Network Science (2025), **13**, e13, 1–22
doi:10.1017/nws.2025.10009

CAMBRIDGE UNIVERSITY PRESS

RESEARCH ARTICLE

Exploring EU public opinion with cognitive mapping

Femke van Esch[1] and Jeroen Snellens[2]

[1]Utrecht University School of Governance, Utrecht University, Utrecht, The Netherlands and [2]Independent Researcher
Corresponding author: Femke van Esch; Email: f.a.w.j.vanesch@uu.nl

Abstract

European Union (EU) public opinion research is a rich field of study. However, as citizens often have little knowledge of the EU it remains the question to what extent their attitudes are grounded in coherent, ideologically informed belief systems. As survey research is not well equipped to study this question, this paper explores the value of the method of cognitive mapping (CM) for public opinion research by studying the cognitive maps of 504 Dutch citizens regarding the Eurozone crisis. The paper shows that respondents perceive the Eurozone crisis predominantly as a governmental debt crisis. Moreover, the concept bureaucracy unexpectedly plays a key role in their belief systems exerting an ambiguous but overall negative effect on the Eurozone and trust in the EU. In contrast to expectation, the attitudes of the respondents are more solidly grounded in (ordoliberal) ideology than that of the Dutch elite. Finally, the paper introduces new ways to measure ambivalence prompting a reevaluation of the significance of different forms of ambivalence and their impact on political behavior. Overall, the results of this study suggest that CM forms a promising addition to the toolbox of public opinion research.

Keywords: Ambivalence; cognitive mapping; eurozone crisis; ideology; public opinion; trust in the EU

1. Introduction

Public opinion plays a crucial role in decision-making and shaping policies in democratic societies. Citizens' opinions inform policy makers and provide them with vital information regarding the needs and concerns of their constituents, thereby keeping governments responsive (cf. Glynn et al., 2018). Responsiveness is also increasingly relevant beyond the national context, particularly with regard to the European Union (EU) which has substantially broadened its mandate over time and issues binding legislation.

Reflecting its relevance, EU public opinion research is one of the most rich and extensive fields of study within European Studies and provides insight in the nature of citizens' assessment of the EU and their policy preferences as well as in the reasons why people hold certain attitudes. However, important fundamental questions remain, especially with regard to the extent citizens actually hold a coherent, ideologically informed set of beliefs regarding the EU (De Vries, 2013; Lutz, 2021; Stoeckel, 2013). This question was first posed by Converse in the context of US politics but is also relevant in the context of the EU (Converse, 2006; Wilker & Milbrath, 1970). As the EU is a distant polity that citizens have limited interest in, and knowledge of (Clark, 2014; Hix, 2015), it is hard to see how they would be able to develop a coherent belief system. In fact, theory suggests that under these conditions citizens' attitudes are more likely to be based on cue-taking, heuristic thinking or attribution than on the rational processing of information, argumentation and reflection (Antonakis & Atwater, 2002; Armingeon & Ceka, 2014; Brosius et al., 2020; Hobolt & de Vries, 2016; Hooghe & Marks, 2016; Kahneman, 2011; Popper, 2013; Shamir, 1995). This raises questions regarding the depth of peoples' belief systems regarding the EU and to what extent

© The Author(s), 2025. Published by Cambridge University Press. This is an Open Access article, distributed under the terms of the Creative Commons Attribution licence (http://creativecommons.org/licenses/by/4.0/), which permits unrestricted re-use, distribution and reproduction, provided the original article is properly cited.

https://doi.org/10.1017/nws.2025.10009 Published online by Cambridge University Press

their attitudes are grounded in a pre-existing and coherent belief system (Aldrin, 2011; De Vries, 2013; Gaxie, 2011; Glynn et al., 2018; Lutz, 2021; Stoeckel, 2013; Wilker & Milbrath, 1970).

While several EU scholars have raised similar questions, the discussion of this issue remains limited. This may be partly due to the sources and methods used in the domain. Many contributions to the field rely on survey research which is less suited for capturing peoples' underlying and pre-existing belief systems, or to explore their consistency (Aldrin, 2011; Gaxie, 2011; Glynn et al., 2018; Norpoth & Lodge, 1985; Wilker & Milbrath, 1970). Research into citizens' perceptions of the EU may thus benefit of using a method specifically designed to study belief systems.

The technique of Cognitive Mapping (CM) offers such a potential complement to the existing toolset of EU public opinion research. CM is a specific form of semantic network analysis. It shares the basic assumption of all belief networks approaches that, rather than isolated attitudes, the relationship among attitudes, beliefs and values provides meaning and order in society and informs human behavior (Axelrod, 1976b; Bertero et al., 2024; Boutyline & Vaisey, 2017; Converse, 2006; McLean, 2016; Yang & González-Bailón, 2017; Young, 1996). CM distinguishes itself from other types of semantic networks by focusing on causal and normative beliefs which allows it to provide insight in peoples' policy preferences and underlying argumentations (Axelrod, 1976b; Van Esch & Snellens, 2024; Yang & González-Bailón, 2017; Young, 1996). While the method is mostly used to study the beliefs of experts or stakeholders in management, organization and policy studies, it has occasionally been applied to study the general public opinion (Boukes et al., 2020; Van Esch et al., 2016; Yang & González-Bailón, 2017).

The goal of this paper is to explore if CM can also help to answer the question to what extent citizens actually hold a coherent set of beliefs regarding the EU. It does so by breaking this question down into three sub questions: Can the use of CM (1) lead to new insights regarding the nature of citizens' belief system towards the EU?; (2) can it provide more clarity into the extent to which citizens interpret EU politics and policy through an ideological lens?; (3) can it deepen our understanding of the extent and ways in which their beliefs regarding the EU are coherent or ambivalent? To answer these questions, the cognitive maps of 504 Dutch citizens regarding the Eurozone crisis and their trust in the EU and will be analyzed.

The paper starts by providing an overview of EU public opinion research and examines how this literature explores the extent to which citizens' attitudes are part of a consistent belief system about the EU. It then discusses the method of CM and critically assesses the value it may add. The paper subsequently introduces the research design and continues to present the empirical findings, after which the conclusion and discussion follow.

2. EU public opinion research

2.1. The state of the art

EU public opinion research focusses predominantly on the question of the legitimacy of the EU in the eyes of the European people, their assessment of their countries' (prospective) EU membership and their evaluation of EU policy. This body of research has greatly enhanced our understanding of EU public opinion, yielding insight into the attitudes and perceptions of citizens across member states: In addition to revealing that peoples đemographic characteristics—like age, educational level, social–economic status, geographical location and gender—affect their attitudes towards the EU, a range of theoretical perspectives are shown to offer explanations for peoples' support for the EU (Bauer, 2020; Hobolt & de Vries, 2016). Many of the demographic explanations, for instance, rely on a utilitarian explanatory mechanism: When EU policies are (seen to be) beneficial to citizens or their countries, they tend to support and trust the EU (Dijkstra et al., 2020). Moreover, the extent to which people hold national or European identities as well as the cues they take from politicians, media or their peers are also shown to play a role (Aichholzer et al., 2021; Armingeon & Ceka, 2014; Mikulaschek, 2023; Schlipphak & Treib, 2017). In addition, there is an

https://doi.org/10.1017/nws.2025.10009 Published online by Cambridge University Press

emerging literature that indicates that emotions affect peoples' support for, and trust in the EU (Boomgaarden et al., 2011; Garry, 2014; Vasilopoulou & Wagner, 2017). Finally, preferences with regard to European integration align with other attitudes like globalism and migration and are part of a new political cleavage in society (Hooghe & Marks, 2018; Hooghe et al., 2016; Treib, 2021). Over time the field has become more diversified in terms of its explanans of interest. As more and different data-sources became available—like the Special Eurobarometer, the Europarlemeter and European Value Studies—scholars were able to refocus their questions to specific policy areas or current events. In addition, the field slowly moved away from simple "for or against" questions, to study different forms of EU support and Euroscepsis (De Vries, 2018).

2.2. Research gaps

However, fundamental questions remain unanswered, specifically with regard to the nature of peoples' beliefs regarding, and attitudes towards the EU. As a polity that is quite distant to its constituents, EU citizens often have little interest in, and knowledge of the EU, its structure or policy making system (Clark, 2014; Hix, 2015). Theories across the fields of behavioral economics, public opinion and social psychology suggest that under these circumstances, citizens' attitudes are more likely to be based on mechanisms like heuristic thinking, cue-taking or attribution rather than on the rational processing of information, argumentation and reflection (Antonakis & Atwater, 2002; Armingeon & Ceka, 2014; Brosius et al., 2020; Hobolt & de Vries, 2016; Hooghe & Marks, 2016; Kahneman, 2011; Popper, 2013; Shamir, 1995; Van Esch & Steenman, 2025). This raises the question (Converse, 2006; Wilker & Milbrath, 1970) to what extent citizens actually hold a coherent, ideologically informed set of beliefs regarding the EU.

This question was first posed by Converse in the context of US public opinion in the 1960s (Converse, 2006; Wilker & Milbrath, 1970). Converse argues that in contrast to the political elite, the majority of the general public does not possess a coherent set of political beliefs and tend not interpret politics through an ideological lens. Focussing on liberalism and conservatism, he shows elites to have structured and coherent ideological beliefs while citizens often provide incoherent or random responses to political survey questions. Notwithstanding the controversy of this finding (Norpoth & Lodge, 1985; Wilker & Milbrath, 1970), the question of whether people hold coherent, ideological beliefs remains relevant in the context of the EU.

Noting the limited knowledge of, and interest in the EU of many Europeans, some EU scholars follow Converse in questioning whether the attitudes citizens report during public opinion polls actually represent pre-existing beliefs (Aldrin, 2011; Gaxie, 2011). Others draw attention to the saliency of ambivalence and indifference in peoples' attitudes towards the EU (De Vries, 2013; Lutz, 2021; Steenbergen & Brewer, 2004; Stoeckel, 2013; Van Ingelgom, 2014) and report that around 30–40 per cent of citizens are ambivalent about the EU (Stoeckel, 2013). Such ambivalence may stem from how the subject is interpreted. Lutz, for instance, finds that ambivalence regarding free movement in EU results from the fact that respondents value their own free movement differently than that of others (Lutz, 2021). The discussion of these questions, however, remains more limited and less fundamental in EU Studies than in the field of US politics.

