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Frames of cooperation: interactional dynamics of pandemic governance networks

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ABSTRACT

Cooperation and interaction are essential in governance networks (GNs), yet how they manifest in practice remains unclear. This study explores cooperation within GNs, focusing on interactional dynamics that shape horizontal policy-making during pandemic governance. Using an inductive frame analysis approach, we examine governance interactions through interviews from Finland's COVID-19 response. We identify four frames of cooperation that reveal how divergent framings represent joint policymaking. The findings expose cooperation realities, expectations, and interactional challenges, illustrating dynamics in network integrity and joint problem-solving. This study contributes to practice-oriented GN research with insights into how actors navigate cooperation in complex, multi-actor governance systems.

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KEYWORDS Cooperation; governance network; frame analysis; COVID-19; complexity

Introduction

Cooperation is necessary in public management and policymaking, particularly during a crisis. Transboundary crises, such as pandemics, rapidly cross geographical, sectoral and organizational boundaries, necessitating cooperation among multiple actors (Ansell, Boin, and Keller 2010) and thereby increasing the complexity inherent in governance (Day 2025). In response to this complexity, policymakers seek support from governance networks (GNs), which are regarded as effective in enabling horizontal governance: overcoming hierarchical steering (Agranoff and McGuire 2001), facilitating joint problem-solving (Koppenjan and Klijn 2004), and promoting information exchange and interaction in policymaking

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(Sørensen and Torfing 2018). However, effective cooperation within GNs requires more than governance structures – it demands capacity to navigate complex interactional dynamics.

Despite networks having received considerable attention in public management research, few studies have explored how GN actors perceive and *actually* navigate cooperation during crises. The literature on GNs has emphasized that network outcomes stem from interaction (e.g. Klijn and Koppenjan 2012; Sørensen and Torfing 2018), and that effective network cooperation requires cohesiveness (Maron and Benish 2022), institutional arrangements (Klijn and Koppenjan 2014) and recognition of actors' diverse perspectives and resources (Krogh 2022). Less is known about the GN interactional dynamics that shape cooperation and joint policymaking in transboundary crises (see Ansell and Boin 2019), as evidenced by the recent COVID-19 pandemic (see Ansell, Sørensen, and Torfing 2021; Xu et al. 2022). These crises demonstrated the need for horizontal governance interactions (Yang and Lu 2022) and collective problem-solving (Wu et al. 2024). To address this literature gap, we explore GN cooperation during transboundary crises by asking: *What is the role of GNs in horizontal pandemic governance? Specifically, how is cooperation framed through the social interaction of the key actors in pandemic GNs?*

Our study focuses on the framings of cooperation within GNs through governance interactions. GN cooperation is understood here as a form of social interaction, in which network actors coordinate multiple interests and strategies, and interact in horizontal and vertical governance processes. While GNs are often conceptualized as networks for collective policymaking rather than policies or services they produce (Isett et al. 2011), extant studies often emphasize management strategies (see Edelenbos, Van Buuren, and Klijn 2013; Koppenjan and Klijn 2004), governance structures (e.g. Provan and Kenis 2008) or network performance (e.g. Huang, Chen, and Yi 2021). However, GNs are complex interaction systems (Klijn et al. 2015), not inherently cooperative or democratic (see Davies 2012; Gronow, Wagner, and Ylä-Anttila 2020). As Klijn and Koppenjan (2014, p. 64) noted, 'cooperation is necessary in networks, but it is not easy, and it comes at a cost'. In transboundary crises, networks come with uncertainty over partner constellations (Ansell, Boin, and Keller 2010), with multiple cooperative strategies (Evans et al. 2023; Maron and Benish 2022), hybrid governance processes (Chan 2022) and the potential for co-optation (Turunen and Weinryb 2020). While coping with the complexity by design within social system is characteristic for GNs, less attention has been paid to how network actors work together to address this complexity (Head 2022; Klijn and Koppenjan 2012; Wang and Ran 2023). Understanding complexity of GN cooperation thus requires attention to the social interactions that underpin it – interactions shaped by norms, constraints, and social encounters (Goffman 1983).

We introduce an approach to studying framings of cooperation to understand GN interactional dynamics. Elucidating governance interactions in the context of complex policymaking contributes to a deeper understanding of the multiple meanings of cooperation. The frames of cooperation reveal expectations of solving complex problems together, as well as the realities of collective actions (see Rein and Schön 1996; van Buuren and Gerrits 2008), continuing recent discussions on conflicts and tensions inherent in multi-actor network cooperation (see Maron and Benish 2022; Qi and Ran 2023; Wu et al. 2024).

