information that can help individuals' understand and evaluate the messages coming from the information flows more easily. Even more, higher level of information would permit individuals to evaluate messages in a more consistent fashion respect to their prior beliefs (Converse, 1964; Carpini & Keeter, 1996; Zaller, 1992)

With these elements in hand, I argue that individuals' propensity to form opinions will not only be conditioned by their level of exposition to the political information flows or by how inclusive their political dispositions are -though this two are critical factors-, but also by the nature of the information flows from the political actors. Or more broadly, and considering the assumption of low level of interest in politics, propensity to form political judgments will be conditioned by the richness and availability of easy-to-process information (or what the political heuristics literature calls "cues").² When such information is easily available and easy-to-process voters will be more likely to develop opinions on any sort of issues since the processing stage will not be demanding. On the contrary, when the available information is cryptic, lacks clear ideological references or is very heterogeneous, voters will have to invest

²Such information, can be acquired in many ways, either through friends, colleges or family members, through the mass media, or some other source. Regardless of importance of this step, the key point refers to the type of information voters receive from the political environment. In a way, I assume that the availability of easy-to-process information is independent of the dominant medium of communication across societies.

more time and effort to fully understand what it is all about, which presumably, increases the likelihood not processing such information.

The next step is to capture the information voters have accessible and whether such information is easy-to-process? I address this issue in the next section.

2.2 The Political Environment

To recapitulate, it is argued that individuals' propensity to form political opinions is affected by the type and availability of information they encounter in their political environment. Then, the next step is to define political environments in terms of this information availability. Here I define a political environment to be increasingly complex as the number of political referents and actors -such as political and social groups- increases, the identity and attributes of these actors is less well delimited, and their actions are increasingly difficult to observe and trace in time. By definition, the available political information citizens have in a such a scenario will be reduced and less easy-to-process.

Under this broad definition, *environmental complexity*, or more precisely *contextual complexity* can be determined by many different institutional and non-institutional elements. However, in the interest of parsimony I identify two factors to capture the notion of contextual complexity. These are the level of variability of political parties ideological appeals (VPIA) and clarity of responsibility. Of course, neither of these two elements alone or together capture all the existent complexity of a national political arena of any polity, and neither do they constitute an exhaustive list of all possible elements. However, given the definition of context complexity they do capture essential aspects of this concept.³ A precise definition of these two concepts will allow to see this point.

1. *Variability of political parties ideological appeals (VPIA)*: through this concept I seek to capture the degree of variability of political parties ideological appeals to the electorate. The underling assumption is that as the degree of variability increases -possibly due to higher levels of intra-party competition, conflict among factions, advertisements

³Moreover, given several methodological constraints -which I detail later- a strong emphasis to capture only key aspects of contextual complexity is not only motivated by theoretical parsimony, but also by statistical modeling demands. With VPIA and Clarity of Responsibility alone -in addition to a few important control variables-, the computational demands become intense. All this will be detailed in section 4.

strategies or whatever motive-, citizens will be exposed to a more complicated environment because the set of messages expressed by political parties will be -arguably- more divergent, heterogeneous and ambiguous. Moreover, in political arenas where parties mobilization and electoral strategies suffers from increasing levels of divergence, the informative value of the traits of the parties -such as their labels, ideological positions, nexus between them and other social groups- will be lower.

2. *Clarity of Responsibility* (Huber & Powell, 1994; Powell & Whitten, 1993; Powell, 2000): Although developed originally for purposes of understanding the prevalence of economic voting, this concept is extremely useful for current purposes. It characterizes the institutional setting of a polity in terms of the extent it enables citizens to identify who is responsible of public policy. Under institutional designs with high levels of clarity, elections provide the winner concentrated power to make policy, and a minor role for political oppositions, and as the incumbents normally enjoy clear majorities, voters can more easily evaluate the outcomes of office. Instead, in systems with low levels of clarity, political actors normally engage in post-election bargaining and form governmental collations with multiple parties. Under this scenario, it will not be as evident for citizens who of the collective group is responsible of public policy. In light of contextual complexity, one can argue that the degree to which citizens can identify the different political actors, their preferences and their political record will be closely related to the degree of clarity of the institutional environment of the polity.