2.3. The role of methods

This may be partly due to the sources and methods used in the domain. First, given the size and nature of the EU and the diversity of its member states, gathering representative data is difficult and expensive. Scholars have therefore relied predominantly on the Eurobarometer, a bi-annual pan-EU public opinion poll held by the EU institutions. The near monopoly and political nature of this source limits the kind of questions that scholars can study (Aldrin, 2011; Nissen, 2014). Although EU scholars are increasingly sourcing data independently, even large collaborative efforts like the European Value Studies remain more limited in scope than the Eurobarometer.

https://doi.org/10.1017/nws.2025.10009 Published online by Cambridge University Press

Second, regardless of the precise source, EU public opinion research has been dominated by survey studies. While this method provides an efficient and tested way to study attitudes, it is less suited for capturing peoples' underlying and pre-existing belief systems, or to explore their consistency (Glynn et al., 2018). Traditional survey studies separate attitudes from the wider belief system they derive from and obscure the interrelation between attitudes people hold on different topics. Moreover, especially when the questions pertain to issues that are not close to peoples' daily lives or when they have little knowledge of the subject, surveys risk measuring artificially constructed rather than pre-existing attitudes. Also, the top-down nature of the method—with its predefined questions and limited response options—provides respondents with limited space to convey their own thoughts (Aldrin, 2011; Gaxie, 2011; Glynn et al., 2018; Wilker & Milbrath, 1970; Zaller & Feldman, 1992).

Finally, surveys are not well-equipped to study ambivalence. Ambivalence is generally defined as judging something to be positive and negative at the same time, which is hard to capture with a survey design (Norpoth & Lodge, 1985; Stoeckel, 2013). Scholars have found ways to get around this by developing specific sets of questions, using proxies or other methods like survey experiments or integrating qualitative techniques like focus groups and interviews (De Vries, 2013; Lutz, 2021; Steenbergen & Brewer, 2004; Van Ingelgom, 2014). However, more information and other tools are needed to develop a better understanding of ambivalence (Stoeckel, 2013). Applying the technique of CM may provide an answer to this call.

3. The technique of cognitive mapping

Cognitive Mapping is a technique specifically designed to study belief systems which has been successfully applied in the fields of management and organizational sciences, policy studies and political and social psychology (Axelrod, 1976b; Bougon et al., 1977; Boukes et al., 2020; Giabbanelli & Nápoles; Laukkanen & Wang, 2016; Van Esch & Snellens, 2024; Vo et al., 2005). The technique rests upon the premise that beliefs are reflected in spoken or written communication or may be derived from respondents via interviews, focus groups or in a survey setting. Cognitive Mapping is a form of semantic network analysis, but of a specific subtype. Unlike in other semantic networks, the relations between concepts in a CM represent a perceived causal (a leads to b) or utility relation (a is of benefit to b) (Axelrod, 1976b; Yang & González-Bailón 2017; Young, 1996; Young & Schafer, 1998). Relations in CM are thus by definition directional as well as signed, indicating whether a concept is perceived to contribute positively or negatively to an effect or utility-concept (see Figure 1). Combining these features, cognitive maps reveal respondents' causal and normative beliefs and provide insight into the argumentation and narrative behind peoples' beliefs.

In organizational, management and policy sciences, the CM technique has been used to explore the attitudes of members of an organization, small groups or experts (Bougon et al., 1977; Giabbanelli & Nápoles; Laukkanen & Wang, 2016). These studies often apply Fuzzy Cognitive Mapping (FCM), a form of CM whereby the relations between concepts are accompanied by a weight to indicate the strength of a relation. In political science, CM has been used mainly as a form of text analysis to study the beliefs of elites at a distance. Only occasionally has CM been used to survey the political opinion of the broader public (Boukes et al., 2020; Van Esch et al., 2016; Yang & González-Bailón, 2017).

3.1. The pros and cons of using CM to study public opinion

The specific nature of CM has several benefits over public opinion polls and may provide a useful methodological complement to the domain of public opinion research. This is especially the case when exploring the nature and coherence of peoples' belief systems (Axelrod, 1976b; Van Esch & Snellens, 2024; Yang & González-Bailón, 2017; Young, 1996).

https://doi.org/10.1017/nws.2025.10009 Published online by Cambridge University Press

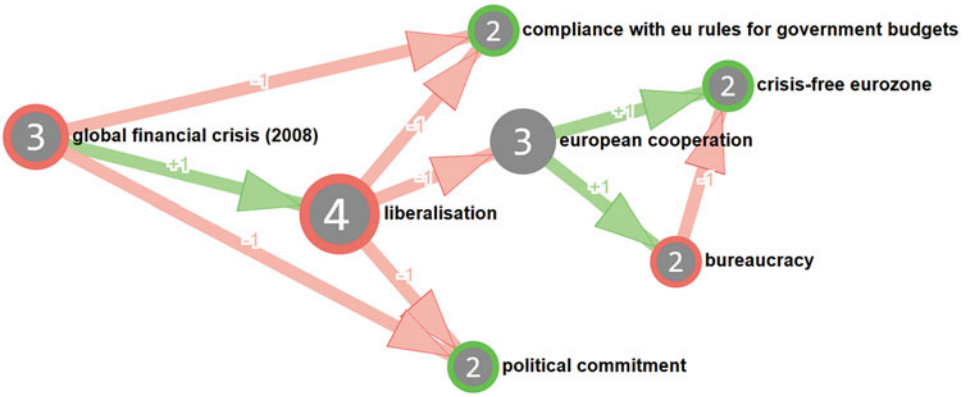


Figure 1. Cognitive map of one of the Dutch respondents.

First, as indicated above, standard survey questions are necessarily narrow in scope, are formulated top-down by the researcher and allow respondents only a few possible response options. Vignette studies or conjoint survey experiments offer respondents more leeway to speak their minds but to a more limited extent than CM. Even while working with preset concepts, CM allows respondents a lot of freedom to express their ideas. For instance, when offered a set of 30 concepts respondents could potentially draw 1800 different relations (30 concepts $*$ 29 concepts $*$ types of relations—positive/negative) and combine these to create an even higher number of different maps.

In addition, the bottom-up and flexible nature of CM reduces the risk that the attitudes it reveals are artificial constructs rather than reflect pre-existing beliefs, and allows respondents to express themselves in ways that researchers may not have imagined (Aldrin, 2011; Gatto & Panarello, 2022; Gaxie, 2011; Glynn et al., 2018; Nissen, 2014). Finally, respondents are free to ignore topics they do not have an opinion on, or to draw a CM with only a few concepts or relations. Our study shows that people also take this liberty: The minimum number of relations our respondents drew was one, the maximum 21.

Finally, unlike most other methods by which scholars may obtain deeper insight in citizens' beliefs—like interviews and focus groups—CM can be applied in large-N research: The data for the maps can be gathered in an (online) survey setting and automatically stored. In addition, software has been developed to analyze the data in an efficient manner (Van Esch, Snellens et al., 2024; Van Esch, Treep et al., 2024). Finally, because of its focus on belief systems rather than single attitudes as well as the freedom it allows respondents to express their ideas in paradoxical ways, CM can be used to study ambivalence. In fact, as will be illustrated below the technique offers different ways to operationalize and measure ambivalence.

Using the CM method for public opinion research also has drawbacks. First, if incorporated in a large-n context it cannot escape the problems associated with eliciting attitudes from respondents at a distance: The concepts with which to draw the maps may be interpreted differently by different people. Moreover, combining negative concepts and negative relations is problematic in CM research as this may result in relations that are the equivalent of double negative statements which are difficult to interpret by both respondents and researchers (Boukes et al., 2020). Third, the technique is not well-known among respondents. Although maps generally correspond well with what respondents intend to express (Hodgkinson et al., 2004; Vo et al., 2005), the task makes some respondents insecure about whether they are fulfilling the task correctly. Finally, as a novel approach to public opinion research, the ways to analyze the data on a larger scale and regarding questions about ambivalence in particular are still being developed (Van Esch, Treep et al., 2024; Young, 2001).

https://doi.org/10.1017/nws.2025.10009 Published online by Cambridge University Press

4. Research design

In order to explore to what extent the CM technique can indeed increase our understanding of citizens' beliefs regarding the EU, we broke down our research question into three sub questions: Can the use of CM (1) lead to new insights regarding the nature of citizens' belief system and attitudes towards the EU?; (2) provide more clarity into the extent to which citizens interpret EU politics and policy through an ideological lens?; (3) provide a deeper understanding of the extent and ways in which their beliefs regarding the EU are coherent or ambivalent?

4.1. Case selection and data collection

To answer these questions, this study will explore the belief systems of 504 Dutch citizens regarding the Eurozone crisis. The Eurozone crisis constitutes a highly salient case that features in many public opinion studies. Moreover, as a founding member of the EU and EMU the Netherlands is often included in studies of EU public opinion. This makes this case both a typical and a hard case for our study (Yin, 2009): Given that the case has been explored extensively, it will be hard to come up with new insights (sub-question one). Moreover, the complexity of the issue area increases the likelihood that citizens' attitudes are based on cue-taking, heuristics, or attribution, making it less easy to refute the thesis of Converse (sub-question two). In addition, the Netherlands was less affected by the Eurozone crisis than other member states, reducing the chance for its citizens to hold strong ideological attitudes towards the subject. Finally, the complexity of the crisis increases the likelihood that people's beliefs will be ambivalent, making it a typical case to study sub-question three thereby allowing us to explore the phenomenon of ambivalence further.

The data for this study was gathered as part of a larger research project including nine EU member states (Denmark, France, Germany, Hungary, Ireland, Italy, the Netherlands, Spain, and the United Kingdom). For each of these countries, in the spring of 2017, a representative sample of approximately 500 respondents completed an online survey comprised of the CM task and a short list of background questions (Van Esch et al., 2018). To elicit respondents' cognitive maps on the Eurozone crisis, a purpose-built web-based software tool (DART) was used. This tool was built to provide a simple user-friendly online facilitator to guide respondents through the task of drawing their cognitive maps, that can be integrated into online survey software. It guides respondents step-by-step through the CM task providing instructions for each step (see Appendix 3). It also links the CM data automatically to the responses to the survey questions to facilitate the analysis of the data.

