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Mapping the complexity of political ideology using emergent networks: the Chilean case

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Abstract

We propose a method to characterize political ideology using network theory. Our analysis is based on the 2015–2016 Chilean constituent process, where self-convened meetings were held throughout the country to discuss which Values, Rights, Duties, and Institutions should be included in the new constitution. Using this unique dataset, co-occurrence networks were constructed by considering the concepts selected in different meetings. The nodes are the concepts, and a link between two nodes represents the association between them. Political ideology is thus analyzed as an emergent network, and we can identify the main ideological communities in Chile and describe their characteristics. Beyond the local results, the proposed methodology enables representing the diversity of a community's political orientations in a realistic ecological context.

Keywords: Political ideology, Latin american politics, Networks

Introduction

The study of networks is increasingly influential in political science; topics of interest in the literature range from political participation, the study of electoral campaigns and the organization of public protests to the processes of political coalition formation, the relationships among Congressmen, and the cosponsorship of bills in Congress (for some general reviews in this area, see Brito et al. 2020; Faustino et al. 2019; Huckfeldt 2009; Siegel 2011; Ward et al. 2011). Nevertheless, these methods still offer new possibilities. In this paper, we are interested in the study of political ideology based on network analysis methodologies.

While most network-based political analyses are based on survey data, where the nodes correspond to individuals or political parties, that is not the only way to examine these issues. The Chilean constituent process of 2015–2016 offers an extraordinary source of information for examining the political positioning of citizens in four dimensions: Values, Rights, Duties, and Institutions (MINSEGPRES 2018). This process had different levels of citizen participation, including an individual consultation and different levels of group participation. The first group stage consisted of self-convened local meetings (ELAs, for its Spanish acronym), and this is the level we will focus on here. Focusing

on the concepts chosen by citizens/voters in each of the aforementioned dimensions, we can build a network based on the links between concepts, which allows us to detect specific communities and examine the centrality of some concepts and the associations between them. In this way, we can offer an illuminating overview of the structure of ideology in the country, where we view ideology as the mental models that allow agents to interpret the world around them; the preferences agents have over values, rights and duties clearly fit into this framework.

Our work complements the literature on political ideology in Chile in two respects: from the point of view of the methodology used and in terms of the data considered. In the Chilean (and Latin American comparative) literature, we find different types of studies, mainly based on surveys or public opinion research. They include descriptive analyses focused on political parties (Alcántara and Rivas 2007; Colomer and Escatel 2005), studies with a focus on sociodemographic differences among voters (Maureira 2008), and works based on latent preference models (Bonilla and Silva 2008; Lindh et al. 2019).¹ These studies allow us to delve into different attributes of political ideology in Chile, but without exploring its fundamental organization and, when they do, impose a specific structure on the data. The method we propose does not impose such structure and instead lets the ideological communities emerge from the association of concepts. Given the complexity of the study of political ideology, the possibility of studying (and visualizing) an emergent network is an important result. Another advantage of the methodology we use is that our networks do not directly consider the popularity of the concepts but the relative frequency of co-occurrence between them. This enables the identification of underrepresented groups that are organized to participate. That said, the structure of the network will depend on the specific characteristics of the constituent process we consider. The way in which preference revelation processes are framed plays an important role in the result that emerges from them (see, for example, Riker 1982; Shepsle 2018).

Regarding the data, although previous works on political ideology in Chile allow us to examine trends over time, they do not have the level of information available in the data collected from the constituent process, particularly in terms of the dimensions considered (MINSEGPRES 2018). At this point, it is important to recall the context of citizen participation in the Chilean constituent process—to gather material for drafting a new constitution—and the potential participation bias in this process, which has been examined by Raveau et al. (2020). The constituent process was marked by an important degree of ambiguity regarding the ultimate purpose of the work being carried out (Fuentes 2016), but to the extent that there were incentives for a truthful revelation of preferences, a network methodology allows us to identify the main ideological communities existing in Chile. Moreover, our analysis allows us to identify some groups that organized themselves to participate in this process, which is a topic that has been examined in previous studies (Fuentes 2016). Uncovering the “structural complexity” of political ideology is not a simple task, and it is important to make the analysis manageable. In this sense, we study the networks for Values, Rights, and Duties separately. Regarding the dimension of Institutions, political ideology is mixed with other factors, including

¹ Studies based on political manifestos and programs, such as those of Gamboa et al. (2013) and Madariaga and Kaltwasser Rovira (2020), are somewhat different but also could be relevant here.

citizens' knowledge of different public institutions; we have therefore decided to leave this issue aside. In any case, and before continuing, it is important to explain that this is not a work on political psychology, nor do we analyze the determinants of ideology. We leave the exploration of the psychological characteristics of the communities we identify as an open question for further research.

Estimating ideology

Inquiring into the structure of political ideology in Chile presupposes accepting that such ideology can be “structured” or that it presents a certain organization. The methods used in political science since the middle of the last century have sought to unveil this structure and thus far have done so either by assuming that there is a single predominant dimension (e.g., a left–right or liberal–conservative axis) or by suggesting a two-dimensional structure. The first known work to propose a two-dimensional system for political ideology is that of Eysenck (2018), in his 1954 book, *The Psychology of Politics*. In it, he seeks to extend the work by Adorno et al. (1950) on the factors behind fascism by proposing a two-dimensional structure for the existence of authoritarian and democratic systems on the right and left, respectively. In this way, social attitudes are organized along two axes, one in terms of left/right (radical/conservative) and the other of authoritarianism/democracy (tough-mindedness/tender-mindedness). Along the same lines as Eysenck, Rokeach (1973) proposed a model that explained the four major ideologies of the 20th century—socialism, communism, fascism, and capitalism—in the two dimensions of freedom and equality.

Although the previous works may no longer be relevant today, it is important to note that they propose a system of two independent (orthogonal) dimensions based on an explanatory theory. After estimating these models, one can evaluate whether the dimensions found are independent and whether they explain the observed variability in ideology. Later, along with the emergence of the spatial theory of voting (Enelow and Hinich 1984), which is widely used in analytical political science, dimensional reduction methods appeared. These techniques seek to express the joint variability of multiple variables in a smaller number of unobserved variables.

The best-known methods in this line include the work by Poole (1998) on the basic space method and the Cahoon–Hinich methodology (Cahoon et al. 1978). In the Cahoon–Hinich model, voter–candidate closeness is represented as a Euclidean distance between the ideal points of voters and candidates in a multidimensional space. This method assumes that the latent variables being searched are uncorrelated, which ultimately leads to the fact that the variance–covariance matrix of the utility can be decomposed using the singular value decomposition.² In contrast, Poole's basic space method directly analyzes any data matrix with missing values to estimate latent variables from observed variables. Although it is inspired by positive political theory, it is a technique that can be used in any setting, as long as the matrix contains real numbers.³ In this

² For elaborations of this model, see Hinich and Munger (1996).

³ In its political application, this method assumes that people have a set of beliefs that explain their political opinions and that respondents evaluate a political actor/issue based on how close they feel to them. Thus, a respondent's evaluation of a political actor/issue is a linear combination of their ideology and stochastic error.

sense, although both methods use the same type of data, they represent two different approaches to ideology estimation.

On the other hand, even though both methods ensure orthogonal latent variables (unlike Eysenck and Rokeach), in the Cahoon–Hinich and Poole methods, the reduced variables do not have a direct meaning or interpretation; thus, these must be searched for later. Bonilla and Silva (2008) used the Cahoon–Hinich methodology with data from the 2003 Chilean presidential candidates. In this case, the first two dimensions explained 90% of the variance, where the first dimension corresponded to the left/right axis while the second was interpreted as the candidate’s ability to change the status quo. In an analogous study of candidates in 2008, the first dimension explained 82% of the variance; the second dimension was unintelligible (Bonilla et al. 2011).