The study provides a thick description of governance interactions during pandemic governance. Finland is used for a qualitative case study of GN cooperation in the temporal context of pandemic governance. Empirical interview data from Finnish health system administrators are analysed using frame analysis to capture their perceptions of cooperation in pandemic GNs. Finnish public governance – traditionally viewed as bureaucratic and siloed, with each ministry responsible for specific administrative matters – provides an interesting case for interpreting transboundary cooperation's interactional challenges especially regarding horizontal governance. Although Finland managed the pandemic relatively well compared with many other European countries (see Johanson et al. 2024; Karreinen et al. 2023; Stenvall et al. 2022), the government faced cooperation challenges in horizontal governance. Despite being well-prepared for crisis management (OTKES 2021) and introducing multiple GNs (HVK 2020), Finnish pandemic governance highlighted the need to improve transboundary cooperation, cross-governmental communication and information sharing (OTKES 2021; Stenvall et al. 2022). Arguably, this case provides valuable insights into governance interactions, illustrating multiple framings of cooperation and complexities in GN cooperation influenced by inter-agency relations and multilevel governance structures (Arkorful 2023).

This study contributes to the GN literature in three ways. First, it deepens understanding of GN interactional dynamics on how cooperation unfolds in horizontal governance (see Klijn 2020). Second, the study leverages a pragmatist framework with a particular focus on social interactions in transboundary crisis cooperation (see Ansell and Boin 2019). By situating empirical analysis within turbulent COVID-19 pandemic governance (see Ansell, Sørensen, and Torfing 2021), characterized by global impact, urgency of policy adjustments and altered governance structures, this study reveals complexities and interactional cooperation challenges within GNs. Third, our study advances methodological approaches to study governance interactions (see Kooiman 2020). Instead of examining changes in GN cooperation per se, we approach dynamics in joint problem-solving as interaction patterns that shape and sustain cooperation over time. Through qualitative, reflective frame

analysis (see van Hulst and Yanow 2016), this study introduces the frames of cooperation as a conceptual tool to vocabularise multiple stakeholder constellations of cooperation and to uncover the subtle, often implicit interactional dynamics therein. It is an attempt to move beyond previous positivist stances and quantitatively oriented approaches of network dynamics.

The article proceeds as follows: Next, we conceptualize complexity of cooperation in GNs and GNs' role in horizontal pandemic governance. In the Methods section, we present empirical data and introduce the inductive frame analysis method used in our study. The Results section then illuminates four parallel frames of cooperation within GNs. Finally, we discuss the interplay between these frames that reflect the GN interactional dynamics in cooperation and GNs' role in horizontal governance during crises.

A governance network approach and its relevance to cooperation during crises

Even in stable times, joint policymaking is a complex task that often creates conflicts that can impede cooperation due to various uncertainties: multiple actors, interests and values; incomplete information; and unpredictability in means and ends (Head 2022; Koppenjan and Klijn 2004). Recent COVID-19 pandemic governance exemplifies a transboundary crisis, involving various authorities, experts and advocates from different sectors and organizations with overlapping responsibilities (Ansell, Boin, and Keller 2010). Complex policymaking situations require acknowledging the plurality of perceptions, mobilizing networks of diverse actors and integrating varied expertise and authorities (Lægreid and Rykkja 2015). The traditional policy network perspective, widely adopted in political science and behavioural public administration, emphasizes interaction in policy development and outcomes. Rather than focus solely on actor interactions within a specific policy domain, we approach network cooperation as a form of horizontal governance (see Ansell 2000) that is characterized by multi-level and multi-actor interactions (Bressers 2009). This multiplicity, in which joint problem framing and goal setting become multi-dimensional, introduces dynamic complexity to public policymaking (Bressers and Kuks 2003).

Given our focus on how network actors frame cooperation during pandemic governance, we chose governance network theory due to its strong emphasis on governance interactions and horizontal forms of governance. This approach allows us to examine the complexities, dynamics and interactional challenges that arise within GN cooperation and how these interactions shape joint policymaking and horizontal pandemic governance. Moreover, particularly when a crisis takes on transboundary dimensions across administrative levels and policy sectors, social interaction processes

become the foundation for effective network cooperation, necessitating reciprocal communication and resource interdependence in policymaking and action (Ansell, Boin, and Keller 2010).

In the public management literature, networks serve as alternative forms of governance and instruments for service delivery (Rhodes 1996) or forms of social interactions and relations (see Börzel 2011). Networks also serve as a methodological paradigm, conceptualization of a social phenomenon or description of organizing public services (Isett et al. 2011). Networks usually comprise multiple actors addressing complex problems or common goals (Agranoff and McGuire 2001; Kooiman et al. 2005) and are viewed as more flexible and dynamic than hierarchies (Klijn and Joop 2016; Sørensen and Torfing 2018).