After a brief instruction on how to complete the CM task, respondents were asked to choose a maximum of seven out of 34 key concepts that to them were most relevant to the Eurozone crisis.[1] These 34 concepts are derived from a list of the most salient concepts in the cognitive maps on the eurozone crisis of the Dutch prime ministers and central bank governors who served during the crisis. To make the concepts from the leaders' CMs easier to grasp and to avoid jargon, concepts with similar meanings were collated, and the most technical terms were reworded into everyday language (see Appendix 3). Following CM standards, negatively worded concepts were avoided as much as possible (Boukes et al., 2020). After selecting the concepts, respondents were presented on a virtual whiteboard on which their selected concepts were randomly spaced. The concept "crisis-free Eurozone" was included automatically in the map as the central concept of this study.

The respondents were then asked whether and how they perceived these concepts to be related by drawing arrows between them, following the freehand drawing approach (Drury et al., 2020; Hodgkinson et al., 2004; Knox et al., 2024; Markíczy & Goldberg, 1995). This approach is seen to be more intuitive, less time consuming and tedious by respondents. In case of probing the general public for their beliefs regarding a topic they have little interest in, this is important for it prevents respondents from skimming over the task or dropping out. In addition, Hodgkinson et al., find this approach to produce maps that respondents feel represent their ideas adequately (Hodgkinson et al., 2004).

https://doi.org/10.1017/nws.2025.10009 Published online by Cambridge University Press

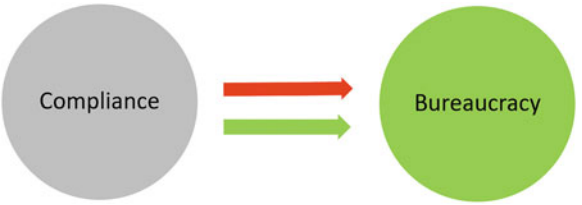


Figure 2. Operationalization of ambivalence as conflicting relations.

The respondents in our study had the choice between positive (green) and negative (red) arrows. They were allowed to draw arrows between a set of concepts in both directions and contrary to common practice, to draw both a positive and negative relation between the same set in the same direction (see Figure 2). The latter option offers respondents the opportunity to assert conflicting thoughts, the most strict indicator of ambivalence (see below). These options were, however, not explicitly disclosed to the respondents in order not to influence their natural thought process. In addition, we opted not to ask respondents to weigh the relations as is common in Fussy CM studies in order not to complicate the task in our non-supervised setting (Knox et al., 2024).

In the second part of the study, the respondents were asked a series of survey questions regarding their background, media use, political preferences and trust in a number of national and European institutions. Moreover, a question was included regarding their trust in the EU, using the wording of the Eurobarometer to make our findings comparable to most studies on EU public opinion. However, in order to be able to compare the CMs of different subgroups, we used a 5 point Likert scale from "very little trust" to "very much trust" and an additional "don't know" option (score of 6) rather than the bivariate "tend to trust," "tend not to trust" that the Eurobarometer uses.

4.2. Operationalization

In order to analyze the data, a collective Dutch cognitive map was composed on the basis of all the individual maps via the "aggregation method." This involves merging the individual maps through common concepts (Vo et al., 2005). The positive and negative relations were merged into a single arrow and given the color (green/red) of the value of their sum (positive/negative). Information on the number of positive and negative relations was retained to enabled detailed analysis of the CMs (see Table 3 and the Appendix 1). The aggregation method results in complex CMs and makes it hard for individual respondents to recognize their own beliefs. However, in the context of this study this method seems the most appropriate as others require respondents to collaborate or are focussed on studying system dynamics. The aggregation method is also easy to apply in an online setting and mimics the way in which attitudes are aggregated in the democratic process (Knox et al., 2024; Vo et al., 2005). Nonetheless when analyzing the collective maps, one must remain cautious that some of the results could be an artifact of the aggregation method.

In order to explore to what extent the method of CM can credibly capture the belief system of the Dutch respondents with regard to the Eurozone crisis and lead to new insights (sub question 1), their collective CM was converted into a graph. In addition, several basic CM descriptive measures like the weight and the sign of the relation and saliency of the concepts as well as the evaluation of concepts were calculated using the Cognitivemapr R-package and displayed in the graph (Van Esch, Snellens et al., 2024; Van Esch, Treep et al., 2024).[2] The visualizations of (excerpts of) the graph enables the narrative analysis of the collective map providing insight respondents' belief system with regard to the Eurozone crisis. By comparing the findings of this analysis with an overview of existing insights in the attitudes of the Dutch regarding the Eurozone crisis, the potential added value of CM research is explored. As existing research has a strong focus on trust in the

https://doi.org/10.1017/nws.2025.10009 Published online by Cambridge University Press

Table 1. List of terms and measures used in CM analysis

Measure (CM component)	Explanation	Measure of:
Weight (edge)	Number of times a relation is drawn	Belief strength
Sign (edge)	Extent to which a relation is positive, negative or ambivalent as indicated by respondents	Value of the perceived relation between concepts
Centrality (node)	Sum of connections from a concept to other concepts	How central the belief is in the system
Saliency (node)	Sum of connections from a concept to other concepts, taking into account the weight of relations	Belief strength/Resistance to change
Consequent path (path)	Sequence of concepts and relations leading out of a concept	Cause of
Antecedent path (path)	Sequence of concepts and relations leading into a concept	Effect of
Evaluation (node)	Value of concept (positive, negative, ambivalent), derived from walking through all consequent paths from the concept to a "utility concept" taking into account the signs and weight of the relations	Belief value (Van Esch & Snellens, 2024; Van Esch, Treep et al., 2024)
Goal Orientation (go) (node)	Relative ratio of relations feeding into a concept (indegree) versus the relations leading out of a concept (outdegree). Calculated as (*indegree − outdegree*)/*saliency*	The extent to which a concept is seen as a cause (−1) or goal (1) (Van Esch & Snellens, 2024)
Paradigm support (graph)	Sum of saliency of concepts indicating support for different policy paradigms	Level of support for a policy paradigm (Van Esch & Snellens, 2024)
Instrument support (graph)	Sum of saliency of concepts indicating support for different policy instruments	Level of support for a policy instrument (Van Esch & Snellens, 2024)
Strict ambivalence (dyad of nodes/CM)	The existence of "conflicting beliefs" in a map: both a positive and a negative relation in the same direction from one concept to another.	Ambivalence (Axelrod, 1976a).
Ambivalence (node/CM)	The extent to which concepts have both positive and negative consequences.	Ambivalence

EU, the analysis of the CM will focus on the relation between citizens' beliefs on the Eurozone crisis and their trust in the EU.

The second sub question asks whether CM can provide insight in the extent the thesis that citizens' beliefs are less ideologically informed than those of the elite holds in the field of EU public opinion (Converse, 2006). Since in the context of the Eurozone crisis, the ideologies that Converse focusses on—conservatism and liberalism—are of limited relevance, our analysis will focus on two rivaling economic ideologies that are widely seen as having played a crucial role in the EU and Dutch political and public debate on the Eurozone crisis (Dullien & Guérot, 2012; Hall, 2014; Schäfer, 2016; Van Esch, 2014): Ordoliberalism and Keynesianism. The Ordoliberal paradigm is characterized by a belief in the primacy of price stability, which may be ensured by pursuing austerity and denouncing monetary financing. For Keynesians, economic growth and employment

https://doi.org/10.1017/nws.2025.10009 Published online by Cambridge University Press

take precedence and economic stimulation is advocated to promote these goals during economic downturns. Keynesians are also more favorable to monetary financing and for a central bank to act as a lender of last resort.

To measure the extent to which our respondents' beliefs are ideological inspired, the measures "paradigm support" and "instrument support" are used. Paradigm support reveals to what extent the beliefs in the CM indicate support for a particular ideology or policy paradigm. Instrument support measures the extent to which respondents support different types of policy instruments (Van Esch & Snellens, 2024). The list of concepts used in our study contains references to three types of policy instruments used during the Eurozone crisis: reform of the European Economic and Monetary Union, stronger fiscal regulation and structural reforms. Paradigm support measures actors' philosophical beliefs, while instrument support focusses on the more everyday practical and operational translation thereof. Including both acknowledges the empirical finding that citizens' ideological beliefs seem to encompass both, and that actors may at the same time have different ideological leanings at the philosophical and at the operational level (Feldman & Zaller, 1992; Zaller & Feldman, 1992). As data on both measures is also available for the Dutch prime minister, Mark Rutte, and governor of the Dutch central bank, Klaas Knot (Van Esch & Snellens, 2024), their scores will be compared to those of our respondents. This provides a first indication as to the value of Converse's thesis in the context of EU politics.

The final sub question asks if using CM may provide a deeper understanding of the extent and ways in which their beliefs regarding the EU are coherent or ambivalent. Ambivalence is generally defined as holding opposing evaluations towards the same object (Lutz, 2021). However, this general definition allows for a more and a less strict interpretation. In its most strict definition, ambivalence indicates that someone sees something to be both true and not true (Lavine et al., 2012). The second more lenient operationalization of ambivalent beliefs is more commonly used and defines ambivalent objects to have both positive and negative aspects or consequences (De Vries & Steenbergen, 2013; De Vries, 2013; Lutz, 2021; Steenbergen & Brewer, 2004; Stoeckel, 2013). There are no established measures for these definitions of ambivalence in the literature on CM, but the technique offers ways to measure both.

In the context of a cognitive map the idea of ambivalence as "conflicting beliefs" translates to drawing a both a positive and a negative relation between two concepts (Axelrod, 1976a, see Figure 2). Whether a CM contains contradictory beliefs is visible in the map or the list of its relations. In order to establish the extent to which a CM holds contradictory beliefs, we calculated the percentage of conflicting relations of the total relations in the CM.