Methods based on the spatial theory of voting also have been used for the ideological positioning of members of Congress through their votes in legislative projects (“roll call”). Perhaps the best-known work in this field is that of Poole and Rosenthal (1985), with the NOMINATE method (for nominal three-step estimation) and its subsequent variations D-NOMINATE, W-NOMINATE, and DW-NOMINATE. Other relevant works are those of Heckman and Snyder (1997), Clinton et al. (2004) and Londregan (1999). Even though they share a similar methodology, nominal voting models are not our main interest in this study, and therefore, we will not delve into this topic.

The aforementioned methods have been the standard in multidimensional political ideology estimation, mainly because of their ability to explain much of the variance in a few dimensions. However, they impose strong requirements by requiring, by construction, the orthogonality of the latent variables. On the other hand, the evaluation of political figures may not adequately represent the diversity of political ideology at a given time, especially if such diversity is not sufficiently represented in Congress or in political actors.

As we will see, the method we use in this study differs in several respects from previous methods for estimating ideology. We use the prioritization of concepts in the ELAs as an indicator of ideological positioning. Unlike factor analysis, we do not impose a restriction on the orthogonality of the dimensions but organize ideology into ideological communities that emerge from the concept association network. Like the factorial methods, these communities must be interpreted, but this is something we do directly from the texts accompanying the selected concepts. Additionally, using concepts instead of political actors allows for the greater diversity of ideas needed to map the political spectrum.

In general, studies of political positioning and political psychology work under at least two problematic assumptions. The first is that of the perfection or transparency of the subjects’ cognitive processes in the identification of their preferred alternative or even when answering a question in a given survey. In the tradition of bounded rationality, we find enough literature to question the operational assumptions with which many studies of political positioning work (Elster 1989; Gigerenzer and Selten 2002; Kahneman 2003; Simon 1990).⁴ This limitation is inherent in any human exercise. However, extracting

⁴ We can point out the following cognitive principles (Rosati 2000): (1) mental representations organized in a cognitive structure of beliefs, (2) selective memory focused on the big picture and not on details, (3) selective attention and perception, (4) causal inferences based on one’s beliefs, and (5) cognitive stability or having a stable set of beliefs over time, once formed. An example of how this can affect political positioning is the “projection hypothesis”. According to this

knowledge from statements in a realistic ecological context—such as spontaneous deliberative dialogues—avoids the framing effect, whereby the person’s decision is affected by the way the question is asked or the options are presented.

The second problematic assumption is whether the operational categories of political identification effectively represent what the subjects think of them. Studies that base political positioning on a right–left scale or on the evaluation of political figures work with a concept of political ideology that constitutes, in itself, a multiplicity of political attitudes related to democracy, social change, and trust in institutions, among other topics. In the ELAs, participants had a broad set of concepts to choose from, so we can expect less variation in the mental representations of these concepts. When working with a broad set of diverse and limited concepts, as in our case, there are more possibilities for combining these concepts, and this combination is what represents ideological positioning.⁵ Furthermore, studies based on ideological scales may show a high level of centrist respondents (Visconti 2021).

Context and data

On October 13, 2015, the president of Chile, Michelle Bachelet, started a constituent process that incorporated public discussion on constitutional issues (MINSEG-PRES 2018). The first stage of the process was the participatory stage, which took place between April 23 and August 6, 2016. In it, “citizens, social organizations, political movements and parties, academia, business and culture were invited to deliberate on constitutional issues” (Jordán et al. 2016). This stage considered four levels of participation: an individual online consultation and three instances of group participation (local, provincial, and regional). In this work, we have focused on the local group level, the self-convoked encounters (ELAs).⁶ This methodological definition involves a trade-off between the quantity of data available and the information we have. While the number of ELAs is much lower than the number of participants in the individual consultations, in the case of the ELAs, the participants had to write down a short argument to explain their concept choices, which helped us interpret the meaning of certain concepts.⁷

The self-convoked encounters (ELAs) were composed of between 10 and 30 citizens, Chileans or foreign residents, over the age of 14. The purpose of the ELAs was to deliberate on four dimensions: Values, Rights, Duties, and Institutions. To answer the questions that motivated the meetings, the organization of the ELAs prepared a reference list of constitutional concepts that was made available to each participant. This list was based on a comparative review of 16 international constitutions elaborated by the government. Individually, each participant had to choose the most relevant concepts for

Footnote 4 (continued)

hypothesis, when an individual is exposed to new information about a candidate, selective attention leads the person to pay attention to those aspects that reinforce their favorite view of the candidate.

⁵ Another way of approaching this issue is with the distinction between the “symbolic” and “operational” aspects of political ideology (Jost et al. 2009). In this terminology, self-identification on a right–left scale is part of the symbolic aspect, since “right” and “left” are abstract and general categories. The operational aspect refers to more specific and concrete issues. Evidence suggests that the two forms of ideology do not always coincide (Stimson 2015).

⁶ The data are publicly available and can be found at <http://constitucionabierta.cl/>.

⁷ From a preference aggregation perspective, the individual consultation dataset should yield more consistent results. However, given the self-convoked nature of the encounters, it is to be expected that these groups (the ELAs) were relatively homogeneous, which makes the structure of the network emerge as we see it.

each of the four questions or propose other concepts. The discussion then began, and a record was made of the seven most mentioned concepts for each question. Finally, the group classified each of the seven concepts of the four questions into the categories of agreement, partial agreement, or disagreement, also adding a brief rationale text in each case (MINSEGPRES 2016).

A total of 8113 ELAs were conducted throughout the country, with more than 100,000 participants. While there may have been a participation bias, this process was described as successful by the OECD (2017).⁸ Here, we have, then, a valuable source of information on the dimensions of Chilean political ideology that has not been sufficiently explored (Raveau et al. 2020).

Before continuing, let us note that the database we are working with was processed by Fuentes-Bravo and Martinez (2022). Among other things, these authors classified the new concepts that appeared in the encounters, which they called open concept arguments. Of the 22,015 such arguments, 10,263 were classified into one of the 114 original concepts, 3001 were considered “unclassifiable”, and the remaining 8751 were grouped into 47 new concepts.

Given our interest in the structure of the ideology itself, here we focus on only three of the four dimensions of the discussion: Values, Rights, and Duties. Let us note that there was a different list of concepts for each of the four dimensions, and that the selection of concepts was conducted on each dimension separately. Consistently, the corresponding datasets were analysed separately. Tables 1, 2 and 3, show the ELA instructions and the original list of concepts, together with the concepts added by the participants (after their classification), for each dimension. As seen, the proportion of new concepts is stable, although it grows as the number of original concepts is lower. In particular, there are 37 original concepts and 15 new ones in Values, 44 original concepts and 14 new ones in Rights, and 12 original concepts and 7 new ones in Duties. The low number of concepts proposed and classified in the dimension of Duties will limit in some ways the network analysis that we propose, and therefore the analysis regarding this point will necessarily be shorter.

Methodology

As we previously explained, each ELA resulted in a set of 7 concepts (at most) for each dimension, with a short argument or rationale text (and an agreement category) associated with each concept. The dataset we used to build the networks consists only of the selected concepts, and the texts have been used only for interpretation purposes. Since the concepts were chosen from a larger pool, the process of selection in effect reflects a prioritization of values, rights or duties.

Networks creation

For each of the four dimensions, we represent the concept map using a co-occurrence network. Each concept is a node of the network, and the links between pairs of nodes symbolize the association between the respective concepts. This association is estimated

⁸ However, it has been criticized for its limited impact in the country; see, for example, Heiss (2018).