If these two factors indeed affect the type of information about political issues that voters have available they should affect as well the average number of political responses an individual provides to a set of survey items. Political settings where parties messages and appeals -among each party- are rather coherent and convergent will provide clear referential points for voters to build their own judgments. Not only partisans of each of these parties will be benefited by the level of clarity, but the effect will spill-over to non-partisans who will also have these clearly identifiable party positions as referential points to construct their own positions on any sort of issues. The similar logic applies to environments with higher levels of clarity. In political setting where current and past actions of parties in government are easy to trace,

as well as their preferences and policies, individuals have accessible information that can be processed easily. This should also have an effect of increasing the average amount of opinions held by individuals.

But the effect of these two factors should not only be limited to the average opinion holding rate. On the contrary, contextual complexity should also condition the effect that political awareness has over individuals' opinion holding rate. As contextual complexity increases (operationally either VPIA increases and/or clarity of responsibility decreases), political interest and formal cognitive skills (education level) are expected to exercise an increasing effect over individuals' opinion holding rate. The reason is that in a simpler environment individuals' personal experience and skills will become less important to overcome the costs required to understand the political world since those costs will be lower.

And third, contextual complexity is also expected to affect the effect of ideology over opinion holding rates. In a similar fashion to the case of political awareness, the "boosting" effect of dispositions should also decrease as individuals are located in a less complex political environment. Since information will become simpler and easy-to-process the comparative advantage of having a cognitive filter to process information will be lower.

2.3 Hypothesis

To sum up, I will evaluate the following hypothesis:

Hypothesis 1 : As the political environment becomes increasingly complex [that is, as clarity of responsibility decreases and VPIA increases], the average number of expressed political opinions will decrease.

Hypothesis 2 : As the political environment becomes increasingly complex [that is, as clarity of responsibility decreases and VPIA increases], the effect of political interest and formal cognitive skills (education level) over the number of expressed political opinions will increase.

Hypothesis 3 : As the political environment becomes increasingly complex [that is, as clarity of responsibility decreases and VPIA increases], the effect of identifying with the left-right ideological scale over the number of expressed political opinions will increase.

3 Data and Measurement

To address these questions my empirical analysis will center on the comparative analysis of large N cross-national survey data, with a special focus on the World Values Survey. Such data provide access to methodologically comparable opinions and attitudes of thousands of individuals located across extremely diverse political settings. By maximizing the diversity of political settings I attempt to maximize as well the observable levels on contextual complexity. I complement the individual level data with an ample set of system level information about the political parties, electoral competition and design, and institutionally of the countries included in this project. Of all of four waves done by the WVS, this paper reports results from the third wave that was applied between 1994-1999.⁴

One important feature of this study is that it focuses exclusively in countries with functionally democratic systems. Indeed, the theory developed here applies only to political realities in which competitive electoral politics (or at least semi-competitive) is the rule of the game (Przeworski, 1991). In other words, I require that all included countries have at least partially institutionalized party systems with political parties seeking electoral support through mass level mobilization (Mainwaring & Scully, 1995). With this sample criteria, I can rule out those countries where individuals cannot socialize political objects because these simply don't exist, or where the output of the opinion formation process is distorted by political threats and fears. In operational terms this implies including in the analysis only countries with a polity score (during the year of the survey) equal or bigger than four. This restriction, in addition to some missing data issues, leaves a sample of 32 countries in the analysis.

3.0.1 Individual Level Variables

The key individual-level variables are measured using survey items from the World Values Survey. The details for each of these variables are:

Opinion Holding Rate : Defined as the amount of political opinions an individual has, this variable is measured by the sum of effective responses to survey questions with explicit political content. A score of 1 is given each time a respondent answered a question

⁴Of the countries in this study 80% of them were applied between 1995 and 1997.

with one of the available survey pre-coded responses, and 0 each time they did not respond or answered “Don’t know”. Importantly the measure includes questions from a diverse set of subjects and issue, decreasing the chance that results might be thrown by idiosyncratic features of the polity in which individuals live. The list of themes accounted by all the questions is:

- Environment, Nature & TK issues (3 variable)
- Gender-work issues (1 variable)
- Social groups (1 variable)
- Post-materialism measures (4 variables)
- Traditionalism (4 variables)
- Inequality and welfare (5 variables)
- Confidence in institutions (4 variables)
- Evaluation of political actors (1 variable)
- Justification of non-ethical behavior (1 variable)
- Moral Issues (1 variable)

Engagement with Politics Index : I construct an additive index of engagement in politics that is composed by three variables: interest in politics, frequency of discussion about politics and a subjective assessment of how important is politics to the respondent. For the sample of 32 countries include in the analysis a relatively high level of reliability is obtained ($\alpha = 0.72$).