The second definition of ambivalence translates in concepts having both positive and negative consequences. In Figure 1, for instance, European cooperation has the positive effect of fostering a crisis-free eurozone as well the negative effect of leading to more bureaucracy. To establish whether a belief indeed carries different positive and negative implications, it is important to consider the belief system as a whole and first determine the value of each concept in its context rather than simply count the number of outgoing positive or negative relations. In Figure 1 for instance, European cooperation has two positive outgoing relations. However, since the concept bureaucracy holds a negative value to this respondent, European cooperation has both a positive and a negative effect and thus fits the second definition of ambivalence.

In addition to categorizing a concept as ambivalent or not, we also determined the extent to which a concept is ambivalent by factoring in how many positive and negative consequences it has (cf. Stoeckel, 2013). In Figure 1, for instance, European cooperation has both a positive and negative consequence, while liberalization has two negative and one ambiguous consequences. Liberalization is thus seen as largely negative and less ambivalent than European cooperation. To calculate the ambivalence score of a concept, we established the number of consequences and type of consequences (positive, neutral or negative) for all the concepts that have effects

https://doi.org/10.1017/nws.2025.10009 Published online by Cambridge University Press

(outdegree > 0). We then calculated its ambivalence using the following function:

$$Ambivalence\ score\ (node) = 1 - \left(\sqrt{\left(\sum consequences^2\right)}\right)/outdegree$$

To be able to compare the CMs, the average ambivalence of all ambivalent nodes was established. In addition, we calculated the ambivalence score as a percentage of all the cause concepts (outdegree > 0) in a map (see Appendix 2).[3]

4.3. Description of the data

The level of trust in the EU among our respondents is largely comparable to that reported in the Eurobarometer that was published around the same time as our survey (EB 87, May 2017). Instead of 45 per cent, 42 per cent of our respondents tend not to trust the EU (Likert score 1-2) while 20 instead of 49 per cent univocally trust the EU (Likert score 4-5). Using a 6-point scale reveals that 29 percent of our respondents are ambivalent about their trust in the EU (Likert score of 3), which suggest that providing respondents with only two answer options—as the EB does—distorts respondents' attitudes. Finally, the number of people in our sample who do not know whether they trust the EU is at 2 per cent smaller than in the Eurobarometer.[4] During the CM task, the 504 Dutch respondents drew a total of 2.783 arrows, an average of 5.5 relations per person using an average of 5.4 concepts. All 34 available concepts were used at least once.

5. Mapping Dutch belief systems regarding the Eurozone crisis

This section reports the findings regarding each of the three sub questions.

5.1. The Dutch take on the Eurozone crisis

Research in EU studies has provided significant insights into the impact of the Eurozone crisis on people's trust in the EU using survey methods (Armingeon & Ceka, 2014; Bauer, 2020; Dijkstra et al., 2020; Foster & Frieden, 2017). The literature, for instance, shows that the level of trust in the EU significantly declined over the course of the crisis from 65% in 2007 to 36% by 2015 (Foster & Frieden, 2017). This decline was particularly pronounced in countries with excessive budgetary deficits and that were subjected to austerity measures imposed by the EU. Conversely, citizens in countries that were less affected by the crisis—like the Netherlands—retained higher levels of trust in the EU (Foster & Frieden, 2017, see Figure 3). Exploring the reasons behind these trends, economic factors such as unemployment, economic stagnation, industrial decline, and the imposition of structural adjustment programs are identified as key contributors to the erosion of trust in the EU. In addition, citizens' attitudes towards the EU correlate with their assessment of their national government's crisis management. In contrast to citizens in highly affected countries, citizens in less affected countries show more confidence in their national government than the EU. Those in crisis-hit nations tend to prioritize public investment and economic stimulus over austerity measures, while citizens in other countries prefer spending cuts and austerity. Interestingly, citizens from crisis-affected countries demonstrate a higher acceptance of strict fiscal rules enforced by the EU, such as automatic fines for excessive public spending. In general, citizens evaluate the EU's effectiveness based on general evaluations of the economy rather than on personal experiences (Bauer, 2020).

The Netherlands was only marginally hit by the eurozone crisis. While GDP remained relatively low in comparison to other member states, so did its governmental debt and deficit and unemployment rates. As a result, the Netherlands was not subjected to externally imposed structural adjustment programs but the government itself did impose austerity measures (Picard, 2015;

https://doi.org/10.1017/nws.2025.10009 Published online by Cambridge University Press

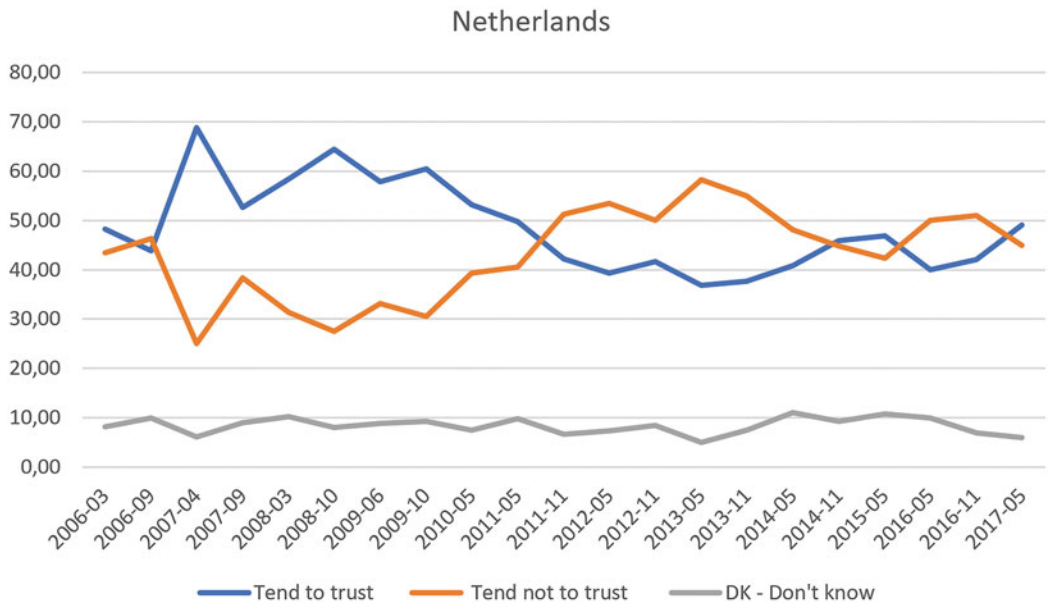


Figure 3. Trust in the EU in the Netherlands (Bauer, 2020; EB 85, EB 86, EB 87).

Van Esch & Snellens, 2024). At the start of the crisis, however, a large majority of Dutch respondents perceived the crisis as having a (fairly) significant impact on the national economy. In contrast to the hawkish, ordoliberal tone of the Dutch public debate and positions of the political elite (Bijsmans, 2021; Verdun, 2022), a majority of Dutch respondents supported providing financial help to other EU countries (Eurobarometer, 2010; Kleider & Stoeckel, 2019). In addition, they favored coordinated EU action over individual national responses even though the majority did not feel the euro helped mitigate the crisis. Finally, little over half of Dutch respondents favored EU member states to invest rather than to reduce public spending. They also showed strong support for a range of EU measures to prevent future crises like stricter regulation of financial markets, the creation of a European monetary fund, penalizing non-compliance with EU rules on debt and deficit and coordinating economic, budgetary and financial policies (Eurobarometer, 2010, 2011a, b). Little is known about the Dutch attitudes in later years of the crisis and to our knowledge no studies exist that explore the role of ambivalence in citizens' beliefs regarding the Eurozone crisis or the Dutch in particular.

5.2. What the Dutch believe: Governmental debt and bureaucracy

To explore what insights can add to these findings by applying CM, the most salient relations from the aggregated CM of the Dutch respondents are visualized in a graph (see Figure 4). In addition, the most salient concepts and relations including the weight (w), value (v) and sign of the relations and the goal-orientation (go) of the concepts helps to explore the content of CMs (see Tables 3 and 4). Analyzing this data leads to some new and surprising findings: While respondents were specifically asked and primed to draw their belief system regarding the Eurozone crisis, the most salient (s) concept in the collective CM is the term "bureaucracy" (s: 412, see Table 3).[5] Ideas that pertain more directly to the crisis like for instance the global financial crisis (s: 322) are much less salient. Bureaucracy is seen mainly as a cause (go: −0,38) and perceived as negative. The connection between bureaucracy with other concepts in the maps reveals why this is the case. First and foremostly, bureaucracy is seen as the main contributor to the Eurozone crisis (negative

https://doi.org/10.1017/nws.2025.10009 Published online by Cambridge University Press

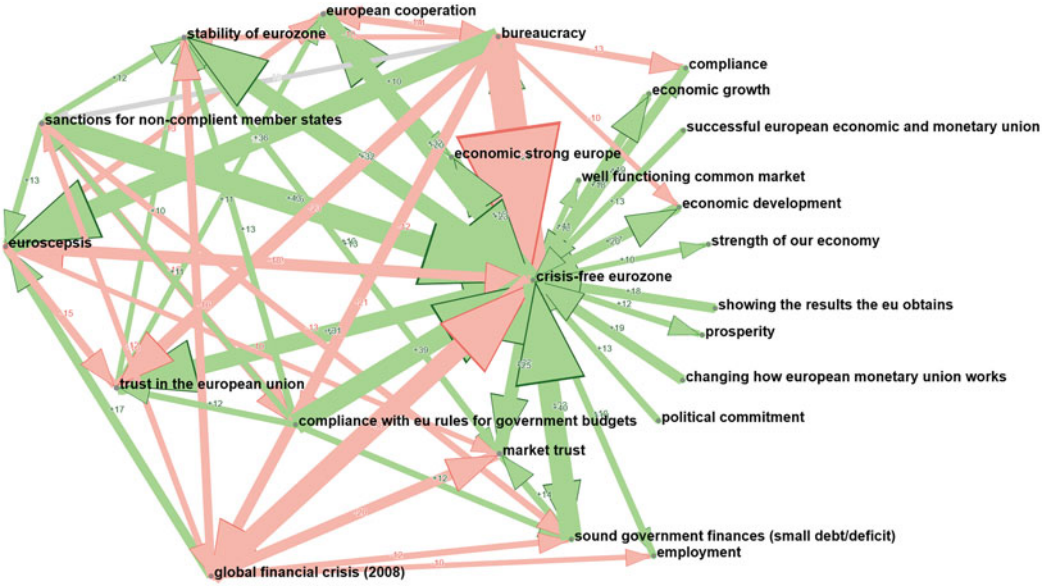


Figure 4. Excerpt from collective CM of all respondents.

relation to crisis-free Eurozone, w: 60, v: -30), Moreover, it is perceived to fuel Euroscepsis (w: 36, v:2), has a negative effect on European cooperation (w: 14, v: -12) and diminishes trust in the EU (w: 23, v: -21).[6] Delving into the details also provides insight into why and how our participants feel bureaucracy is connected to the Eurozone crisis: In their minds it dissuades compliance in general and with EU budgetary rules in specific (w: 13, v: -9; w: 12, v: -4) as well as the reform of EMU (w: 7, v: -5). In addition, they feel it reduces the stability of the Eurozone (w: 10, v: -8), diminishes market trust (w: 7, v: -5) and has negative influence on economic development (w: 10, v: -8) and sound governmental finances (w: 7, v: -5).