Table 1 What should be the main VALUES and PRINCIPLES that inspire and support the Constitution? Choose up to seven topics among the list below or suggest others

<i>Original concepts</i>		
Civic friendship	Secular state	Autonomy/freedom
Multiculturalism	Common good/community	Participation
Citizenship	Patriotism	Democracy
Development	Pluralism	Decentralization
Multinationalism	Dignity	Probity
Diversity	Republic	Free entrepreneurship
Respect	Gender equity	Responsibility
Security	Rule of law	Sovereignty
Cultural identity	Solidarity	Equality
Subsidiarity	Inclusion	Tolerance
Innovation/creativity	Transparency/publicity	Integration
Environmental respect/protection		Unity
Peace/peaceful cohabitation		Justice
Others, specify		
<i>New concepts</i>		
Guarantor state	Social security	Private property
Freedom of conscience	Freedom of worship	Freedom of speech
Freedom	Social justice	Participatory democracy
Human rights	Integral development	Family
Heterosexual married families		Equity
Sustainable development		

by first calculating the coefficient ϕ , a variation of Pearson’s correlation coefficient for binary variables. This coefficient was designed to compare dichotomous distributions, which in this case respond to the choice or not of a concept in the ELAs. For example, for the pair of values *Democracy* and *Justice*, the ϕ coefficient is obtained from the following table (Read and Vidakovic 2006):

Justice	Democracy	
	Yes	No
Yes	a	b
No	c	d

where a, b, c, d are the frequencies of observation; that is, a is the number of ELAs that chose both concepts, b is the number of ELAs that chose *Justice* but not *Democracy*, and so on. Then, for a pair of concepts i and j , the ϕ_{ij} coefficient is calculated as:

$$\phi_{ij} = \frac{ad - bc}{\sqrt{(a + b)(c + d)(a + c)(b + d)}} \tag{1}$$

Once the ϕ_{ij} coefficient has been calculated, its significance can be tested with a χ^2 test:

$$\chi_{ij}^2 = N\phi_{ij}^2$$

Table 2 What should be the fundamental and universal RIGHTS contained in the Constitution? Choose up to seven topics among the list below or suggest others

<i>Original concepts</i>		
Suffrage/vote	Honor/reputation	Nationality
Right of association	Election to public office	Peaceful assembly
Participation	Life	Freedom to work
Security/nonviolence	Right to work	Equality
Fair wage	Nondiscrimination	Decent housing
Equality before the law	Health care	Freedom of education
Freedom of conscience	Personal freedom	Property
Freedom of movement	Freedom of expression	Education
Gender equity	Right to strike	Social security
Privacy and intimacy	Access to culture	Cultural identity
Right to information	Indigenous people	Taxequality
Request before the authorities	Right to organize and to collective bargaining	Equality in relation to public burdens
Mental and physical integrity	Access to justice/due process	Children and teenager's rights
Integration of disabled people	Environmental respect/protection	Judicial protection of individual rights
Free economic initiative/free enterprise	Access to public information	Others, specify
<i>New concepts</i>		
Standard of living	Freedom of worship	Right to water
Human rights	Social rights	Animal rights
Cultural identity of indigenous people	Right to quality public health care	Respect life from conception
Right to make one's own decisions about one's life	Freedom	Right to work and a decent wage
Freedom of information and speech	Conservation of cultural and historical heritage	

Table 3 What universal DUTIES and RESPONSIBILITIES should be established in the Constitution? Choose up to seven topics among the list below or suggest others

<i>Original concepts</i>	
Protection and conservation of cultural and historical heritage	
Compliance with treaties and international commitments	
Protection, promotion and respect of human and fundamental rights	
Respect for the Constitution	Responsibility
Respect for other's rights	Tax compliance
Lawful exercise of rights	Community service
Fulfill public charges	Compliance with laws
Conservation and natural-protection duties	Others, specify
<i>New concepts:</i>	
Protection of private property	Suffrage/vote
Probity and transparency	Citizen participation
Respect and nondiscrimination	National unity
Social and civic responsibility	

where $N = a + b + c + d$. Finally, the weight of the link between the nodes (concepts) is obtained by calculating the distance $d_{ij} = \sqrt{1 - \phi_{ij}}$. If ϕ_{ij} is positive and significant at the 95% confidence level, a link between concepts i and j is constructed, with weight $1 - d_{ij}$.

The coefficient ϕ_{ij} is a metric that adjusts for the relative abundance of concepts. That is, two concepts may have been chosen infrequently, but if they were chosen together, they will present a high and significant coefficient ϕ_{ij} . This is particularly important for us, as we do not seek to quantify the popularity of the concepts but rather the strength of the association between them.

Network analysis

First, it is convenient to clarify that we will work with weighted networks, where each link takes a continuous value between 0 and 1, which represents the strength of the association between pairs of concepts. This association arises from the co-occurrence of concepts in the same ELA. On the other hand, they are undirected networks, that is, the association between a pair of concepts is not directional. Finally, for the following analyses, the giant component of the network will be used; that is, isolated nodes (concepts that have no link to any other concept) are excluded from the network.

Distance and diameter

Let us consider a pair of nodes, the shortest path between them is referred to as a geodesic. The length of a geodesic is called geodesic distance or simply distance. The diameter of the network is the maximum distance found between all possible pairs of nodes (Wasserman and Faust 1994); it quantifies how far apart the farthest nodes in the network are. In social networks, the interpretation of the distance between nodes and the network diameter is straightforward. For example, in a weightless communication network, the geodesic distance will represent the number of intermediaries a message has to go through to get from one actor in the network to another. In our network, the interpretation is not as straightforward. Each link represents the association between two concepts that arises from the co-occurrence of those concepts in the preferences of a group of people (the participants in the ELAs). Thus, nodes that are farther apart represent concepts that are less likely to be found in the set of people's preferences; at the extreme end, we have the diameter of the network, which would represent opposite ideological poles. In this work we analyse not the diameter's value itself, but rather the nodes that make up the shortest path between the farthest nodes in the network.

Community detection

A community (or cluster) is a group of nodes in which the probability of being connected to each other is greater than the probability of being connected to nodes outside the community. Community detection is a widely discussed problem in network theory, and there are no universal definitions of what constitutes a community or when one method is better than another (Fortunato and Hric 2016). One of the most popular techniques for community detection is based on the concept of modularity. This metric was designed to quantify the strength of the division of a network into modules and measures the density of links within the community with respect to the links between communities. Thus, algorithms based on this concept seek to maximize the modularity of the partition. Among these, one of the most widely used is Louvain's method, named after the university where it was developed. Louvain's method consists of a hierarchical algorithm in which each node is initially its own community. At each iteration, each

node moves to the community where it contributes most to the modularity of the partition. This process is repeated until the modularity no longer increases, and then the first phase ends (Blondel et al. 2008). In the second phase, a new network is constructed in which the nodes are the communities found during this phase, and the links are calculated by summing the link weights of the nodes of the corresponding community. Then, the first phase is applied to this new network, and the process continues until maximum modularity is reached.

As a robustness check, we compared our results using the Louvain algorithm with other standard methods, such as Fast Greedy and Leading Eigenvector (Clauset et al. 2004; Newman 2006).

Centrality measures

Centrality measures in networks were originally intended to study how small groups communicate and organize themselves to solve problems. Many centrality measures have been proposed, but among the most common ones are (Freeman 1978): (1) node i 's degree centrality (degree) is the number of nodes that are in direct contact with i ; (2) the betweenness centrality of node i represents the frequency with which node i is on the shortest path between pairs of nodes; (3) the closeness centrality of node i measures the number of steps required (i.e., the number of nodes to go through) to go from i to any other node in the network. These centrality measures were used in their *igraph* implementation for R (Csardi and Nepusz 2006). The specific algorithms for each metric also can be found at <https://igraph.org/r/>.