Political Dispositions : as mentioned above I employ the Left Right self identification scale. It might be argued that the applicability of this disposition is not equal for all countries in the analysis. While in some countries it may capture some aspects of political conflict in other polities it significance refers to other aspects. While this seems quiet reasonable, it does not affect this study given that I do not use the scale to capture ideological positions, but only as a dummy variable indicating whether respondents locate themselves on the scale or not. Moreover, as detailed later, I will treat the effect as a random parameter -so each country has it’s own estimate- subject to the influence of aggregate properties of the polity. However, it is worth noticing also that some scholars argue that the cross-national variable content of the scale should not affect cross-national research since the focus of the analysis is on its heuristic value, which may

not necessarily be related to its content (Dalton et al., 2008). Some authors even argue that under this logic, the left-right scale can be assumed to be applicable universally (Duch et al., 2008).

3.0.2 Macro Level Variables

At the aggregate level, the key variables to be included in the analysis are:

Variability of political parties ideological appeals (VPIA) : this variable is captured by using expert ratings of political parties location on the left-right ideological scale. By considering the variability of expert ratings for each political party one can measure the degree of heterogeneity in the perception associated to each political party. If one assumes that the accuracy of expert rating is independent of the country of the expert, then the degree of variability of their assessment is due to the variability of the ideological appeals of political parties themselves.⁵ Under this assumption, a higher level of heterogeneity reflects a higher degree of divergence or ambiguity in the preferences of the parties. Instead, parties who's ratings across different judges converge towards some common point indicate a high level of cohesiveness. This measure was captured for parties separately, but can be aggregated into a country level measure as well. This is what I do here. For each country I calculate:

$$VPIA_k = \sum_j \frac{\sum_i \left(\frac{[P_{ijk} - \bar{P}_{jk}]^2}{n_{ij} - 1} \right)}{n_j}$$

where P_{ijk} is the ideological location of party j as rated by expert i from country k . Thus, this equation simply expresses the country average of the standard deviation of each party location of the left right scale. The higher $VPIA_j$ is, the higher the average variability of the ideological appeal of parties from country j . For the empirical analysis I use the Huber-Inglehart data (Huber & Inglehart, 1995). This was measured in 1993 -that is, two years before the third wave of the WVS surveys went to field- and includes 42 countries. In total, there around 24 countries that overlapped between the survey

⁵Fortunately, there is some evidence that the level of accuracy of expert rating is indeed independent of the country of the expert. NOTE

expert data and the third wave of the WVS, and that also accomplished the polity score ≥ 4 requirement. Given the severe reduction in the number of available countries, I used multiple imputation to complete the missing cases for this variable. With the technique 8 countries were added to the analysis. For details of the imputation model and the employed procedure see the Appendix A.

Clarity of Responsibility (CofR) : In this article CofR is captured through three components: a) Executive control of relevant legislative houses (both lower and upper house if polity is bicameral and only lower if unicameral); b) Logarithm of the number of years incumbent party has been in office, with two important exceptions: i) if coalition government the measure refers to the party holding the executive position, and ii) if the executive office holder is an independent the measures captures the number of years this individual has been in office; and c) A dummy variable indicating whether there is a single party government or not. By definition, all these three measures should increase the level of clarity of responsibility. While components (a) and (c) concentrate power in less actors, components (b) increases the information citizens have about the incumbent party. Scores for this variables are extracted through factor analysis.⁶