Complexity of cooperation in governance networks

Governance network theory from the early 2000s acknowledges the plurality of actors (public, social and private) when addressing complex problems and their blurred interests in joint policymaking. GNs facilitate social relations among individuals and organizations. GNs solve complex societal problems, make decisions and formulate public policies in interactive processes (see Klijn and Koppenjan 2012, 2014; Koppenjan and Klijn 2004; Sørensen and Torfing 2018). GNs comprise multiple actors working together, with their negotiations and social games stemming from their mutual interdependence and complex interaction patterns (Klijn et al. 2015; Koppenjan and Klijn 2004). With a decentralized character of horizontal governance and featuring multiple actors involved in joint policymaking with different perceptions, interests and agendas, GNs are expected to adapt to changing contexts (Sørensen and Torfing 2018) and contribute resources and efficiency by close cooperation with diverse authorities especially in crisis situations (Turunen and Weinryb 2020).

In the management literature, terms such as *cooperation*, *coordination* and *collaboration* often are used interchangeably to study interorganizational relations (Castañer and Oliveira 2020). Here, cooperation in GNs involves joint problem-solving and policymaking: joint action, sharing information and resources among network actors to achieve a common goal (see Gulati, Wohlgezogen, and Zhelyazkov 2012; Salvato, Reuer, and Battigalli 2017). Extant GN studies typically have focussed on network governance or management of cooperation among network actors. These structural and outcome-oriented approaches often investigate network governability, overlooking social aspects, network actors' interaction and their diverse constellations involved in GN cooperation. Much of this literature emphasizes network performance (Klijn et al. 2015); management of cognitive, social or institutional complexities (Klijn and Koppenjan 2014); or

knowledge conflicts and competing interests in joint problem-solving (Koppenjan and Klijn 2004).

However, we acknowledge that cooperative relations are full of tensions due to actors' social interactional processes (Fortes et al. 2023; Kork, Koskela, and Turpeinen 2021) and real-life cooperative efforts among GNs, in which network actors interact with and respond to each other's ambitions in making decisions (van Buuren and Gerrits 2008). By its nature, cooperation is emergent and dynamic (Teisman, Gerrits, and Van Buuren 2009). According to Bressers (2009), governance is a set of interaction processes. His contextual interaction theory posits that policy processes within multi-level and multi-actor networks are shaped by interactions among involved actors. These interactions are driven by key actor characteristics – such as motives, cognitions and resources – which both influence and are influenced by these social interactions.

Recent studies have indicated that GNs are not always cooperative or collaborative (see Gronow, Wagner, and Ylä-Anttila 2020; Mischen 2015), as actors often try to exert influence, which can shape interactional dynamics in joint problem-solving. Network dynamics studies often have relied on quantitative methods to model network evolution and agent behaviour (see Klijn and Koppenjan 2012; Wang and Ran 2023), rather than the intricate interactional aspects of cooperation. First, policy characteristics affect cooperation. GNs face inherent tensions in cooperation, particularly when balancing reliability and accountability (Olivier et al. 2012, 2017; Waardenburg et al. 2020). Second, while compromises in policymaking can enhance resilience, they may hinder agile decision-making (Strebel and Bundi 2023). Third, actors' formal positions and legislative status can lead to them dominating the network, jeopardizing self-regulation and joint problem-solving in GNs (Krogh 2022).

We conceptualize GNs as complex interaction systems (Klijn and Joop 2016; Klijn et al. 2015; Sørensen and Torfing 2018) characterized by multi-level network actors and their behaviour: multiple strategies, differing framings and interdependencies. GN cooperation thus represents a horizontal configuration of mutually dependent yet operationally autonomous actors of from various sectors (Sørensen and Torfing 2018). Although GNs enable flexible governance structures, in practice, the complexities in horizontal governance and network actors' joint action are inevitable. Challenges arise from actors' interaction, cooperative processes and hybrid practices of participation and network management (see Klijn 2020; Klijn and Koppenjan 2012; Lai 2012). The interactional dynamics are related to network actors' social processes and behavioural adjustments during cooperation. Actors strive for network integrity by avoiding cognitive dissonance after compromises, interpreting problems often through a common reference frame and

focussing on their relative strengths, as they are dependent on each other's resources (Bressers 2009).

External complexities, such as crises, introduce additional dynamics into GN cooperation that can be understood through the lens of social interactions among network actors. First, multi-level decision-making is complicated due to competing problem framings and multiple solutions (van Popering-Verkerk and Van Buuren 2016), emphasizing interaction and maintaining good cooperative relations among network actors (Edelenbos, Van Buuren, and Klijn 2013). Here, the collective framing process facilitates actors' interaction and cooperative efforts by establishing rules or shared values, or finding alternative problem framings (Agranoff and McGuire 2001; Klijn and Koppenjan 2014). Second, in addition to interdependence, network actors are also dependent on other actors outside of GNs, adding strategic complexity for cooperation. Political pressures, bureaucratic relations and hierarchies may obscure transparency and accountability ties in cooperation (Krogh 2022), thereby affecting the quality of social interactions among network actors. This may require goal adjustments or a shift in roles and responsibilities. Particularly in turbulent contexts, GN cooperation also depends on adaptable management, decision-making powers (Scognamiglio et al. 2023) and actors' configurations (Verweij et al. 2013).