These measures of centrality provide different information, and it is convenient to review their interpretation in the context of our concept networks. In this case, the degree tells how connected or associated a concept is with the other concepts in the network. Thus, a concept will have a high degree if it was frequently chosen together with other concepts, that is, it has links to many other concepts. On the other hand, the centrality of intermediation shows how key concepts connect different communities within the network. Next, a concept will have high betweenness centrality if it was frequently chosen by one ideological group as well as by another. Finally, closeness centrality tells us how central a given concept is within the network.

Results

Community detection

A particularly interesting result that emerges from our analysis concerns the distinct ideological clusters within the networks. To reiterate, these clusters represent communities of concepts in the sense that they significantly co-occur across the ELAs. Starting with the dimension of Rights, an issue of great popularity in Chile today, Table 4 shows the three clusters identified by the Louvain algorithm. In Cluster D, we see first-generation rights, that is, negative rights that emphasize political and civil liberties.⁹ Among them,

⁹ We owe the classification of rights into three generations to Vasak (1977). Although the first- and second-generation rights are included in the Declaration of Human Rights of 1948, it is in the International Covenant on Civil and Political Rights (ICCPR) and the International Covenant on Economic, Social and Cultural Rights (ICESCR) of the United Nations (1996) where they are instantiated (Domaradzki et al. 2019). The main difference between these two types of rights deals with the action of the state. In first-generation rights, the state "undertakes to respect and to ensure" those rights, while in second-generation rights, it "undertakes to take steps ... to the maximum of its available resources" to achieve them. Finally, third-generation rights are more recent and have been called collective (Domaradzki et al. 2019) or solidarity rights (Vasak 1977). They are mentioned in the declarations of Stockholm (1972) and Rio (1992) at the

Table 4 Communities by dimension

Values	
Cluster A	<i>Freedom</i> , Participation, Cultural identity, Decentralization, Inclusion, Multiculturalism, Gender equity, Environmental respect/protection, Common good/community, Secular state, <i>Participatory democracy</i> , Diversity, <i>Equity</i> , <i>Guarantor state</i> , <i>Human rights</i> , <i>Social justice</i> , <i>Sustainable development</i> , Pluralism, Multinationalism, Innovation/creativity
Cluster B	<i>Heterosexual married families</i> , <i>Freedom of conscience</i> , <i>Freedom of worship</i> , <i>Freedom of speech</i> , Citizenship, Civic friendship
Cluster C	Security, Tolerance, Responsibility, Justice, Transparency/publicity, Respect, Equality, Integration, Democracy
Cluster D	Dignity, Autonomy/freedom, Rule of law, Probity, Sovereignty, Development, Subsidiarity, Free entrepreneurship, <i>Family</i> , Republic, Unity, Patriotism, <i>Integral development</i> , Peace/peaceful cohabitation, <i>Private property</i>
Rights	
Cluster A	<i>Standard of living</i> , <i>Right to make one's own decisions about one's life</i> , <i>Freedom</i> , Honor/reputation, Cultural identity, <i>Cultural identity of indigenous people</i> , Right to information, Mental and physical integrity, Participation, <i>Conservation of cultural and historical heritage</i> , <i>Right to work and a decent wage</i> , <i>Right to quality public health care</i> , Access to public information, Access to culture, <i>Right to water</i> , Request before the authorities, <i>Human rights</i> , <i>Animal rights</i> , Equality, <i>Freedom of information and speech</i> , Judicial protection of individual rights, Environmental respect/protection, <i>Social rights</i>
Cluster C	Right to strike, Education, Integration of disabled people, Health care, Social security, Decent housing, Right to organize and to collective bargaining, Fair wage, Right to work, Indigenous people, Children and teenager's rights, Tax equality, Gender equity, Nondiscrimination
Cluster D	Nationality, Security/nonviolence, Life, <i>Respect life from conception</i> , Suffrage/vote, Property, Right of association, Equality before the law, Equality in relation to public burdens, Access to justice/due process, Freedom of movement, Freedom of conscience, <i>Freedom of worship</i> , Freedom of education, Freedom of expression, Freedom to work, Personal freedom, Free economic initiative/free enterprise, Privacy and intimacy, Peaceful assembly, Election to public office
Duties	
Cluster A	Tax compliance, Compliance with treaties and international commitments, Protection and conservation of cultural and historical heritage, Conservation and natural-protection duties, Protection, promotion and respect of human and fundamental rights, Community service
Cluster N	<i>Citizen participation</i> , <i>Respect and nondiscrimination</i> , <i>Social and civic responsibility</i> , <i>National unity</i> , <i>Probity and transparency</i> , Fulfill public charges, <i>Suffrage/vote</i>
Cluster D	Compliance with laws, <i>Protection of private property</i> , Lawful exercise of rights, Respect for others' rights, Respect for the Constitution, Responsibility

Nonoriginal concepts are shown in italic font. Cluster A: progressive left; Cluster B: evangelical community; Cluster C: traditional left; Cluster D: right-wing

we find the right to *Life* and *Security/nonviolence*, *Equality before the law*, the *Right of association*, the right to *Suffrage/vote*, and the freedoms of movement, expression, worship, work, education, entrepreneurship, conscience, and personal liberty. Therefore, we associate Cluster D with a right-wing ideology. In Cluster C, we have mainly second-generation rights, which are positive rights that promote equality and advocate the state's active participation to this end. Here, we find social and economic rights, such as the right to *Education*, *Health care*, *Decent housing*, and *Social security*. Additionally, but to a lesser extent, we find some third-generation rights, such as the rights of *Indigenous people*. This is why we associate Cluster C with the traditional left. Finally, in Cluster A, we find second-generation rights, such as *Social rights*, *Equality*, *Standard of living*, and *Right to quality public health care*, but also most of the third-generation rights, such as

Footnote 9 (continued)

United Nations General Assembly. They include the (positive) rights to self-determination, development, a clean environment, and participation in cultural heritage.

Conservation of cultural and historical heritage, Environmental respect/protection, and Animal rights. For this reason, we associate Cluster A with an orientation that is also left-wing but progressive. These labels—i.e. the political interpretation of the clusters, were proposed and discussed by the authors, by looking at the concepts within each cluster.

First-generation rights have been catalogued as negative and individual, while second-generation rights also are individual but positive, and third-generation rights are collective and positive (Vasak 1977). In this framework, we see that the difference between Clusters D and C is given in the negative/positive nature of rights, that is, in the action of the state. While Cluster D emphasizes freedom and the role of the state in ensuring non-interference in the use of these freedoms, Cluster C demands that the state play an active role as the guarantor of social rights. On the other hand, the difference between Clusters A and C does not have to do with the role of the state, as both are inclined to positive rights but with the individual/collective character.

This classification is consistent with what we see in the dimension of Values, where we also can identify the same Clusters A, C, and D. The concepts that allow us to classify Cluster D as right-wing have to do with the importance assigned to *Autonomy/freedom, Private property, Rule of law, Development, Subsidiarity, Sovereignty, Family, Patriotism, Solidarity, and Dignity.* Regarding Cluster A, the concepts of *Freedom, Participation, Cultural identity, Gender equity, Environmental protection, Participatory democracy, Equity, and Human rights* allow us to identify it as a progressive cluster. Finally, in Cluster C, we see the leftist concepts that relate to the ideas of *Tolerance, Justice, and Equality.*

The distinction between Clusters A and C also can be related to their age differences. According to Inglehart and Abramson (1994), societies shift from materialistic concerns—such as physical and economic security—to postmaterialistic values—such as freedom of expression and standard of living—once the material needs are taken care of. To test this idea, we performed mean difference tests to compare the average age of/in different clusters. For both Values and Rights, Cluster A is younger than Cluster C (age difference = 6.5 years), which in turn is younger than Cluster D (age difference = 8.03 years).¹⁰

Cluster B, which appears only in the Values dimension, is a special case. Let us note that the concepts within this cluster promote a very clear vision of society: the idea of *Heterosexual marriage families* is eloquent in this sense. Since these concepts are mostly added by participants and with almost identical text across different ELAs, this suggests a special level of organization. The references to *Freedom of worship* and *Freedom of conscience* are consistent with anecdotal evidence about the organization of the evangelical protestant community's participation in the constituent process; thus, we have identified this cluster as "evangelical".¹¹ The fact that this cluster appears only in the

¹⁰ The average cluster age was estimated by selecting all concepts belonging to the cluster, identifying the ELAs that select those concepts, and taking the average age of their participants. These differences are significant at a 0.01 significance level.