In addition to these variables the empirical models also include Gross Domestic Product per capita (with adjustment of purchasing power parity). It is important to notice that this variable is not included only as a control variable, but it actually accounts for an important alternative, the “cognitive mobilization” hypothesis (Dalton, 1984; Inglehart, 1990; Dalton, 2005). According to this perspective, societies that have gone through extended periods of socio-economic growth experience several structural changes. Among these, a very relevant one is the eventual dealignment of the party system respect to its traditional base of conflict coupled with a progressive loss of political parties orientation function over the electorate. It is argued that rising educational rates across the population allow voters a higher level of independence from political parties since they will be increasingly able to process political information without the assistance of political heuristics provided by parties. While the

⁶The results of the factor analysis are: a) Factor Loadings: i) Executive control (0.40), ii) Log Number of Year Incumbent Party (0.438), and iii) Single Party Government (0.84); b) Proportion of explained variance: 35%.

theory being proposed here is not incompatible with cognitive mobilization hypothesis is does have some contradictory predictions. In opposition to cognitive mobilization, I argue that even controlling for level of economic development of a polity, special properties of the party system, specifically VPIA, should have systematic consequences over individual level political cognition.

4 Estimation and Results

4.1 Model Specification

To test Hypothesis 1 through 3, I estimate hierarchical linear models that have the following general structure:

$$Y_{ij} = \beta_{0j} + \beta_{1j}D_{ij} + \beta_{2j}E_{ij} + \beta_{3j}P_{ij} + \sum_{z=4}^Z \beta_{zj}X_{zij}^c + \epsilon_{ij} \quad (1)$$

where Y_{ij} represents the number of expressed political opinions of individual i from country j , D is a dummy variable indicating weather the respondent mentioned a position on the left-right scale, E and P are the political awareness proxies (education level and the political engagement index, respectively) and X_z^c represents a series of socio-demographic control variables. Among the control variables I include gender, age, age squared, a dummy variable for unemployment and a dummy variable indicating whether the respondent has a party preference (measured through a vote intention question).

Simultaneously, the parameters β_{0j} , β_{1j} , β_{2j} and β_{3j} will be treated as random variables. All four parameters will have three predictors:

$$\beta_{ij} = \gamma_{ij} + \gamma_{ij}VPIA_j + \gamma_{ij}CofR_j + \gamma_{ij}Log(GDP \text{ per capita}_j) + \mu_{ij} \quad (2)$$

for $i = 0, 1, 2, 3$. On the basis of this notation hypothesis 1, 2 and 3 can be restated as:

Hypothesis 1 :

1. As VPIA increases, $\beta_{0j} \rightarrow 0$.
2. As CofR increases, $\beta_{0j} \rightarrow 0$.

Hypothesis 2 :

1. As VPIA decreases, $\beta_{2j} \rightarrow 0$ and $\beta_{3j} \rightarrow 0$.
2. As CofR increases, $\beta_{2j} \rightarrow 0$ and $\beta_{3j} \rightarrow 0$.

Hypothesis 3 :

1. As VPIA decreases, $\beta_{1j} \rightarrow 0$.
2. As CofR increases, $\beta_{1j} \rightarrow 0$.

4.2 Exploratory Data Analysis

Given the large amount of data it might be appropriate to have a sense of how the main variable in this study distribute. For this I estimated a simple OLS regression with the number of expressed opinions as the dependent variable, and with gender, age, education, political engagement and ideological identification as independent variables for each country separately. Results are plotted in Figure 1. Panel A shows the histogram of the opinion holding rates, and panel b, c and d shows the slopes of the engagement in politics index, educational level and ideological identification variables. All ordinal and continuous variables were mean centered.

Several patterns are worth mentioning. In first place, the overall level of response to the 25 survey questions is very high. The intercept mean across the 32 countries is 22.8 and the standard deviation is 1.00. Dividing the sample by countries also confirms that the level of viability of the country intercept seems important (but not tremendous). While the lowest country intercept was 20.01, the highest level was 24.3, that is, between the countries with the lowest and highest response rates we found a difference of 4 more answered survey questions.

The other variables appear to show a larger level of variability. The country mean coefficient of the political engagement variable is 0.39 with a standard deviation of 0.29 and with a broad range of 0.02 and 1.41 between the country with the lowest and highest estimate. Very similar situation applies to the education parameter with a mean of .10, with an even larger standard deviation of 0.11 and a range of -0.03 and 0.55, and also to the ideology identification parameter with a country mean of 1.52 with standard deviation of 0.65 and range of 0.55 and 2.99.