Cooperation challenges within governance networks during pandemic governance

Crisis situations, such as pandemics, present a particularly demanding context for GN cooperation and horizontal governance. The dynamic crisis events, characterized by ambiguity and uncertainty (Saban 2015), require rapid adaptation, quick fixes and innovative trans-sectoral action (see Parker et al. 2020). Transboundary crises call for horizontal governance and joint problem-solving across policy sectors as a single authority or actor alone cannot address all interconnected aspects of the crisis. Despite the necessity for transboundary cooperation, fostering interactional governance capacity across administrative levels remains challenging (Boin 2019; Lægreid and Rykkja 2023; Nohrstedt et al. 2018). Cooperative efforts across governance levels often introduce communication, coordination and joint response challenges (Boin, Busuioc, and Groenleer 2014) even though cooperation relies more on networks than hierarchical structures.

Although GNs often are viewed as particularly relevant for facilitating cross-border cooperation and collaborative processes, a pragmatist approach can improve understanding of how network actors construct meanings during crises (Ansell and Boin 2019). Crises are not merely objective events, but also are subject to different interpretations by various stakeholders (Boin, Busuioc, and Groenleer 2014; Christianson and Barton 2021), resulting in multiple problem framings. This includes how they interpret events and each

other's responses, or how they perceive the value of cooperation. Determining how network actors enact and make sense of situations (see Weick, Weick, Kathleen, and David 2005) requires essential social interaction processes for building information capacity in GNs and supporting joint problem-solving.

The COVID-19 pandemic, as an example of a transboundary crisis, highlighted the relevance of governance interactions and GN cooperation in redefining pandemic governance capacity (Arkorful 2023; Kapucu and Hu 2022; van den Oord et al. 2023). Extant research on GNs in other crisis contexts – such as in the fishing industry (Kooiman et al. 2005) and environmental crisis debates (Klijn and Joop 2016) – has similarly highlighted the interactional challenges actors face in joint problem framing during horizontal governance and GN cooperation. Studies on network cooperation have found particular challenges in cross-sectoral collaboration strategies (Nolte and Lindenmeier 2023; Wu et al. 2024), interactional coordination (Kapucu and Hu 2022; Moynihan 2009), brokerage roles in inter-agency interactions (Saban 2015), reputational influence (Yang and Lu 2022) and leadership behaviour (Kapucu and Ustun 2018). These findings suggest that effective cooperation during crises is shaped by interactional, organizational and institutional features.

Recent studies have revealed the complexities in cooperation and governance interactions, particularly within horizontal pandemic governance. In the temporal context of COVID-19 pandemic, GNs comprised multiple actors operating across various governance levels. Formal pandemic GNs included institutionally pre-planned task forces with mandated advisory roles, while informal GNs emerged through ad hoc committees and unofficial networks that play significant role in problem framing and administrative capacity building (see Isett et al. 2011.) Consequently, cooperation within pandemic GNs involved both vertical and horizontal interactions. While interorganizational coordination across governance levels is essential when formulating joint responses (Ansell, Sørensen, and Torfing 2021; Kapucu and Hu 2022), cooperation during the pandemic was shaped by institutional agency (Greer et al. 2022), political dynamics (Kihlström et al. 2023) and power relations (Xu et al. 2022). From the perspective of governance interactions, these findings highlight how turbulent problems, such as pandemics, are coupled with uncertainty, conflicting interests and competing problem framings (see Ansell, Sørensen, and Torfing 2023; Head 2022; Ramus, Vaccaro, and Brusoni 2017). GNs' role in horizontal governance depends on GN actors' capability to work together (Mwije 2023) and construct a collective knowledge base that fosters robust governance (see Ansell, Sørensen, and Torfing 2021, 2023).

At the same time, cooperation during transboundary crises challenges the logic of bureaucracy and fixed governance arrangements (Boin 2019)

complicating GNs' role in horizontal governance. In Finland, pandemic governance combined a strong national ministerial structure with a decentralized healthcare system and legislative mandates. However, this configuration led to ambiguities in actor roles and institutional complexities for GN cooperation, as responsibilities for managing communicable diseases were distributed across local, regional and national authorities (see Karreinen et al. 2023; Tiirinki et al. 2020). GNs were expected to enable politico-institutional flexibility to overcome rigid ministerial structures and a fragmented administrative culture. Yet, enhancing horizontal governance across policy sectors remains a longstanding governance challenge in Finland, requiring cooperative cross-governmental actions (see OECD 2015; 2022). The pandemic forced actors to work together and identify shared interests (Kihlström et al. 2023), but only a few regional horizontal structures facilitated coordination. This resulted in cooperation challenges at the national level and varied local responses (Karreinen et al. 2023; Kihlström et al. 2022). In summary, GNs during the pandemic illustrate reconciliation challenges for systems-to-be-governed across social, economic, political, ecological and security dimensions, underscoring the importance of governance interactions (see Kooiman 2008; Kooiman et al. 2005) that need further exploration in GN cooperation research.