¹¹ As noted, this may not have been the only group that organized to participate in the constituent process. During that time, there were several groups—political, economic, and social—that declared an interest in organizing to confront this process. The idea was, presumably, to put on the agenda issues that otherwise would have been absent. However, since the work of Olson (1965), we know that the existence of benefits associated with organizing collectively are not a sufficient reason to explain a capacity to organize. In the case of evangelical churches, that capacity to organize can

Values dimension suggests that its selection of concepts does not differ much from those of other clusters in the other dimensions. For example, in the dimension of Rights, in Cluster D (political right), we find a blend of concepts that could be called “conservative” (such as *Life* and *Respecting life from conception*) with others of a nationalist nature (*Nationality*) and those of a “liberal” type (those that promote individual liberty, such as *Freedom of work*, *Property*, and *Free economic initiative/free enterprise*). Therefore, we can assume that when Cluster B is not differentiated, it is Cluster D that absorbs its share.

In the dimension of Duties, the network does not show the same disposition as in Values and Rights, perhaps because, as there were fewer concepts to choose from, each concept had a greater probability of being chosen by different people. Nevertheless, we can identify a progressive Cluster A and a cluster that seems to be right-wing (D). The remaining cluster (called N in Table 4) does not have a clear sociopolitical interpretation.¹²

As community detection is a key part of this analysis, we compared the Louvain partition with other clustering methods as a robustness check. The purpose of this analysis is to test the stability of the partitions, i.e., modularity variations, how many clusters resulted and how many nodes changed membership community. For the Value network, the Fast Greedy algorithm yields the same clusters (and modularity) as Louvain. However, with Leading Eigenvector, modularity falls (from 0.56 with Louvain to 0.48), and some nodes change community membership. Compared to the Louvain partition, the concepts *Private property* and *Integral development* move from Cluster D to Cluster B, while *Freedom* moves from Cluster A to Cluster D and *Citizenship* moves from B to C. An additional small cluster appears, which contains *Democracy*, *Equity* and *Secular state*. In addition, Cluster A—the progressive cluster—splits into two clusters, plus an additional cluster with only one element (*Social security*). The presence of small clusters and the lower modularity make the Leading Eigenvector a less desirable option. Even so, the main clusters preserve their meaning.

Regarding the Rights network, the three algorithms—Louvain, Fast Greedy and Leading Eigenvector—tie in modularity (0.44), identify three clusters, and overall, five nodes change community membership. With Fast Greedy, and compared to Louvain, *Access to culture* and *Environmental respect/protection* move from Cluster A to Cluster C, while *Equality in relation to public burdens* and *Access to justice/due process* move from Cluster D to Cluster A. Also compared to Louvain, the Leading Eigenvector algorithm makes *Access to culture* move from Cluster A to Cluster C, and *Suffrage/vote* move from D to C. Finally, we tested the Duties networks, where Louvain reaches the highest modularity

Footnote 11 (continued)

be explained in the already existing organization at the local level, in each church with its pastor, and in the churches among themselves. Here, the motivation to organize seems to respond to a need to establish protection of life from conception and of the family as fundamental values of society.

¹² This cluster is composed almost exclusively of open concepts, except for *Satisfying public burdens*, which serves as a link to the progressive cluster. However, when we look at the argument texts, we find that certain open concepts refer to different things and even present conflicting positions. For example, regarding *Citizen participation*, there are phrases in favor of participatory democracy and phrases in favor of compulsory voting, positions that in the Chilean context do not necessarily go together. Therefore, this cluster groups together open concepts but does not represent a single ideological community. This is probably an artifact of the method used, whose goodness depends on the sufficient availability of concepts of defined valence.

(0.43). With Leading Eigenvector (modularity 0.39), three nodes change community membership: *Fulfill public charges* (from N to A), *Responsibility* (from D to N) and *Community service* (from A to D). With Fast Greedy (modularity 0.42), Cluster N remains the same, while Clusters A and D are combined in a large cluster, leaving three nodes apart (*Protection of private property*, *Responsibility*, *Community service*). But, as we said, communities in the Duties network are not so well defined because of the smaller pool of concepts. Overall, the Louvain algorithm reaches the highest modularity, and the changes in community membership do not significantly alter our main interpretations and conclusions.

Throughout this work, we have used a 95% confidence level for link creation. At the 99% level, the communities remain the same for the Duties network, and only one node changes community membership in the Rights network. The largest change is shown in the Values network, where the progressive cluster splits into two groups, one with original concepts and the other composed almost exclusively of open concepts. However, both subgraphs consist of progressive concepts. On the other hand, another community appears, formed by *Citizenship*, *Civic friendship* and *Integration*, the first two previously belonging to the evangelical clusters and on the network periphery. Even when both concepts are now in a different cluster, they are still connected to conservative concepts such as *Freedom of worship* and *Patriotism*. Overall, cluster splitting is to be expected, given the fewer number of links in the network.

One way to study the “ideological” closeness between communities is through the intercluster distance, which we estimate by calculating the average geodesic distance between all pairs of nodes belonging to two different clusters. Doing this for Values, we find that Cluster B (evangelical) is closest to D (right), then to C (left), and then to A (progressive). This result is quite intuitive. However, the shortest intercluster distance is between Clusters C and D. This indicates that for the Values dimension, the traditional left is ideologically closer to the political right than to the progressive left.¹³ While this may seem counterintuitive, we see that for the Rights network, this relationship is reversed, and Cluster C is closer to Cluster A than to Cluster D. All of the above indicates that the traditional left’s closeness to the political right is mediated by values and to the progressive left by rights. One explanation for this is that most of the traditional left and right tend to be conservative in this dimension. However, in regard to rights, the political right promotes freedom, while the left and progressivism share the vision regarding the positive role of the state as the guarantor of social rights.

To assess the consistency between clusters and political conglomerates, we tested the cluster distribution between certain municipalities and the rest of the country. To narrow down the task, we focused on the Metropolitan Region, the one with the highest population in Chile. For Cluster A, we chose the top 3 municipalities where participation in the progressive *Frente Amplio* coalition 2017 primary election was maximum. These municipalities belong to District 10, and they are Providencia, Ñuñoa and La Reina.¹⁴ Thus, we compared the number of observations belonging to Clusters A, C and D within

¹³ Intercluster distances for dimension Values: B–D: 0.055; B–C: 0.057; B–A: 0.071, A–D: 0.06; A–C: 0.068, C–D: 0.054. Intercluster distances for Rights: A–C: 0.035; A–D: 0.04; C–D: 0.041.

¹⁴ Source: <https://www.latercera.com/noticia/donde-estan-los-votantes-del-frente-amplio/>, accessed February 2022.

these three municipalities and in the rest of the region. For both Values and Rights, the two distributions were significantly different at a significance level of 0.001. The proportion of observations in Cluster A increased from 0.40 to 0.49 for Values and from 0.20 to 0.28 for Rights.