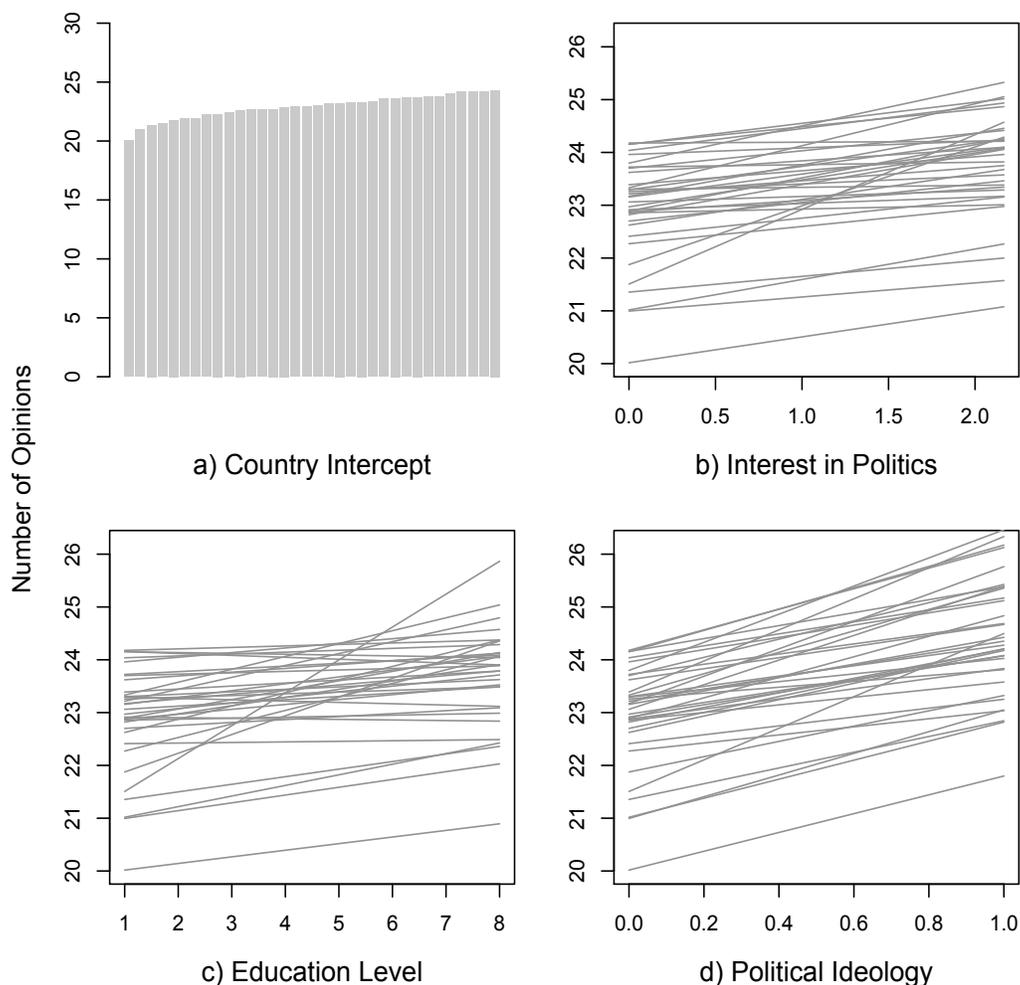


Figure 1: a) Histogram of Opinion Holding Rate, Relationship between Opinion Holding Rate and b) Interest in Politics, c) Education level and d) Ideological identification.

4.3 Results Hierarchical Models

Results of the empirical models are shown in Table 1. As in the exploratory data analysis, all independent ordinal and continuous variables are mean centered.⁷ Three alternative models were estimated. The first is an intercept-only model in which only the constant varies randomly. Model 2 turns random the education, political engagement index and ideological identification parameters as well, and also adds cross-level predictors. Model 3 collapses education and the political index variables into one single index which I call awareness and

⁷Summary statistics of all independent variables are available in Appendix B.

adds an interaction between this last variable and ideological identification.⁸ The interaction between awareness and ideological identification is also allowed to vary randomly across countries.