Methods

Research design

This study employed a qualitative research design to explore lived experiences of governance actors and given meanings of cooperation in GNs. We used the inductive frame analysis method to explore how key network actors in pandemic governance perceived cooperation to reveal potential dynamics, benefits and risks associated within. Frame analysis provides an analytical instrument to approach governance interactions that shape cooperation and joint policymaking within GNs during pandemic governance. Framings of cooperation drawn from the qualitative interview data represent the various cooperation constellations in GNs.

Empirical research context

GNs during pandemic governance comprised policy actors and inter-organizational and professional networks. Finnish pandemic governance challenged established cooperative practices of information-sharing and coordination among authorities (see Moisio 2020). Although ministries' roles and responsibilities were legally defined, legalist governance hindered flexible resource allocation and task

division (see Brunila 2024), thereby complicating horizontal governance. For network cooperation, the legal framework to manage pandemics lacked clear administrative guidance, prompting corrective actions and the improvement of regional coordination for future preparedness (Johanson et al. 2024). During the acute pandemic phase, responsibilities were fragmented across local (e.g. municipalities), regional (e.g. hospital districts and regional state administrative agencies) and national (e.g. Ministry of Social Affairs and Health, Ministry of the Interior, Prime Minister's Office, National Institute for Health and Welfare) authorities. These various GN actors played a key role in implementing crisis strategies, fostering vertical and horizontal pandemic governance and supporting parliamentary policymaking. Finland's decentralized healthcare system also affected resilience, in which autonomy and trust were vital for governance operational efficiency (Kihlström et al. 2023; Tiirinki et al. 2020). However, despite efforts such as horizontal policy programmes and holistic committee institutions, Finnish administrative culture has remained siloed, thereby hindering joint problem-solving and horizontal governance.

Data collection

The qualitative interview data were collected through in-depth interviews with 53 actors in managerial or administrative positions within the Finnish health system (see Table 1). The interviewees, selected via purposive and snowball sampling, held leadership positions in politics and civil service across four Finnish regions, thereby ensuring geographical diversity. These key GN actors – policymakers, public authorities and top managers – represented various organizations and governance levels involved in pandemic governance during 2021–2022. Their insights on cooperation offered perspectives that could not be found through official administrative documents (see Zølner, Ørum, and Allan 2007). Their interpretations and interactions helped illuminate how cooperation was framed and enacted within GNs.

The interviews took place between March 2021 and February 2022, lasted 60–90 minutes each and were conducted remotely using Microsoft Teams. Ethical guidelines set by the Finnish National Board on Research Integrity were followed strictly throughout the research process. All participants were informed about the study and gave verbal informed consent prior to the interviews, which were recorded and transcribed verbatim in Finnish, and were anonymized to ensure confidentiality in the research process. The authors translated the interview excerpts presented below into English.

Table 1. The study informants and Finnish authorities in pandemic governance networks.

Time of interviews	Authorities in pandemic governance	Role and responsibilities in pandemic governance	Number (and position) of interviewees in the study (N = 53)
National level October 2021 – February 2022	The Government Ministry of Social Affairs and Health The Finnish Institute for Health and Welfare (THL) Finnish Medicines Agency; National Emergency Supply Agency; Finnish Border Guard; National Supervisory Authority for Welfare and Health n = 4 Hospital districts, n = 20 Regional State Administrative Agencies, n = 6	Leading national pandemic governance and policy response Declaring a state of national emergency in cooperation with the president of the republic Overseeing preparedness and implementation of health policy Supporting health system actors Overseeing national epidemiological surveillance and coordinating vaccinations National authorities with sectoral responsibilities, e.g. in preparedness, supplies and security	6 (ministries and chief secretaries) 7 (political and administrative actors) 3 (leading experts) 4
Regional level March – June and October – December 2021		Organizing specialized healthcare Coordinating and supervising regional contingency planning in municipalities and hospital districts Decisions on restrictions in their administrative territory, if deemed necessary	10 (managerial positions in hospital district) 8
Local level March – June 2021	Joint municipal authorities, n = 33 Municipalities, n = 309	Organizing jointly municipal responsibilities in one region, voluntary joint inter-municipal cooperation of social and primary healthcare Organizing primary healthcare, emergency planning and preventing communicable diseases Implementing measures to limit local epidemics	6 (managerial positions) 3 (municipal managers) 6 (managerial positions in municipal social and health care services)