For Cluster D, we followed the same procedure and chose the top 3 municipalities where participation in the right-wing *Chile Vamos* coalition 2017 primary election was the highest. These municipalities belong to District 11, and they are Vitacura, Las Condes and Lo Barnechea.¹⁵ Again, we compared the cluster distribution among these three municipalities and the rest of the region, and they were significantly different, at a significance level of 0.001, for Values and Rights. The proportion of observations in Cluster A increased from 0.22 to 0.31 for Values and from 0.26 to 0.49 for Rights.

There were no presidential primaries of the traditional left-wing conglomerate for the 2017 presidential election. Therefore, to test Cluster C, we used the first-round results. Since District 13 has traditionally supported left-wing candidates, we chose the top 3 municipalities where the voting difference between the *Nueva Mayoría* (traditional left-wing coalition) and *Frente Amplio* was maximum: El Bosque, Pedro Aguirre Cerda and San Ramón.¹⁶ The cluster distributions among these three municipalities and the rest of the region were significantly different at a significance level of 0.001. The proportion of observations in Cluster C increased from 0.34 to 0.42 for Values and from 0.49 to 0.60 for Rights.

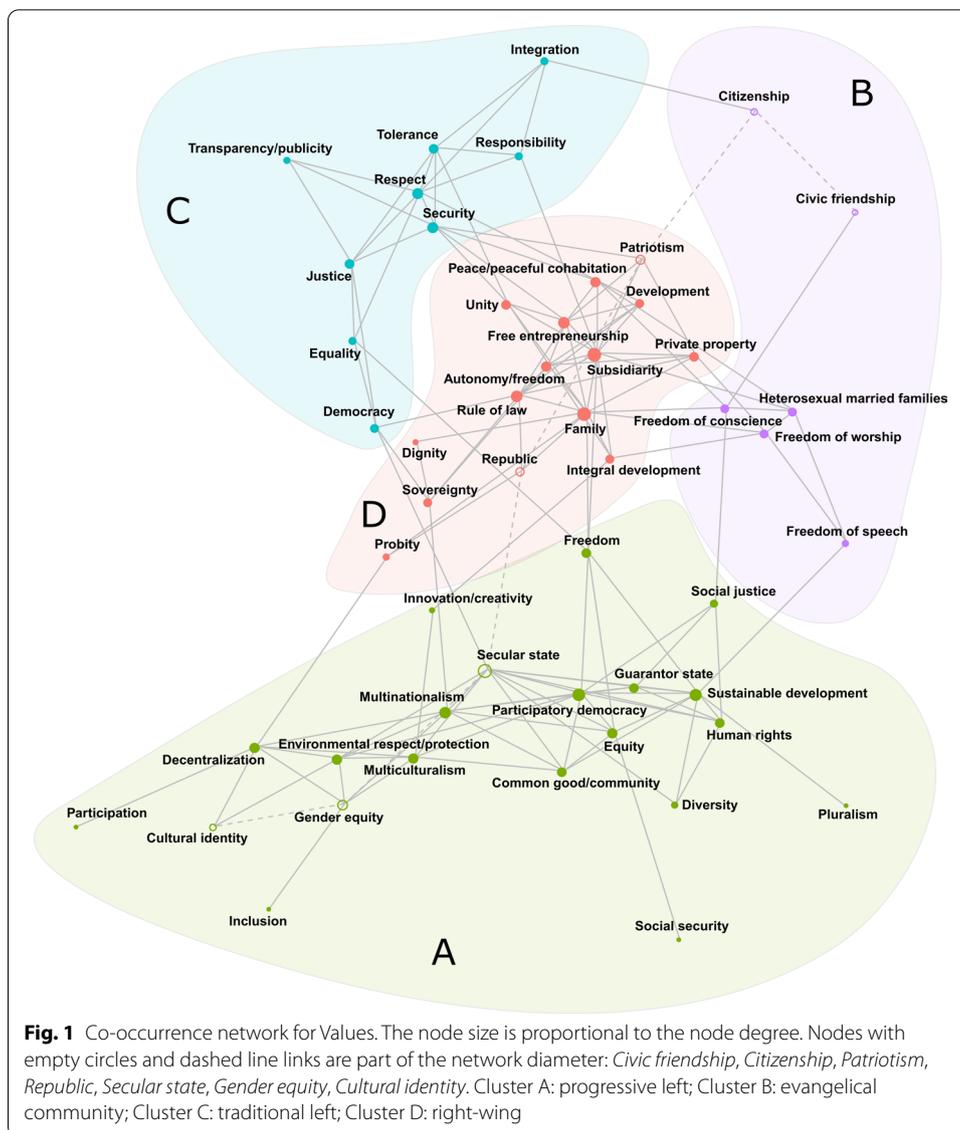
Network analysis

Here we show the results of our network analysis for each dimension: Values, Rights and Duties. The graphs are depicted in Figs. 1, 2 and 3. Network descriptors can be found in Table 5.

Values Starting at the top left of the network (Figure 1), we can see one extreme of the diameter made up of the progressive concepts *Cultural identity* and *Gender equity*. Then, we see *Secular state* and *Republic*, both referring to the separation of powers, with the former serving as a link between progressive concepts and more centrist concepts that are less ideologically charged. We then move on to *Patriotism*, with a nationalist slant, to finish with *Citizenship* and *Civic friendship*. In the previous section, both concepts were identified as part of the evangelical cluster. In the case of *Civic friendship*, this concept absorbed many of the concepts added by the participants during the ELAs, work that was done by the data systematization team. On the other hand, it is interesting to note that *Citizenship* is connected both to *Patriotism*—by virtue of belonging to a nation—and to *Integration*, alluding to the integration of Chileans, migrants, and native peoples. In sum, we have progressivism on one side of the diameter and concepts that fall into the evangelical community on the other side. If we visually divide the network based on this axis, on one hand, we have the political right, where the concepts of an economic nature are farther away on the network, and on the other hand, we have the