Other key concepts in the CM point to two alternative narratives regarding the crisis. The first narrative revolves around the global financial crisis which is the second most salient concept in the belief system of our respondents and is—as another major and direct cause of the Eurozone crisis—also evaluated negatively (w: 38, v: -24). In the minds of our respondents the global financial crisis also caused a decline in market trust (w: 20, v: -16) and the stability of the Eurozone (w: 16, v: -14) while fueling Euroscepsis (w: 17, v: 5). However, this is not the dominant narrative. Analysis of the other key concepts reveals that they interpret the crisis primarily as a governmental debt crisis. Concepts like "sanctions for member states that do not comply to the EU budgetary rules" (s: 278), "sound governmental finances" (s: 253) and "compliance with EU rules for governmental budgets" (s: 231) are all part of the top ten most salient concepts in the CM and evaluated positively (see Table 2). In fact, all three concepts are seen as major preventors of, or solutions to the Eurozone crisis, with a combined effect that far exceeds that of the global financial crisis or bureaucracy. Moreover, there is little disagreement among the Dutch respondents that enforcing sound budgetary policies would have a positive effect on the Eurozone (see columns 5-6 in Table 3 and Appendix 1). The conclusion that the framing of the Eurozone crisis as a governmental debt is dominant, is further supported by the low saliency of concepts that would point to the interpretation of the Eurozone crisis as a more structural economic crisis like employment (s: 142), economic growth (s: 128), domestic structural reforms (s :62), sustainable social security systems (s: 57) or liberalization (s: 49, see Appendix 1).

https://doi.org/10.1017/nws.2025.10009 Published online by Cambridge University Press

Table 2. Top ten most salient concept in the aggregated CM of all respondents

Concept	Saliency	Goal orientation	Value	Relative saliency
Crisis-free Eurozone	947	0,16	1	17,01
Bureaucracy	412	−0,38	−1	7,40
Global financial crisis (2008)	322	−0,30	−1	5,79
Stability of eurozone	286	0,26	1	5,14
Sanctions for non-compliant member states	278	−0,17	1	4,99
European cooperation	277	−0,03	1	4,98
Trust in the European Union	273	0,30	1	4,90
Euroscepsis	258	0,12	−1	4,64
Sound government finances (small debt/deficit)	253	−0,07	1	4,55
Compliance with EU rules for government budgets	231	−0,28	1	4,15

Focussing on the perceived consequences of the Eurozone crisis, the most salient effect of a crisis-free Eurozone in the eyes of the Dutch is the somewhat tautological conclusion that it would (re)establish stability with the Eurozone (w: 32, v: 28). Solving the crisis is also seen to increase trust in the EU (w: 31, v: 19) and foster further European cooperation (w: 29, v: 19). These more general effects outweigh the positive economic effects of a crisis-free Eurozone in the mind of the respondents, like strengthening the economy of the EU (w: 23, v: 21), increasing market trust (w: 22, v: 14), improving government finance (w: 22, v: 8), economic growth (w: 18, v: 6) and development (w: 20, v: 14) and employment (w: 10, v: 4). The perceived effects of the crisis, thus focus on structural issues like stability and trust rather than on the economy. In line with this, only a few of our respondents draw a link between the crisis or its consequences and the general interest or their self-interest (s: 52; s: 51).

Finally, it is clear from the state of the art in EU Studies that the Eurozone crisis had a negative effect on peoples' trust in the EU. This connection also exists in the minds of the Dutch citizens in this study. In their CM the effect of the crisis on EU trust is seen as stronger than on other perceived consequences of the crisis (w: 31, v: 19). Moreover, a similar idea is conveyed through the perceived link between the concepts "successful Economic and Monetary Union" and "stability in the Eurozone" and trust in the EU (w: 8, v: 8; w: 10, v: 6). Other factors that negatively impact trust in the EU are bureaucracy (w: 23, v: −21) and Euroscepsis (w: 15, v: −15). As indicated above, these two factors are mutually reinforcing in the minds of our respondents, fortifying their negative impact on trust. In addition, as bureaucracy is also seen to significantly hinder the Eurozone's ability to become crisis-free (w: 60, v: −30), it also indirectly limits trust in the EU in the eyes of the Dutch respondents.

The final remaining question is whether the difference in EU trust among the respondents is also linked to differences in their belief systems. When conducting a quick comparison of the maps, several things stand out: Those with low and ambivalent trust in the EU identify the same top ten concepts to which they generally assign the same value. The collective CM of the group with high trust diverges from this and they are the only group for which the concept EU trust falls just outside their top ten of most salient concepts. Moreover, in the view of the respondents with high trust in the EU, the Eurozone crisis only has a weak effect on EU trust (w: 3), weaker than the reverse effect of trust on the crisis (w: 5). Answering this question would require a more in-depth analysis and the development of new ways to facilitate the comparison of CMs in a more in-depth fashion.

https://doi.org/10.1017/nws.2025.10009 Published online by Cambridge University Press

Table 3. Top ten most salient relations in the aggregated CM of all respondents

Cause concept	Effect concept	Weight of relation	Sum of signs	Nr. positive relations	Nr. negative relations
Bureaucracy	Crisis-free Eurozone	60	−30	15	−45
Sanctions for non-compliant member states	Crisis-free Eurozone	43	25	34	−9
Sound government finances (small debt/deficit)	Crisis-free Eurozone	40	30	35	−5
Compliance with EU rules for government budgets	Crisis-free Eurozone	39	23	31	−8
Global financial crisis (2008)	Crisis-free Eurozone	38	−24	7	−31
Bureaucracy	Euroscepsis	36	2	19	−17
Crisis-free Eurozone	Stability of Eurozone	32	28	30	−2
European cooperation	Crisis-free Eurozone	32	24	28	−4
Crisis-free Eurozone	Trust in the European Union	31	19	25	−6
Stability of Eurozone	Crisis-free Eurozone	30	24	27	−3

5.3. The ideology of the masses

The second sub question asks whether CM may help to answer one of the classic questions in the domain of public opinion, the extent to which citizens' attitudes are actually grounded in an ideologically inspired belief system (Converse, 2006; Wilker & Milbrath, 1970). To answer this question the "paradigm support" and "instrument support" of our respondents is are calculated and compared to that of two key members of the Dutch elite: the Dutch prime minister, Mark Rutte, and governor of the Dutch central bank, Klaas Knot (Van Esch & Snellens, 2024).

Table 4 shows the level of paradigm support in the cognitive maps of all our respondents, the different subgroups and the two Dutch leaders. In correspondence to the findings from the narrative analysis, the analysis shows a strong support among our respondents for the Ordoliberal policy paradigm. This support seems independent of their trust in the EU. Interestingly and in sharp contrast to the thesis put forward by Converse, the belief system of our respondents is even more strongly Ordoliberal than that of the Dutch elite: The maps of all subgroups contain about three times more arguments in support of an Ordoliberal approach to the crisis than a Keynesian approach, while about half of the arguments of the leaders correspond to a more Keynesian ideology.

Table 5 shows the level of support for the different policy instruments. In line with their perception that the Eurozone crisis is a governmental debt crisis and corresponding to their Ordoliberal ideology, the participant in our study support stronger EU fiscal regulation over structural and

Table 4. Paradigm support for the different groups of Dutch citizens in comparison to the Dutch political and financial leadership

Paradigms	All	Low trust	Ambivalent	High trust	Do not know	Rutte	Knot
Keynesian	4.85	4.54	5.25	4.73	4.44	7.39	12.60
Ordoliberal	13.69	13.35	14.69	12.92	16.67	15.65	23.28
Quotient	0.35	0.34	0.36	0.37	0.27	0.47	0.54

https://doi.org/10.1017/nws.2025.10009 Published online by Cambridge University Press

Table 5. Instrument support for the different groups of Dutch citizens in comparison to the Dutch political and financial leadership

Instruments	All	Low trust	Ambivalent	High trust	Do not know	Rutte	Knot
EMU reforms	1.94	1.85	2.74	1.20	0.00	3.91	3.44
Stronger EU fiscal regulation	4.99	5.02	5.25	4.80	−2.22	5.65	2.67
Structural Reforms	3.27	2.86	1.96	1.69	0.00	8.26	5.73

EMU reforms with the exception of the group that do not know whether they trust the EU. They also generally prefer structural over EMU reforms with the exception of the group with ambiguous trust in the EU. However, the major dissent is between the Dutch citizens en their leaders, who both show more support for structural reforms than the Ordoliberal measure of imposing stronger fiscal regulation.

5.4. Ambivalence: Beyond to believe and not to believe

Finally the findings of our analysis confirms the conclusions of earlier studies that ambivalence is an integral, and relevant aspect of public opinion that deserves further exploration. Focusing on ambivalence in its uncommon, strict definition reveals that of 50 of our 504 respondents took the liberty to draw at least one pair of conflicting relations (see Appendix 2).[7] In total these citizens drew 72 pairs of conflicting relations. Seventy percent of this subgroup drew only one conflicting pair of relations, three respondents indicated that they felt strictly ambivalent about all the relations in their CM (see Appendix 2). Overall, the share of strictly ambivalent relations for the maps of these 50 respondents ranges from around 11 to 100 percent. These results indicate that even in its most strict definition, ambivalence is a relevant construct when studying public opinion.