Inductive frame analysis

We employed frame analysis as our methodological approach, emphasizing how cooperative activity needs are interpreted, enacted and given meaning, rather than determined primarily by events and actions (De Vries 2004). This includes tacit understandings that manifest as social interactions (Persson 2018). Actors' responses to 'What is going on here?' (see Goffman 1974) shape their conception and interpretation of cooperation. In the policymaking context, frame analysis reveals how policy problems are framed differently, such as perceptions of crises, proposed solutions and beliefs that mobilize and legitimize collective action (Rein and Schön 1996).

The frame, as an analytical concept, was conceptualized here as a structured pattern of text or speech comprising multiple elements. Analysing these patterns as frames allowed us to identify actors' perceptions, such as their specific ambitions and interpretations of problems within their interactions and collective actions (see Matthes and Kohring 2008; van Buuren and Gerrits 2008). Although our data included network actors from various GNs, we did not differentiate between governance levels, nor did we compare actors' or GNs' framings. Instead, by focussing on governance interactions, we aimed to reveal framings of cooperation and what potential interactional dynamics emerged from this for GNs' role in horizontal pandemic governance.

Frame analysis offers two analytical advantages: It helps unveil the construction of different meanings of GN cooperation and identifies these framings' potential effects (Björnehed and Erikson 2018). To avoid confusion with the deductive method known as *framework analysis*, we applied an inductive frame analysis approach that allows for detecting emerging frames and enables in-depth analysis of multiple framings of cooperation, rather than relying on predefined categories (Rasmussen 2011). While the method is time-intensive and difficult to replicate, its ability to capture diverse perspectives makes it a valuable research method (Semetko and Valkenburg 2000).

The analysis process proceeded in four phases (Figure 1). As the research data were part of a larger research project that examined lessons from COVID-19 governance to improve health crisis management and health system resilience (see Kihlström et al. 2023; Karreinen et al. 2023; Kihlström et al. 2022), the broad thematic interview data (872 transcribed pages) first were raw-coded inductively using Atlas TI (Version 9.1) to determine preliminary topics. The careful reading of the 53 interview transcripts and pre-analysis of the data informed an initial codebook, which included emerging topics from the data. The codebook was tested on a sample transcript, which two researchers coded independently, followed by a discussion of the interpretation of

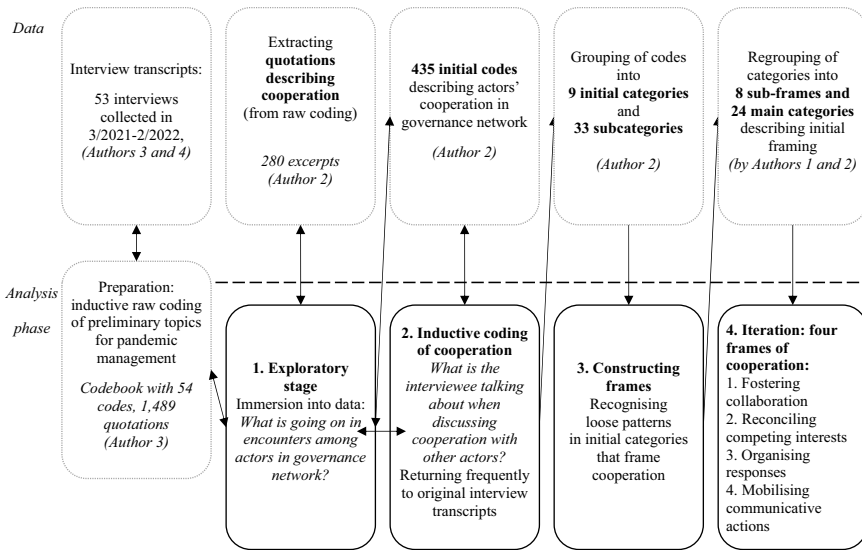


Figure 1. Analysis process.

the codes and potential discrepancies, and necessary additions and deletions. The resulting polished version of the codebook was used for the entire data set. To extract the research data for this study, we selected all material related specifically to the topics of cooperation and networks from the raw-coded data set. Altogether, we obtained 280 text excerpts.

Our analysis began by coding this data inductively to determine how the actors perceived cooperation. A set of 435 initial codes described their perceptions of cooperation within pandemic GNs. These codes were grouped inductively into nine initial categories with 33 subcategories to illustrate the given meanings of cooperation. Original interview data were reread and regrouped into eight subframes and 24 main categories that described the initial framing of network actors' interactions to refine and ensure the interpretations' validity.