Before focusing on the variables related to the hypothesis of the study it is worth mentioning other relevant results. Among these there is a strong positive effect of being male, as well as a strong quadratic effect of age. Although this could vary by country -which I do not test here-, the overall pattern is to see a negative increase -that become more accentuated- in the opinion holding rate with the rise of age. Results from the three models are highly significant for these three variables (gender, age and age squared). Also, as expected, the effect of education, political engagement and ideological identification is strong and positive. This effect is significant across all three alternative model specifications for the three variables.

Now in terms of the hypothesis of the study, Model 1 presents a first chance to evaluate hypothesis 1 under somewhat less restrictive conditions. The results indicate a significant and negative effect for VPIA, which implies that as parties ideological appeals become more variable the average number of expressed opinions decreases. The effect of GDP per capita and CofR has in both cases has the correct sign, but is only close to significant in the first case (p-value = 0.12). In models 2 and 3, the estimates of these variables correspond to having all continuous and ordinal variables set to their mean and all dummy variables are set to zero (that is, non identifiers for ideological identification). At this level, the magnitude of the effect of VPIA is very similar, though it's standard error grows. The inverse situation is observed for the CofR variable, where as in model 1 it's effect was positive but non-significant, it becomes significant in models 2 and 3 (p-values 0.06 and 0.04 respectively). Similarly the effect of GDP per capita is also positive, which is in accordance with the cognitive mobilization hypothesis. This is important since the expected patterns from contextual complexity hold even when controlling for cognitive mobilization effects.

Among the interactive coefficients of model 2 and 3 there are also several of relevant results. In terms of VPIA, both interactions with political engagement in model 2 and with awareness in model 3 result in negative and marginally significant results (p-values 0.07 and

⁸Given the addition of this individual level interactive term I merged education and the political engagement index to avoid a high level of multicollinearity.

Table 1: Hierarchical Linear Models of Opinion Holding Rates

	Model I		Model II		Model III	
	Coef.	SE	Coef.	SE	Coef.	SE
Intercept	20.71	0.86	19.95	1.36	21.32	1.43
Gender (male)	0.29	0.02	0.26	0.02	0.25	0.02
Age	-0.01	0.00	-0.01	0.00	-0.00	0.00
Age ²	-0.00	0.00	-0.00	0.00	-0.00	0.00
Unemployed	0.05	0.03	0.00	0.03	-0.01	0.03
Education	0.14	0.00	0.67	0.20		
Pol. Eng.	0.32	0.02	0.92	0.51		
Awareness					15.51	4.36
Party Preference	0.65	0.02	0.69	0.02	0.66	0.02
Ideology	1.54	0.02	3.30	1.08	2.09	1.17
VPIA	-0.38	0.18	-0.37	0.28	-0.33	0.28
Log Gdp	0.14	0.09	0.25	0.15	0.14	0.15
CofR	0.16	0.12	0.37	0.20	0.40	0.20
Ideology×Awareness					-14.96	4.46
Education×VPIA			0.05	0.04		
Education×Log Gdp			-0.06	0.02		
Education×CofR			-0.02	0.02		
Pol. Eng.×VPIA			0.17	0.09		
Pol. Eng.×Log Gdp			-0.07	0.05		
Pol. Eng.×CofR			-0.02	0.06		
Ideology×VPIA			-0.09	0.20	-0.10	0.21
Ideology×Log Gdp			-0.21	0.12	-0.12	0.13
Ideology×CofR			-0.23	0.14	-0.25	0.14
Awareness×VPIA					1.50	0.81
Awareness×Log Gdp					-1.22	0.48
Awareness×CofR					0.31	0.56
Ideology×Awareness×VPIA					-1.07	0.64
Ideology×Awareness×Log Gdp					0.92	0.39
Ideology×Awareness×CofR					-0.41	0.45
N cases	69312		69312		69312	
N countries	32		32		32	
$\sigma^2_{Residual}$	4.29		4.18		4.18	
$\sigma^2_{Intercept}$	0.25		0.61		0.60	
σ^2_{Educa}	-		0.01		-	
$\sigma^2_{Pol. Eng.}$	-		0.06		-	
σ^2_{Ideo}	-		0.26		0.28	
σ^2_{Aware}	-		-		2.11	
$\sigma^2_{Aware \times Ideo}$	-		-		2.44	