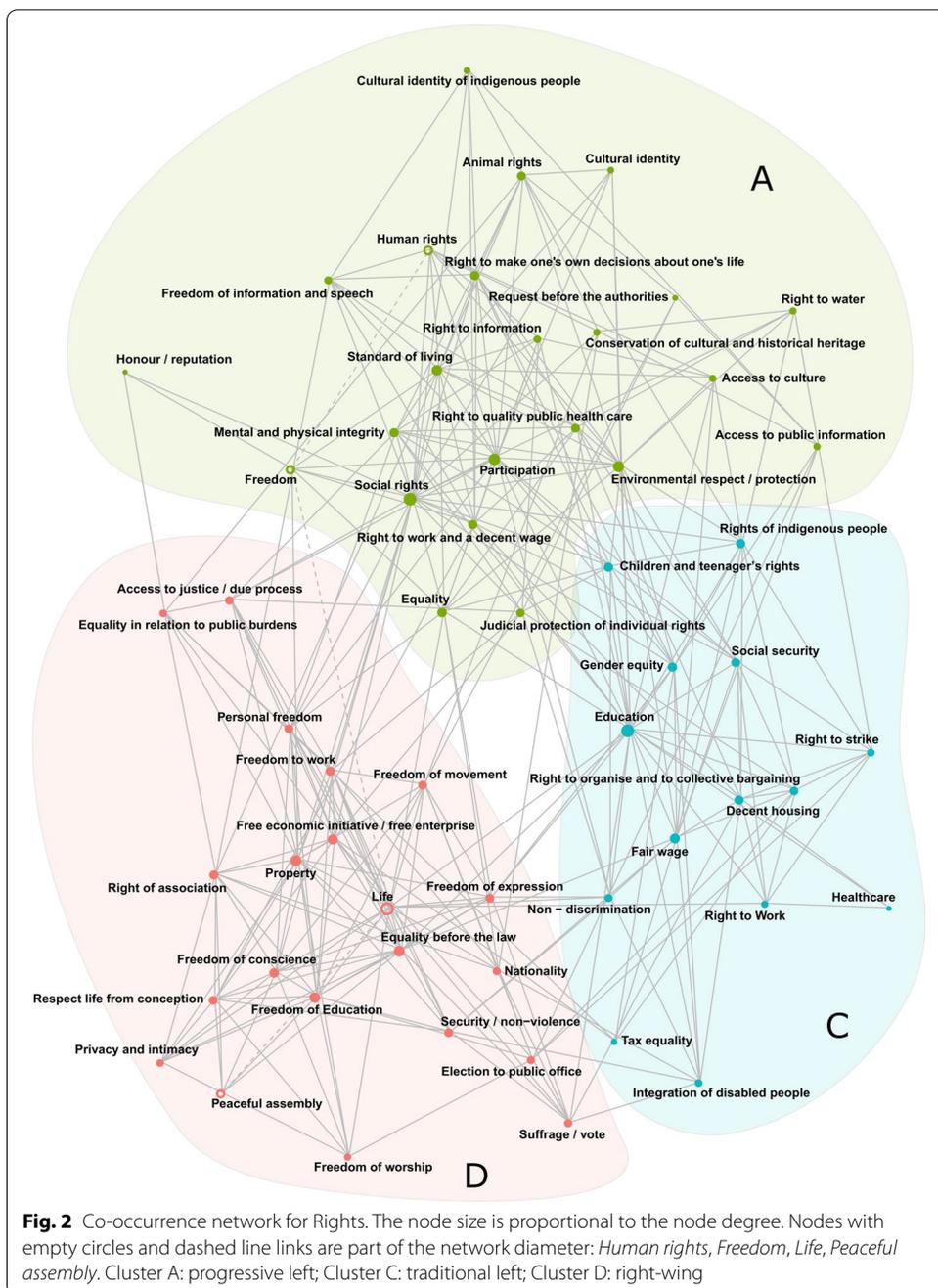
¹⁵ Source: <https://www.latercera.com/noticia/mapa-del-votante-chile/>, accessed February 2022.

¹⁶ Source: <https://www.emol.com/especiales/2017/actualidad/nacional/elecciones/resultados.asp>, accessed February 2022.



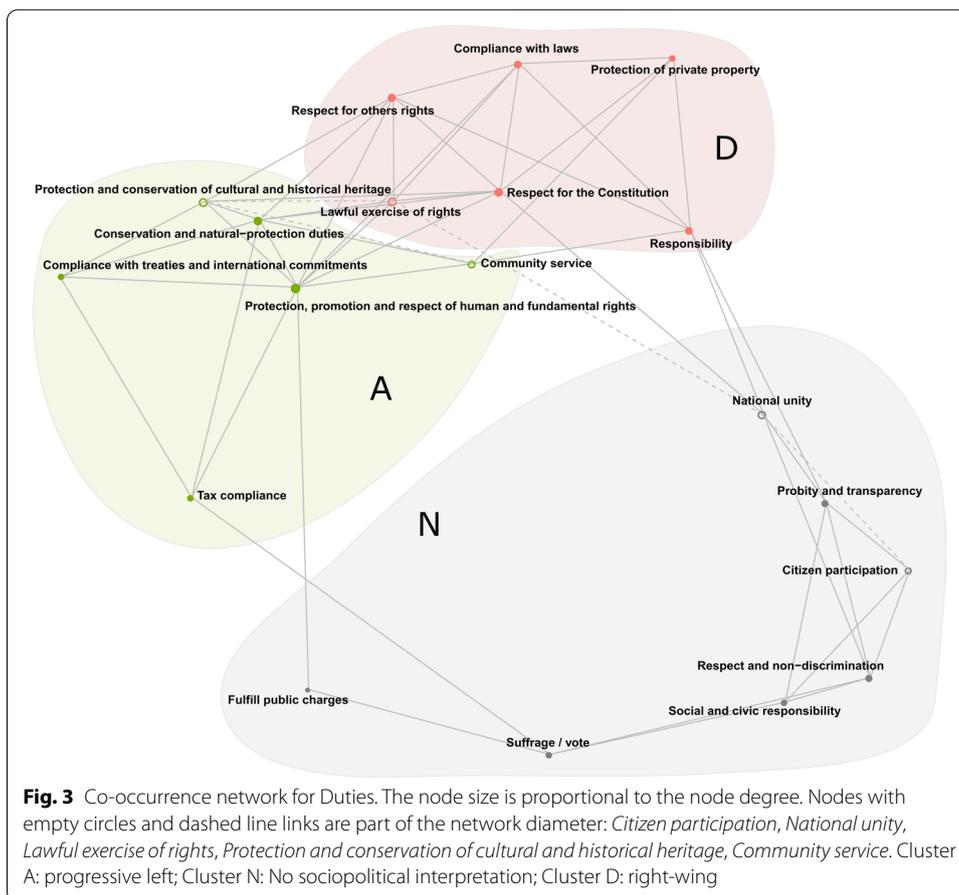
left, where concepts such as *Social security* and *Social justice* also tend to lie on the network periphery.

Regarding the network’s centrality measures, the three concepts with the highest betweenness centrality are *Secular state*, *Freedom*, and *Family* (see the second panel of Table 5). As we already have noted, the first serves as a link between progressivism and what can be labeled the political center. On the other hand, *Family* is connected to several concepts within the right-wing cluster (that is why it has high degree centrality) and serves as a link with the evangelical cluster through its connection with *Freedom of worship* and *Freedom of conscience*. Finally, *Freedom* does not exhibit a great degree centrality, but it does show a high betweenness centrality, since it connects diverse lines of thought. Thus, while progressives think about the freedom to decide about their own body, the right is thinking about the freedom to undertake and personal autonomy. The fact that *Freedom* does not have such high degree centrality may be because there



are other concepts that are more specific with respect to freedom, such as *Freedom of expression*, *Freedom of worship*, and *Free entrepreneurship*, which “compete” when they are used.

Since values are deeply embedded in culture, we would expect a stronger effect of participant age on concept selection in this dimension. The concept associated with the oldest average age is *Sovereign* (46.2 years), followed by *Solidarity* and *Rule of law*, all three from Cluster D, the right-wing cluster. As we would expect, the “youngest” concepts belong to Cluster A, the progressive cluster, with *Equity* as the concept



with the youngest average age. Finally, within Cluster A, *Human rights* (43 years) and *Social security* (42.5 years) are the “oldest” concepts, suggesting that there is an older segment within progressivism that adheres to the discourse of the traditional left.

Rights Fig. 2 shows the concepts within the network’s diameter. These are: *Human rights*, which is embedded in the progressive cluster; then comes *Freedom*, which, as we saw earlier, refers to various objects of freedom and is in turn connected to *Life*. This concept plays the role that *Family* played in the Values network; that is, it has great centrality in the network, particularly among the right-wing and evangelical concepts. It precisely makes the link with the other end of the diameter, which is *Peaceful assembly*. This concept is strongly connected to other evangelical nodes, such as *Freedom of worship*, *Freedom of conscience*, and *Respect life from conception*, and it was probably added by the evangelical group thinking about congregating freely in public spaces, as seen in this phrase: “there should be the right to gather in public places, *Plaza de Armas*, without previous authorization for preaching, authorized artistic-musical activities”. As happened in the Values dimension, the diameter of the network shows a progressive-religious axis, while the traditional right and left move away in other and opposite directions. Thus, on one side of the axis diameter, we have the *Right to strike*, *Health care*, and *Decent housing*, and on the other side, we have *Property* and *Freedom to work*.