In an iterative cycle, the authors critically examined and discussed each frame to determine the final frames, including their relation to the main cooperation categories. Researcher triangulation strengthened the trustworthiness of results as all authors reviewed the framing cooperation patterns. The resulting four frames of cooperation can be viewed as socially shared principles, persistent over time and working symbolically to structure the social world (Reese 2001).

Results

The analysis indicates that cooperation in GNs is shaped through network actors' interactions, with both benefits and risks for horizontal governance that can be framed in four distinct ways: cooperation as (1) fostering collaboration; (2) reconciling competing interests; (3) organizing responses; and (4) mobilizing communicative actions. These alternative framings reflect interactional dynamics that shape cooperation and joint problem-solving in pandemic GNs.

Cooperation as fostering collaboration

We've received a lot of messages that the cooperation has been good and even from entrepreneurs, who have suffered a lot from this, that despite everything, it has been proactive and solid. You can trust it, and you only do what you've got to do, even if it's very unpleasant. I'm sure our doctors are really respected in their networks; they're listened to, and they're respected. That's the kind of support, and trust is the main feeling. It has even been surprisingly nice. (Regional level, 25)

The first way to frame cooperation in pandemic governance is to emphasize the benefits: positive collaborative elements and partnerships among actors addressing turbulent governance issues. Cooperation was framed by interaction as being based on interpersonal and interorganizational relationships. Within this frame, the actor's relevant expertise and substantive knowledge were viewed as highly beneficial for GNs: Actors valued their interactions and cooperation, which nurtured collegiality and partnerships. Cooperation created horizontal administrative relations, reflecting cooperative actions built at multiple organizational and governance levels of expertise. Due to the low hierarchies and informal power relations, interaction was experienced as spontaneous events, making communication and support relatively easy and contributing to the formation of effective partnerships. Direct personal relationships enabled actors to be heard in GNs and helped them offer and obtain support in complex decision-making situations.

However, the risk of fostering collaboration relates to the delicate vulnerability of cooperation if GN actors are left unattended, fly solo, are passively resistant or their interests become too divergent. During the pandemic's acute phases, existing policy advisory systems were activated alongside calls for additional subject-matter expertise, such as infection specialists. Assistance was requested to translate national crisis management instructions and restrictions into local action. The expert networks were built mainly on professional cooperation in the same field, which enabled research information-sharing and creation of a common situational picture among GN actors:

[The] Ministry needs situational information . . . but I would be careful not to start using it as a guideline for operational management; that's what happened at the very beginning when the Ministry imagined that they were going to give us instructions on how we should enact restrictions, whether we can have visitors or not. (Regional level, 19)

The risks related to deterioration of cooperation became evident during the prolonged crisis, as dissatisfaction with partners emerged. Particularly at the central government level, local crisis awareness was challenged, and network expertise was undermined. Local GNs' slow pandemic responses were perceived as reluctance and resistance to change.

Cooperation as reconciling competing interests

In that kind of multi-actor perspective, we need many actors and cooperation There needs to be a lot of people from different organisations to solve the problems, (which) requires pretty strong networks. And there are a lot of different interests and slightly conflicting interests. From a health prevention view, I'd say that the airports should be closed, but the business world is saying flights should be operating. (Local level, 14)

Another way of framing cooperation during pandemic governance concerns the continuous adaptation of multiple and often competing interests within GNs. Cooperation manifested mainly through risk management, such as the continuous balancing and regulating of demands. The involvement of new agencies in GNs evolved traditional authority roles, complicating cooperation and causing jurisdictional challenges. Policy issues without clear jurisdiction in GNs were directed voluntarily to senior administrators, which reinforced central government power. Similarly, some GN actors withdrew from their expected responsibilities mid-crisis, creating opportunities for other actors to influence GN actions.

Demand for flexibility and opportunities to exert influence were viewed as benefits of network cooperation. Nevertheless, power struggles both within organizations and between different administrative levels affected GN cooperation and interaction:

We've had quite a lot of disputes. So, then the Ministry and the Government tried to take control, but of course, it is difficult to say what was the mutual role between them. But they didn't have enough of a mandate, so we got into those funny situations where very different solutions were made for the same issue in different parts of the country. (Local level, 7)

Informal guidance from multiple channels supplemented official government guidance on GN activities. This was viewed as oppressive and damaging cooperation. However, this was perceived to stem from the fragmented administrative culture and governmental authoritative management

methods, rather than individual GN actors. The regional-level actors were able to align and act in their interests, while those with different views or from smaller organizations had to be more flexible. Initially, GN actors upheld their strict organizational interests and administrative roles, but had to adapt as the pandemic continued.