The concepts that are most often seen to have conflicting consequences are crisis-free eurozone (10 times), closely followed by bureaucracy (7 times) and global financial crisis (6 times). There is a considerable variety in the conflicting implications these concepts are perceived to have. Bureaucracy, for instance is seen to have both a positive and negative effect on Euroscepsis, crisis-free Eurozone, liberalization, compliance with EU rules for government budgets and the stability of the Eurozone. In almost 85 percent of cases a particular conflicting relation is drawn by only one respondent. The most frequently mentioned strict ambivalent relation is that between bureaucracy and Euroscepsis, whereby three respondents felt bureaucracy both fostered and reduced Euroscepsis. These examples suggest that it would be hard for these respondents to form an attitude or policy preference with regard to the topic of bureaucracy, indicating the broader relevance of studying strictly ambivalent beliefs for political science.

A more commonly used and less strict measure operationalizes ambivalence as holding opposing evaluations towards the same object. In the context of CM this translates in concepts having both positive and negative implications. Almost 31 percent (155) of maps in our set fulfill this condition and identify positive and negative consequences for one or more concepts in their map. This adds up to a total of 309 ambiguous concepts (see Appendix 2). This percentage corresponds quite closely to the level of ambivalence found in survey-based studies of EU public opinion.[8] Our findings, however, confirm the relevance of also assessing the extent to which respondents' beliefs are ambivalent (cf. Stoeckel, 2013), for the level of ambivalence per concept and per map exhibits a high degree of variability. In 67 percent of our cases the ambivalent concept has an equal number of positive and negative consequences, indicating maximum ambivalence (score of 1). In these cases, respondents would again have a hard time asserting a preference or attitude on the subject at hand. In the remaining 33 percent of cases, the respondent's assessment of the concepts is skewed

https://doi.org/10.1017/nws.2025.10009 Published online by Cambridge University Press

Table 6. Top ten ambivalent concepts (overall)

Concepts	Number of times identified as ambivalent	Sum ambivalence scores	Average ambivalence score per ambivalent concept	Saliency (all CMs)	Average ambivalence score per total concept use (all CMs)
Liberalization	8	6,50	0,81	49	13,27
Subsidiarity	6	6,00	1,00	46	13,04
European digital market	2	2,00	1,00	16	12,50
Political commitment	13	10,53	0,81	106	9,94
Sustainable social security system	5	5,00	1,00	57	8,77
Compliance with eu rules for government budgets	18	15,83	0,88	231	6,85
Bureaucracy	32	28,11	0,88	412	6,82
Domestic structural reforms	5	4,17	0,83	62	6,72
Public support	4	4,00	1,00	62	6,45
Sound government finances (small debt/deficit)	16	14,33	0,90	253	5,67

towards positive or negative, which suggests that they would be able to form a clear opinion on the subject.[9]

The concept that is most frequently perceived as fully ambivalent (equal number of positive and negative effects) is crisis-free eurozone (46 times), closely followed by bureaucracy (32 times), compliance with EU rules for government budgets (18 times) and sound government finances (small debt/deficit) (16 times). When reviewing their average ambivalence score, however, none of these concepts make the top ten. Moreover, when we also take into account the cognitive maps without any ambivalent beliefs (ambivalence score 0), liberalization, subsidiarity and the European digital market come out as the concepts respondents are most ambivalent about. Compliance with EU rules for government budgets, bureaucracy and sound government finances (small debt/deficit) closely follow (see Table 6). The concepts innovation and pragmatism are the only concepts seen as non-ambiguous by all respondents.

6. Conclusion

This paper explores to what extent citizens hold a coherent, ideologically informed belief system regarding the EU by studying the cognitive maps of 504 Dutch citizens regarding the Eurozone crisis. The findings provide a nuanced picture of the belief systems of the respondents and leads to new insights.

The narrative analysis of the CMs suggest that our Dutch respondents primarily perceive the crisis as a governmental debt crisis, with concepts like sound governmental finances and compliance with EU budgetary rules being highly salient. This corresponds to the image painted in existing studies regarding the predominant Dutch narrative on the Eurozone crisis. However, the analysis provides a more nuanced and in-depth picture of the underlying belief systems of our

https://doi.org/10.1017/nws.2025.10009 Published online by Cambridge University Press

respondents. One of the most remarkable findings in this regard is that the concept of bureaucracy emerges as a key factor negatively affecting the Eurozone, European cooperation and trust in the EU and fueling Euroscepsis. This finding has remained under the radar in the existing studies on the Eurozone crisis and EU public opinion. It suggests that the technique of CM—which allows citizens to express their ideas more freely and in the context of their wider belief systems—may lead to important new findings.

The study also shows a strong support for Ordoliberal economic principles among the participants in our study and a corresponding preference for strengthening EU fiscal regulation. This support corresponds with the results of the narrative analysis and suggests that the attitudes of citizens may be grounded in a coherent belief system. In fact, the beliefs of the Dutch citizens in this study turn out to be more, rather than less ideologically informed than the cognitive maps of the two Dutch political leaders, Rutte and Knot. This finding is in direct contrast to the thesis of Converse which is quite remarkable for an issue-area in which most citizens neither have much interest in nor knowledge of.

Finally, recent additions to the literature on EU public opinion show that a considerable number of citizens hold ambivalent attitudes towards the EU. However, survey research struggles to provide deeper insights into this phenomenon. The CM technique offers respondents more freedom and different ways to express ambivalent beliefs. As no commonly used CM measure of ambivalence exists, the paper introduces two new operationalizations of ambivalence in the context of cognitive mapping: (1) A strict operationalization indicating a conflict of mind as represented in Figure 2; and (2) a measure reflecting respondents perception that a concept has a variety of both positive and negative implications. In addition to enabling a qualitative exploration of the content of respondents' ambivalent beliefs, both operationalizations are quantifiable and scalar. They thus allow scholars to establish not only whether respondents hold ambivalent beliefs but also the extent to which their beliefs or their belief systems are ambivalent.

To our knowledge no prior studies exist that operationalize, or empirically study ambivalent beliefs defined as holding conflicting thoughts. Reviewing the results of our analysis, this appears to be a caveat in the literature for about 10 percent of our respondents took the freedom to express that they hold conflicting beliefs. Moreover, apart from representing a considerable part of our participants, the implications of holding conflicting beliefs may be far-reaching. Believing, for instance, that a concept like "complying with EU rules for government budgets" both fosters and hampers "economic growth" (as one of our respondents does) makes it very difficult for people to form an attitude or policy preference. Such indecisiveness is likely to impact their political behavior.

In addition to this strict form of ambivalence, the CMs of nearly 31 percent of our respondents contain ambivalent beliefs in the sense that some of their beliefs have both positive and negative effects. While the concepts crisis-free Eurozone and bureaucracy are most often identified as ambiguous, liberalization and subsidiarity come out as on average the most ambivalent. As these concepts refer directly to two of the most longstanding and contested characteristics of the EU—the nature of the EU as a neoliberal project and the ongoing discussion about the proper level of the Europeanization of national autonomy—one may wonder if this finding is particular to the specific context of this study or would hold more generally.

Finally, in a similar fashion as above, the fact that CM offers a scaled measure of operationalization ambivalence is significant. For also when respondents evaluating concepts as equally positive and negative (ambivalence score of 1), it will be hard to form an attitude or political preference. However, at lower levels of ambivalence (scores between 0-1), when beliefs have both positive and negative implications but lean one way or the other, citizens may be expected to have a preference. The principled difference may thus not be between the first and the second definition of ambivalence but rather on the level of ambivalence. Future research is needed to explore whether this line of thinking holds value.

https://doi.org/10.1017/nws.2025.10009 Published online by Cambridge University Press

7. Discussion

Apart from offering a better understanding of peoples' belief systems regarding the Eurozone crisis, the paper offers an attestation to the feasibility and value of applying CM to (EU) public opinion research. In order to fit our purpose, we diverted from some of the common practices in (F)CM studies. Three characteristics of public opinion research necessitated these changes: First, public opinion research involves querying large groups of citizens that are not directly accessible, making direct supervision of the task impossible. Moreover, members of the general public are often not invested in the topics being polled which increases the chance of a low response rate, respondents dropping out or skimming over the tasks. Finally, in contrast to some CM studies in management, organization and policy sciences, public opinion research is not aimed at revealing "accurate" beliefs but studies subjective beliefs (cf. Giabbanelli & Nápoles; Knox et al., 2024; Özesmi & Özesmi, 2004).

As a result, one of the main concerns in public opinion research is ensuring that the maps represent an adequate reflection of respondents' belief systems, an internal validity concern. As discussed in the section on research methods, the CM technique holds several benefits over survey research in this regard as it offers respondents more freedom to convey their ideas. On top of this, we aimed to make the CM task as simple as possible. In contrast to what is common in FCM studies, respondents were not asked to weight the relations they drew which would make the task harder (Drury et al., 2020). In addition, a new software application was developed specifically designed to be user-friendly. We also used the free-hand drawing approach to elicit the cognitive maps, which has been shown to be more intuitive and less tedious for the participants and guided respondents step-by-step through the CM task offering instructions illustrated with everyday examples. Finally, we allowed participants to review their map at the end of the task (see Appendix 3). Although we conducted several tests of our setup in both live and remote digital settings and integrated the feedback we received, moving forward more systematic tests should be conducted to establish the extent to which respondents indeed feel capable of visualizing their beliefs using the CM method.