0.06, respectively). This empirical pattern is consistent with hypothesis 2 since the negative interaction between these variables indicates that the effect of political engagement or general

political awareness over opinion holding rates decreases as the parties appeals become more variable. In other words, individuals' level of engagement -or more broadly their level of awareness about politics- has progressively less effect over the amount of opinions they hold in less complex political environments. While this effect was noticeable in model 2 between VPIA and political engagement and in model 3 with awareness, the interaction $VPIA \times Education$ has the correct sign in model 2 but remains far from significant. This might be due to multicollinearity since once GDP per capita is dropped from the model the interaction becomes significant.

CofR also shows some important interactive results. In model 2 it has only one close to significant interactive effect, that of $Ideology \times CofR$ (p-value = .10), and in model 3 the equivalent interaction has a slightly larger estimate with the same standard error. The negative sign of both interactions indicates that as clarity of responsibility increases in a polity, voters ideological identification will have a lower effect over the opinion holding rates. This result is entirely consistent with hypothesis 3. In model 2 the interaction between $Ideology \times Log Gdp$ also denotes a strong negative relationship.

Model 3 also has some specific results important to mention. In addition to all the cross-level interactions included in model 2, it adds an extra interaction between ideology and awareness, as well as triple interactions between ideology and awareness and each of the included macro level variables. First thing to notice is that the interaction between ideology and awareness is highly significant and negative. At first this would seem to indicate that the effect of awareness decreases among individuals that locate themselves on the left-right scale. However, this is not the case. To completely understand the dynamic associated with this negative effect one must consider a) that it's coefficient estimate is smaller than the awareness coefficient, and b) that awareness is mean centered so values lower than the mean are negative. Then, the predicted number of responses for an individual with highest level of awareness, ideology = 1 and that comes from an average country would be: $\gamma_{00} + 14.96 \times max(awareness) + 2.09 - 11.41 \times max(awareness) = 21.32 + 4.03 = 25.35$, while the same estimate from an individual with ideology=0 and with the lowest level of awareness is equal to: $\gamma_{00} + 14.96 \times min(awareness) + 2.09 \times 0 - 11.41 \times 0 = 21.32 - 7.03 = 14.28$. What this negative interaction is actually implying is that the absence of both a high level

of awareness plus of ideological identification decreases dramatically the level of expressed opinions. Instead, having both elements does not get an individual to far away from the expected number of opinions associated to just having one of these traits.

Lastly, among the macro level predictors for this interaction there are two significant results. The interaction $Ideology \times Awareness \times LogGdp$ has a strong positive effect, while the $Ideology \times Awareness \times VPIA$ that has a marginally significant effect (p-value 0.09). This last result was not specified in the hypothesis of the study but it is completely consistent with the logic of contextual complexity. The negative coefficient indicates that as VPIA increases, then the negative interaction $Ideology \times Awareness$ accentuates. In other words, as VPIA increases, the differential opinion holding rate between individuals with ideology=0 and low awareness level compared to individuals with ideology=1 and high awareness becomes even more pronounced.

In sum, there is a good amount of empirical information that supports the notion that increasing environmental complexity reduces opinion holding rates, as well as it increases the effect of political awareness and disposition variables. The performance of the two key macro level variables -VPIA and CofR- is relatively good. Of course, they do not have significant effects for all possible targets (i.e. $VPIA \times education$, $CofR \times politicalengagement$), but they sure have several significant effects that are entirely consistent with hypothesis 1, 2 and 3. In this sense, it seems relatively fare to state that they have a persuasive effect over individuals' propensity to form political opinions.