Table 5 Network descriptors

	Values	Rights	Duties
Nodes	51	58	19
Links	145	319	53
Link density	0.11	0.19	0.31
Diameter	0.12	0.08	0.10
Mean distance	2.80	2.05	2.01
Mean Degree	5.58	11.00	5.58
Centrality measured for the top 5 ranked nodes by betweenness centrality			
	Degree	Closeness	Betweenness
Values			
Secular state	13.00	0.45	214.11
Family	13.00	0.47	197.15
Freedom	6.00	0.46	152.82
Subsidiarity	13.00	0.45	151.77
Sustainable development	10.00	0.40	110.71
Rights			
Social rights	25.00	0.62	199.92
Education	25.00	0.61	192.16
Life	21.00	0.58	116.47
Participation	20.00	0.58	61.99
Equality before the law	17.00	0.55	56.88
Duties			
Protection, promotion and respect of human and fundamental rights	10.00	0.60	26.37
National unity	6.00	0.55	24.13
Responsibility	6.00	0.53	18.90
Suffrage/vote	4.00	0.44	14.58
Respect for the Constitution	8.00	0.60	13.84

Note: Calculation of Diameter and Closeness centrality use the weight attribute

Continuing with the centrality measures (Table 5), the three most central nodes are *Social rights*, *Education*, and *Life*. The first two far surpass the third in betweenness centrality, which suggests that the provision of education and social rights are more widely held among the participants; not so for the right to *Life*, which has high degree centrality because it is very present in the right and evangelicals but lower betweenness centrality because it is not as connected with the concepts of the other groups. Regarding *Social rights*, note that this concept was not in the original set of rights that the ELA organization proposed, so it is likely that different things were grouped under the label of “social rights”. If we look at the texts, we see many phrases that refer to constitutional guarantees already established in the current constitution, such as the right to vote, organize, and be elected to public office, and other phrases that postulate that article 19 should not be altered,¹⁷ thus keeping the provision of rights constant. Other phrases seek to expand the current provision of rights, such as the right to housing and transportation.

¹⁷ In the current Chilean constitution, article 19 is part of Chapter 3: Constitutional Rights and Duties.

It is also worth noting that *Human rights* is deeply embodied in the progressive cluster, although in Chile this concept has usually been associated with the traditional left. There are two factors that may explain this. The first is that *Human rights* was not in the original set proposed for this dimension, probably because it was not a specific constitutional guarantee. Therefore, it was a concept added by the participants, and in general, these do not appear in the traditional left's cluster. It should be noted, however, that *Human rights* did appear in the original list of Duties, as the duty of *Protection, promotion and respect of human and fundamental rights*. On the other hand, if we look at the age ranges associated with each concept in the progressive cluster, we see that *Human rights* is one of the least chosen by young people. This suggests that within progressivism, there could be an older age group, perhaps serving as a bridge between progressivism and the traditional left.

Duties As previously mentioned, the initial set of proposed concepts here is smaller; there are only 12, which become 19 after the open concepts systematization. As seen in the second panel of Table 5, in general, these concepts have low centralities. Regarding the diameter of the network (see Fig. 3), we have the concepts *Citizen participation*, *National unity*, *Lawful exercise of rights*, *Protection and conservation of cultural and historical heritage*, and *Community service*. The first of these, *Citizen participation*, is far from other progressive concepts. Continuing with the diameter, we then have *National unity*, a nationalist concept, and *Lawful exercise of rights* to finally arrive at progressive concepts such as *Protection and conservation of cultural and historical heritage* and *Community service*, which, although not exclusively progressive, is connected to the progressive triad of *Conservation and natural-protection duties*, *Protection, promotion and respect of human and fundamental rights*, and *Protection and conservation of cultural and historical heritage*. The progressive religious axis is not seen in this network.

To test the robustness of our method, a null model was created by assuming a random selection of concepts. We use the final set of concepts by dimension, i.e., the original concepts plus those added by the participants. Then, for each ELA, we simulated a random selection of the same number of concepts they originally chose and applied the aforesaid network creation procedure. Over 100 randomized networks, the average number of links was 0.33 for Values, 1.01 for Rights and 0 for Duties. At the 90% confidence level for the chi-square test, these figures increase up to 0.65 for Values, 1.62 for Rights and 0 for Duties. This result shows that a random selection of concepts does not generate a meaningful network.

Conclusions

This study has shown how political ideology can be analyzed as an emergent network. This way of examining ideology is a relevant methodological contribution that, applied to Chilean data, enlightens us about the characteristics of different ideological communities. Beyond the theoretical advantages that the network methodology offers, its performance does depend on the initial pool of concepts considered. Given a sufficiently broad set of concepts and a process of concept selection, the resulting network should adequately map the ideology of a group of participants.

Our network methodology has allowed us to capture the differences between the traditional left and the progressive left in Chile, both for Values and Rights. Within the

right-wing cluster, even when the networks contain liberal, nationalist and conservative concepts, they do not seem to form separate clusters, besides the organized evangelical one in the network for Values. On the other hand, although our analysis of the network of Duties is less conclusive, we believe that it is important to consider this dimension to offer a more complete picture of political ideology. Regarding the community detection, the Louvain algorithm consistently reached the highest modularity score. In general, the partitions remain stable, although some nodes change community membership. These changes do not significantly alter our main interpretations and conclusions.

Our political maps also have showed that it is possible to recognize the evolution of the concept of rights in Chile. Along with the intercluster distances, the emergence of new rights allows us to be more specific to the right/left distinction. Thus, Clusters A and C (progressive and traditional left, respectively) are the closest in the Rights dimension and prioritize the selection of second-generation rights, i.e., they advocate for an active role of state. However, in Values, the traditional left is closer to the right than to the progressive left. This may be linked to what the first and second generations of rights have in common: their individual nature. In addition, the right-wing cluster and the traditional left-wing cluster are older than the progressive cluster. The evolution of political ideology has a generational component, examined by Putnam (2000), which may be interesting to explore further in the Chilean context.

Leaving aside the communities, through the network diameter, we have identified a progressive/right-wing pole in the ideology map. The network visualization also displays the economic aspects of ideology in a different direction. These directions are not “axes”, strictly speaking, because they are not orthogonal, nor do they represent coordinates. However, since the network visualization¹⁸ is designed to avoid crossing edges and make edge lengths uniform, the “directions” displayed in the resulting graph still hold their meaning. On the other hand, centrality measures can inform us about the relative importance of certain nodes. In this way, we have identified concepts that link different groups, such as *Secular state*, which is highly connected to progressive concepts but also to *Republic* and *Democracy*. Concepts with high closeness and a high degree—such as the right to *Education*—can be understood as widely held concerns in contemporary Chile because they are closer to all other nodes and frequently mentioned.

The results we have presented, based on data prior to the social outburst of October 2019, show results consistent with the characteristics of different emerging groups in Chile and their priorities and “agendas” in terms of Values, Rights, and Duties. Since 2016, new conservative voices have arisen, and we also have seen the consolidation of new progressive movements in the country.

Abbreviation

ELA: Encuentro local autoconvocado (self-convoked encounters).

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¹⁸ Specifically, the Fruchterman—Reingold layout algorithm (Fruchterman and Reingold 1991).

Author contributions

Conceptualization, MPR and JPC; methodology, MPR; formal analysis, MPR, JPC and CF; data curation, CF; writing—original draft preparation, MPR and JPC; writing—review and editing, CF. All authors have read and agreed to the published version of the manuscript. All authors read and approved the final manuscript.

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Declarations**Ethics approval and consent to participate**

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Consent for publication

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Competing interests

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