Moreover, several features could be added to make sure the cognitive maps visualize peoples' beliefs as closely as possible and to prevent measurement errors. Firstly, respondents could be allowed to add concepts to their maps. This would give them even more freedom to express their ideas. Combining this with a pre-existing list prevents the task from becoming too daunting and keeps the processing of data efficient. In addition, it may provide an indication of how well the presented list of concepts match the belief systems of the participants and if limiting the selection to seven is overly constraining. It could also help limit any potential bias present in the list of preselected concepts. The list used in this study, for instance, does not include any reference to providing fiscal support to other EU member states. This was a controversial subject in the European public debate but not one that was salient to the Dutch leaders whose cognitive maps inspired the list. Whether this is also the case for our respondents is therefore a question we cannot answer. Similarly, the list contains three Ordoliberal and two Keynesian concepts and there are four concepts that are categorized as structural reforms while the other instruments appear only once. This may have affected the results. Finally, while the software positions the concepts randomly once selected and respondents could change their position, the order of the list of concepts was not randomized. These issues should be improved in future studies.[10]

As indicated above, another drawback of our research design is that people may have had different interpretations of the concepts. If so, this may explain some of the variation in the cognitive maps we found. To mitigate this, more elaborate explanations could be added (as we did for the concept "subsidiarity," see Appendix 3) or respondents could be asked to provide their own interpretation of the concepts. This would, however, complicate the task and the processing of data. Finally, although we avoided using negative concepts, there are indications that some of the concepts that have a negative connotation—like Euroscepsis and the global financial

https://doi.org/10.1017/nws.2025.10009 Published online by Cambridge University Press

crisis—caused confusion when used as an effect concept. In addition to carefully formulating the concepts, it could be wise to include questions in the survey asking for a pairwise comparison of relations between the central concept of the study and concepts with a negative connotation as a double-check of the map (cf. Boukes et al., 2020).

Finally, there are some promising avenues for future research. The first way forward would be to develop ways to compare individual cognitive maps in a meaningful way and to establish similarity measures that go beyond the structure of the graphs or lists of most salient concepts or relations. This would not only open the way for more comparative studies—exploring for instance national differences in the perception of crises—but also to study changes in individual or collective belief systems over time. Moreover, as many of the measures used in CM analysis are quantifiable, CM can be used in explanatory and statistical analyses to test contested hypotheses such as the extent to which political sophistication or lack of knowledge fosters ambivalent beliefs (Stoeckel, 2013). Finally, CM can be used to study the implications of citizens' belief systems for public policy, or facilitate simulations ascertaining how public opinion might evolve in response to policy changes or vise versa (Dornschneider, 2015; Kim et al., 2016; Van Esch & Snellens, 2024). These latter avenues for future research may, however, benefit from the switching to FCM.

Supplementary material. The supplementary material for this article can be found at https://doi.org/10.1017/nws.2025.10009.

Acknowledgments. We gratefully thank the organizers and participants of the ECPR Joint Session workshop on Networks of Political Beliefs for their feedback and support.

Data availability statement. The data that support the findings of this study are openly available in supplementary materials.

Funding statement. This work was supported by European Union's Horizon 2020 research and innovation program under grant agreement No 649484 for the data-collection of the cognitive maps

Competing interest. None.

Notes

1 Setting a limitation on the number of concepts to seven ensures that there would be enough space on respondents' screens to keep an overview of all concepts and to draw relations between them. The exact number of seven is partly arbitrary but follows the thesis of Miller that an average person can hold around 7 words into their working memory (Miller, 1956). The magical number seven, plus or minus two: Some limits on our capacity for processing information. *Psychological review*, *63*(2), 81. Although this claim has been disputed, consensus still holds that people can only hold a very limited number of informational chunks in their working memory. Just under half of our respondent (234) selected the maximum of seven concepts.

2 See Table 1 for an overview of all the measures used in this article, with a brief description of their meaning and references.

3 For more information regarding the analyses, see the GitHub repository of the authors: https://github.com/Fesch-star.

4 Ten respondents did not answer this question, if they are added to the "do not know" category, the percentage is still lower than the 6 per cent reported in EB87

5 The term crisis-free Eurozone is left aside as it was pre-selected as the central topic of the CM and thus very saliently in all CMs.

6 The scores in columns 5 and 6 in Table 3 show that—in contrast to the majority—a fourth of respondents feel bureaucracy may actually stimulate a crisis-free Eurozone. The large dissent on the effect of bureaucracy on Euroscepsis, 19 positive and 17 negative relations, may indicate significant split in opinion among our respondents, but may also partly be the result of a "double negative" effect as Euroscepsis may be seen as a negative concept. This illustrates the need for careful formulation of the concepts in CM research.

7 Three people drew a positive arrow as well as two negative arrows between the same pair of concepts.

8 All of the CMs that contain strict ambivalent relations are also part of this set, meaning the total percentage of ambivalent CMs is 31 per cent.

https://doi.org/10.1017/nws.2025.10009 Published online by Cambridge University Press

9 These inferences presume that each arrow respondents drew carries the same weight in their mind (see discussion).
10 While we cannot say this with any certainty, the effects of this seem to be limited. The scores of paradigm support corresponds closely to the balance of concepts in the initial list, but instrument support does not. Also as shown in Appendix 3, the top 7 most salient concepts were spread across the concept list as presented to the respondents.

References

Aichholzer, J., Kritzinger, S., & Plescia, C. (2021). National identity profiles and support for the European union. *European Union Politics*, *22*(2), 293–315. doi: 10.1177/1465116520980068.

Aldrin, P. (2011). *The Eurobarometer and the Making of European Opinion* In: Gaxie, D., Hube, N., & Rowell, S., eds. *Perceptions of Europe* (pp. 17–34). ECPR Press.

Antonakis, J., & Atwater, L. (2002). Leader distance: a review and a proposed theory. *The Leadership Quarterly*, *13*(6), 673–704. doi: 10.1016/s1048-9843(02)00155-8.

Armingeon, K., & Ceka, B. (2014). The loss of trust in the European Union during the great recession since 2007: the role of heuristics from the national political system. *European Union Politics*, *15*(1), 82–107.

Axelrod, R. (1976a). The mathematics of cognitive maps. In *Structure of Decision: The Cognitive Maps of Political Elites* (pp. 343–348).

Axelrod, R. (1976b). *Structure of Decision: The Cognitive Maps of Political Elites*. Princeton University Press.

Bauer, S. (2020). *Citizens' Support for the European Union*. Springer.

Bertero, A., Franetovic, G., & Mijs, J. J. (2024). Inequality belief systems: what they look like, how to study them, and why they matter. *Social Indicators Research*, *174*(2), 1–28.

Bijsmans, P. (2021). The Eurozone crisis and Euroscepticism in the European press. *Journal of European Integration*, *43*(3), 331–346.

Boomgaarden, H. G., Schuck, A. R., Elenbaas, M., & De Vreese, C. H. (2011). Mapping EU attitudes: conceptual and empirical dimensions of Euroscepticism and EU support. *European Union Politics*, *12*(2), 241–266.

Bougon, M., Weick, K., & Binkhorst, D. (1977). Cognition in organizations: an analysis of the Utrecht Jazz Orchestra. *Administrative Science Quarterly*, *22*(4), 606–639. doi: 10.2307/2392403.

Boukes, M., Van Esch, F. A. W. J., Snellens, J. F. A., Steenman, S. C., & Vliegenthart, R. (2020). Using cognitive mapping to study the relationship between news exposure and cognitive complexity. *Public Opinion Quarterly*, *84*(3), 599–628. doi: 10.1093/poq/nfaa040.

Boutyline, A., & Vaisey, S. (2017). Belief network analysis: a relational approach to understanding the structure of attitudes. *American Journal of Sociology*, *122*(5), 1371–1447. doi: 10.1086/691274.

Brosius, A., van Elsas, E. J., & de Vreese, C. H. (2020). Trust in context: national heuristics and survey context effects on political trust in the European Union. *European Union Politics*, *21*(2), 294–311.

Clark, N. (2014). The EU's information deficit: comparing political knowledge across levels of governance. *Perspectives on European Politics and Society*, *15*(4), 445–463. doi: 10.1080/15705854.2014.896158.

Converse, P. E. (2006). The nature of belief systems in mass publics, 1964. *Critical Review*, *18*(1-3), 1–74.

De Vries, C., & Steenbergen, M. (2013). Variable opinions: the predictability of support for unification in European mass publics. *Journal of Political Marketing*, *12*(1), 121–141.

De Vries, C. E. (2013). Ambivalent Europeans? Public support for European integration in East and West. *Government and Opposition*, *48*(3), 434–461. doi: 10.1017/gov.2013.15.

De Vries, C. E. (2018). *Euroscepticism and the Future of European Integration*. Oxford University Press.

Dijkstra, L., Poelman, H., & Rodríguez-Pose, A. (2020). The geography of EU discontent. *Regional Studies*, *54*(6), 737–753. doi: 10.1080/00343404.2019.1654603.

Dornschneider, S. (2015). *Whether to Kill*. University of Pennsylvania Press.

Drury, J. L., Pfaff, M. S., & Klein, G. L. (2020). A method for rigorously assessing Causal mental models to support distributed team cognition. In: McNeese, M., Salas, E., & Endsle, M. R., eds. *Contemporary Research* (pp. 115–135). CRC Press.

Dullien, S., & Guérot, U. (2012). The long shadow of ordoliberalism: Germany's approach to the euro crisis. European Council on Foreign Relations (ECFR).

Eurobarometer (2010). European and the crisis (NL), EB741.

Eurobarometer (2011a). European and the crisis (NL), EB751.

Eurobarometer (2011b). European and the crisis (NL), EB761.

Feldman, S., & Zaller, J. (1992). The political culture of ambivalence: ideological responses to the welfare state. *American Journal of Political Science*, *36*(1), 268–307.

Foster, C., & Frieden, J. (2017). Crisis of trust: socio-economic determinants of Europeans' confidence in government. *European Union Politics*, *18*(4), 511–535.

Garry, J. (2014). Emotions and voting in EU referendums. *European Union Politics*, *15*(2), 235–254.