5 Conclusions

This paper has intended to identify some specific conditions that increases the likelihood individuals' will have opinions about political issues. The main argument is that the opinion formation process is an joint interactive process between individuals' dispositions, their level of political awareness, and the complexity of the political environment in which they are located. This feature was captured though the degree of variability of parties ideological appeals and the level of clarity of responsibility of the institutional framework of a polity. It has been argued that as the political environment becomes progressively complex -parties ideological

appeals become more variable and the institutional framework becomes less clear- it will contain less accessible and easy-to-process political information, and thus it will increase the effort voters have to make to form their opinions about political issues. Further, by modifying the accessibility and easiness of available political information, the political environment was also expected to moderate the effect that political awareness has on individuals opinion holding rates. To test these hypothesis linear hierarchical models with cross-national survey data were estimated. Results tended to provided a good amount of solid support for the expected behavioral patterned deduced from the model.

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Appendix A: Multiple Imputation of VPIA

As mentioned in the text the Huber-Ingelhart data on party locations is not available for all countries considered in third wave of the World Values Survey. In order to increase the number of countries in the sample, and thus, the level of macro-level variability, I imputed this variable for 8 countries for which data was available on a set of variables related to the Variability of Political Parties Ideological Appeals. These variables are: Electoral Variability, Number of Parties in Government and the Gallagher Least Squares Index of Disproportionality. Results of the imputation model are below (see table 2). The three mentioned variables have a relatively strong effect on the observed level of VPIA. The regression model included 28 observations (countries) and a R^2 of 0.57. Using this model I imputed eight observations, that is, $8/(8+28)=22\%$ of the sample. Among the recuperated countries are Albania, Croatia, Latvia, Macedonia, Moldova, Peru, Slovenia and Uruguay.

Table 2: OLS Model of Average Ideological Party Variance

	Estimate	Std. Error	t value	Pr(> t)
Intercept	0.4538	0.1884	2.41	0.0241
Volatility	0.0102	0.0054	1.89	0.0707
Number of Parties in Government	0.1354	0.0373	3.63	0.0013
Disproportionality	0.0141	0.0208	0.68	0.5054
σ		0.39		
R^2		0.57		
N cases		28		

To impute these values I used the following procedure (for further details see Allison (2002)):

1. Regress Y on X covariates for the n_1 cases of observed data. Extract the $\hat{\beta}$ vector of coefficients and the residual variance estimate $\hat{\sigma}^2$.
2. Randomly draw m times $\tilde{\sigma}_{[i]}^2$ from it's posterior distribution (assuming uniform prior) $(n_1 - k)\hat{\sigma}^2/\chi^2$, with scale parameter $\hat{\sigma}^2$ and k equals the available degrees of freedom in the imputation model.
3. Randomly draw m times $\tilde{\beta}_{[i]}$ from a multivariate normal distribution with mean $\hat{\beta}$ and

covariance $\tilde{\sigma}_{[i]}^2(X'X)^{-1}$, where m is the desired number of complete data sets. Take each vector $\tilde{\beta}_{[i]}$ and calculate m predicted values $\hat{Y}_{[i]}$ for all cases.

4. Add random error to each $\hat{Y}_{[i]}$ by calculating: $\tilde{Y}_{[i]} = \hat{Y}_{[i]} + \mu_i$, where μ_i is a random draw from $N \sim (0, \tilde{\sigma}_{[i]}^2)$
5. Finally, if Y was not observed replace missing cell with $\tilde{Y}_{[i]}$, creating m complete data sets.

Results reported in Table 1 are calculated using all $m = 5$. Parameter estimates are the averages of the m coefficients vectors and standard errors are computed following Rubin (1987).

Appendix B: Summary Statistics of Independent Variables

	Mean	Std. deviation	Min	Max
Gender	0.48	0.50	0.00	1.00
Age (Mean centered)	-0.00	15.81	-25.86	54.14
Unemployed	0.09	0.28	0.00	1.00
Education (Mean centered)	0.00	2.28	-3.48	3.52
Party Preference	0.76	0.43	0.00	1.00
Ideological Self Id	0.73	0.44	0.00	1.00
Engagement in Politics (Mean centered)	0.00	0.56	-0.93	1.24
Awareness (Mean centered)	0.00	0.23	-0.47	0.53
VPIA (Mean centered)	-0.00	0.51	-0.74	1.60
Log(GDP per Capita)	8.94	0.96	6.67	10.58
CoR (Mean centered)	0.00	0.75	-1.07	2.02