Gatto, A., & Panarello, D. (2022). Misleading intentions? Questioning the effectiveness and biases of Eurobarometer data for energy sustainability, development and transition research. *Energy Research & Social Science*, *93*, 102813.

https://doi.org/10.1017/nws.2025.10009 Published online by Cambridge University Press

Gaxie, D. (2011). What we know and do not know about citizens' attitudes towards Europe. In: Gaxie, D., Hube, N. & Rowell, S., eds. *Perceptions of Europe. A Comparative Sociology of European Attitudes* (pp. 1–16).
Giabbanelli, P. J., & Nápoles, G. (2024). Fuzzy Cognitive Maps. Springer Nature.
Glynn, C. J., Herbst, S., Lindeman, M., O'Keefe, G. J., & Shapiro, R. Y. (2018). Methods for studying public opinion. In Glynn, C., ed. *Public Opinion* (pp. 57–86). Routledge.
Hall, P. A. (2014). Varieties of capitalism and the Euro crisis. *West European Politics*, *37*(6), 1223–1243. doi: 10.1080/01402382.2014.929352.
Hix, S. (2015). Brits know less about the EU than anyone else. LSE European Politics and Policy (EUROPP) Blog. http://eprints.lse.ac.uk/id/eprint/70833
Hobolt, S. B., & de Vries, C. E. (2016). Public support for European integration. *Annual Review of Political Science*, *19*(1), 413–432. doi: 10.1146/annurev-polisci-042214-044157.
Hodgkinson, G. P., Maule, A. J., & Bown, N. J. (2004). Causal cognitive mapping in the organizational strategy field: a comparison of alternative elicitation procedures. *Organizational Research Methods*, *7*(1), 3–26. doi: 10.1177/1094428103259556.
Hooghe, L., & Marks, G. (2016). Calculation, community and cues. *European Union Politics*, *6*(4), 419–443. doi: 10.1177/1465116505057816.
Hooghe, L., & Marks, G. (2018). Cleavage theory meets Europe's crises: Lipset, Rokkan, and the transnational cleavage. *Journal of European Public Policy*, *25*(1), 109–135.
Hooghe, L., Marks, G., & Wilson, C. J. (2016). Does left/right structure party positions on European integration? *Comparative Political Studies*, *35*(8), 965–989. doi: 10.1177/001041402236310.
Kahneman, D. (2011). *Thinking, Fast and Slow*. Macmillan.
Kim, D.-H., An, J., & Lee, E. (2016). Cognitive map analysis for policy agenda setting: a case of the green growth in Korea. *Korean System Dynamics Review*, *17*(1), 65–75.
Kleider, H., & Stoeckel, F. (2019). The politics of international redistribution: explaining public support for fiscal transfers in the EU. *European Journal of Political Research*, *58*(1), 4–29.
Knox, C., Furman, K., Jetter, A., Gray, S., & Giabbanelli, P. J. (2024). Creating an FCM with participants in an interview or workshop setting. In: Giabbanelli, P. J., & Nápoles, G., eds. *Fuzzy Cognitive Maps: Best Practices and Modern Methods* (pp. 19–44). Springer.
Laukkanen, M., & Wang, M. (2016). *Comparative Causal Mapping: The CMAP3 Method*. Routledge.
Lavine, H. G., Johnston, C. D., & Steenbergen, M. R. (2012). *The Ambivalent Partisan: How Critical Loyalty Promotes Democracy*. Oxford University Press.
Lutz, P. (2021). Loved and feared: citizens' ambivalence towards free movement in the European Union. *Journal of European Public Policy*, *28*(2), 268–288. doi: 10.1080/13501763.2020.1720782.
Markíczy, L., & Goldberg, J. (1995). A method for eliciting and comparing causal maps. *Journal of Management*, *21*(2), 305–333.
McLean, P. (2016). *Culture in Networks*. John Wiley & Sons.
Mikulaschek, C. (2023). The responsive public: how European Union decisions shape public opinion on salient policies. *European Union Politics*, *24*(4), 645–665. doi: 10.1177/14651165231190322.
Miller, G. A. (1956). The magical number seven, plus or minus two: some limits on our capacity for processing information. *Psychological Review*, *63*(2), 81.
Nissen, S. (2014). The Eurobarometer and the process of European integration. *Quality & Quantity*, *48*(2), 713–727. doi: 10.1007/s11135-012-9797-x.
Norpoth, H., & Lodge, M. (1985). The difference between attitudes and nonattitudes in the mass public: just measurements. *American Journal of Political Science*, *29*(2), 291–307.
Özesmi, U., & Özesmi, S. L. (2004). Ecological models based on people's knowledge: a multi-step fuzzy cognitive mapping approach. *Ecological Modelling*, *176*(1-2), 43–64.
Picard, R. G. (2015). Understanding the crisis. In *The Euro Crisis in the Media: Journalistic Coverage of Economic Crisis and European Institutions* (pp. 1–18). IB Tauris.
Popper, M. (2013). Leaders perceived as distant and close. Some implications for psychological theory on leadership. *The Leadership Quarterly*, *24*(1), 1–8. doi: 10.1016/j.leaqua.2012.06.008.
Schäfer, D. (2016). A banking union of ideas? The impact of ordoliberalism and the vicious circle on the EU banking union. *JCMS: Journal of Common Market Studies*, *54*(4), 961–980. doi: 10.1111/jcms.12351.
Schlipphak, B., & Treib, O. (2017). Playing the blame game on Brussels: the domestic political effects of EU interventions against democratic backsliding. *Journal of European Public Policy*, *24*(3), 352–365. doi: 10.1080/13501763.2016.1229359.
Shamir, B. (1995). Social distance and charisma: theoretical notes and an exploratory study. *The Leadership Quarterly*, *6*(1), 19–47.
Steenbergen, M. R., & Brewer, P. R. (2004). The not-so-ambivalent public: policy attitudes in the political culture of ambivalence. In: Saris, W. E., & Sniderman, P. M., eds. *Studies in Public Opinion: Attitudes, Nonattitudes, Measurement Error, and Change* (pp. 93–129).

https://doi.org/10.1017/nws.2025.10009 Published online by Cambridge University Press

Stoeckel, F. (2013). Ambivalent or indifferent? Reconsidering the structure of EU public opinion. *European Union Politics*, *14*(1), 23–45.
Treib, O. (2021). Euroscepticism is here to stay: what cleavage theory can teach us about the 2019 European Parliament elections. *Journal of European Public Policy*, *28*(2), 174–189. doi: 10.1080/13501763.2020.1737881.
Van Esch, F. A. W. J. (2014). Exploring the Keynesian–Ordoliberal divide. Flexibility and convergence in French and German leaders' economic ideas during the euro-crisis. *Journal of Contemporary European Studies*, *22*(3), 288–302. doi: 10.1080/14782804.2014.937679.
Van Esch, F. A. W. J., Joosen, R., & Van Zuydam, S. (2016). Responsive to the people? Comparing the European cognitive maps of Dutch political leaders and their followers. *Politics and Governance*, *4*(2), 54–67. doi: 10.17645/pag.v4i2.577.
Van Esch, F. A. W. J., & Snellens, J. F. A. (2024). How to 'measure' ideas. Introducing the method of cognitive mapping to the domain of ideational policy studies. *Journal of European Public Policy*, *31*(2), 428–451.
Van Esch, F. A. W. J., Snellens, J. F. A., Dekker, M., De Gooijer, D., Lobée, J., Patist, A., Van Riet, N., Rozendaal, T., Tichattibin, N., & Van der Wulp, T. (2024). CognitiveMapr. In (Version v1.0.0). www.cognitivemapr.nl
Van Esch, F. A. W. J., & Steenman, S. C. (2025). Fonder from Afar: distance, leadership, and the legitimacy of the EU. *Politics and Governance*, *13*, 1–17.
Van Esch, F. A. W. J., Steenman, S. C., Joosen, R., Brand, L., & Snellens, J. F. A. (2018). Making meaning of the Euro-crisis. Deliverable 3.3 for the TRANSCRISIS Horizon2020 project. https://www.transcrisis.eu/wp-content/uploads/2018/03/Deliverable-3.3-Meaning-Making-of-the-Euro-Crisis.pdf.
Van Esch, F. A. W. J., Treep, J., Moopen, N., & Snellens, J. (2024). Cognitivemapr: Functions for Cognitive Mapping Analysis. In (Version 0.1.0).
Van Ingelgom, V. (2014). *Integrating Indifference: A Comparative, Qualitative and Quantitative Approach to the Legitimacy of European Integration*. ECPR Press.
Vasilopoulou, S., & Wagner, M. (2017). Fear, anger and enthusiasm about the European union: effects of emotional reactions on public preferences towards European integration. *European Union Politics*, *18*(3), 382–405.
Verdun, A. (2022). The greatest of the small? The Netherlands, the new hanseatic league and the frugal four. *German Politics*, *31*(2), 302–322.
Vo, H. V., Poole, M. S., & Courtney, J. F. (2005). An empirical comparison of collective causal mapping approaches. In: Narayanan, V. K., & Armstrong, D. J., eds. *Causal Mapping for Research in Information Technology* (pp. 142–173). IGI Global.
Wilker, H. R., & Milbrath, L. W. (1970). Political belief systems and political behavior. *Social Science Quarterly*, *51*(3), 477–493.
Yang, S., & González-Bailón, S. (2018). Semantic networks and applications in public opinion research. In: Victor, J. N., Montgomery, A. H. & Lubell M., eds. *The Oxford Handbook of Political Networks* (pp. 327–353).
Yin, R. K. (2009). *Case Study Research: Design and Methods*, vol. *5*. Sage.
Young, M. D. (1996). Cognitive mapping meets semantic networks. *Journal of Conflict Resolution*, *40*(3), 395–414. doi: 10.1177/0022002796040003001.
Young, M. D. (2001). Building worldview (s) with Profiler+.
Young, M. D., & Schafer, M. (1998). Is there method in our madness? Ways of assessing cognition in international relations. *Mershon International Studies Review*, *42*(Supplement 1), 63–96. doi: 10.2307/254444.
Zaller, J., & Feldman, S. (1992). A simple theory of the survey response: answering questions versus revealing preferences. *American Journal of Political Science*, *36*(3), 579–616.

Cite this article: van Esch F. and Snellens J. (2025). Exploring EU public opinion with cognitive mapping. *Network Science* **13**, 1–22. https://doi.org/10.1017/nws.2025.10009

https://doi.org/10.1017/nws.2025.10009 Published online by Cambridge University Press