Cooperation as organising responses

Through a formal management system, it has been possible to organise collaboration and coordination among different departments, in the way that the key actors from the units have been involved in it, making it possible to plan directly the division of work and responsibilities. In other words, it has also sought to improve the rationality of cooperation and the use of resources. (National level, 32)

A third way to frame cooperation focusses on GN's organizational elements. Multiple pandemic GNs were organized alongside existing formal cooperation structures. Networking activities were promoted across organizations and administrative sectors, and new national-level GNs were established. However, cooperation was based on experts resolving very narrow policy issues, mainly from the same fields. The approach resulted in multiple horizontal advisory systems:

This politicisation has been a new phenomenon for us as such a small regional authority. We are not used to this kind of feedback (in which) people criticise and criticise, even against the truth. (Regional level, 30)

Political guidance and government steering affected GN options. Some pandemic steering actions were viewed as politically motivated, rather than evidence-based. For example, national-level steering sometimes conflicted with legislation, and mixed formal directions and informal oral guidance caused confusion over the interpretation of recommended measures. Conflicting control mechanisms and coordination difficulties with GN accountability relations hindered effective cooperation even within the same policy area. Delegating official tasks to GNs could have enabled specialization, but cooperation mainly focussed on task division and delegating management actions between GNs. Actors with substantive competence who cooperated with multiple GNs, such as the Ministry of Social Affairs and Health, accumulated considerable responsibility.

Cooperation as mobilising communicative actions

It is very important that we (get) regionally united We usually communicate, 'Hey, what do we think about this?' and in the Corona cooperation groups, we refine it. We want to hear THL's [Finnish Institute of Health and

Welfare] point of view and what the regions think. We can discuss the aspects, but this is what we have decided in our region'. (Local level, 7)

Cooperative action in GNs challenges actors to articulate their interests and perceptions. From this positive perspective, cooperation framed by interaction mobilizes GN actors' communication and encourages argumentation. In their personal relations, actors had opportunities to advocate indirectly for their organizational interests and influence political agendas, public opinions and personal brands. The respondents felt that promotion of personal expertise was a primary interest of interaction, as it helped sustain their authority within GNs. Particularly under political guidance, the actors had to nurture their own integrity and official mandate within GNs. Collective evaluation of communication quality in network cooperation was viewed as beneficial, with GN actors reviewing all activities, including responses, outcomes, expectations and shortcomings:

At some point, the hospital districts imagined that they could see what was happening with local governance. After the dialogue diminished, it became unclear who decides what, and it was then discussed a lot in the media, too. (Local level, 17)

In some GNs, actors perceived that the internal dialogue among actors was direct, although the GN's public image was the opposite. Regular meetings and daily contacts facilitated close relationships among actors. Nevertheless, multiple encounters were burdensome and increased actor workload. In some cases, meta-governance interaction efforts limited the number of GN actors and their participation opportunities to streamline cooperation. Sometimes, responsibility for sector-specific communication was withdrawn from GNs.

Summary of framings

The analytical frames were grounded in the empirical interview data reflecting lived experiences of governance actors. The four frames of cooperation reveal how divergent framings represent joint policymaking. These findings expose realities, expectations, and interactional challenges of GN cooperation. In our analysis, the identified frames of cooperation serve as interpretive lenses that illustrate interactional dynamics in network integrity and joint problem-solving. The framings inform the real-life cooperation challenges inherent in GNs. The analysis demonstrates that cooperation in GNs is not a uniform process but rather is enacted differently across network actors. The framings help explain how cooperation is understood and practised. Cooperation can be perceived both instrumentally and strategically, and is shaped by the dynamics in joint problem-solving. For some actors, cooperation meant simply organizing responses, while for others, it served as a foundation for deeper collaboration. These framings reflect how network

cooperation is shaped by general tensions between efficiency and inclusiveness (Provan and Kenis 2008), balancing network-level outcomes with actor involvement (Evans et al. 2023).

Furthermore, the framings illustrate governance interactions on how actors navigate in cooperation when coordinating and aligning with multiple interests, ambitions and perceptions of the solutions among network actors. The frame of reconciling competing interests in cooperation is related partly to the network actors' joint problem-solving, but most importantly, the frame is more like an instrument within the social system and a web of interdependent interactional relations reflecting social processes and interactional dynamics within GNs. More generally, the framings also demonstrate how cooperation is shaped by key actor characteristics, including their motivations, power differences and interpretations (see Bressers 2009). These perceptions shape cooperation, but they also can evolve over time.

Positively oriented framing of GN cooperation emphasized aspects such as collegiate approach, flexibility, network integrity and governance structure. These findings align well with extant GN research that has emphasized collective decision-making, mutual interdependence, trust, power-sharing and reciprocity as key elements of effective network cooperation (cf. Wang and Ran 2023). For example, framing cooperation as a strategic premise for fostering collaboration viewed personal competence as very essential – not only for network membership, but also for coordinating relationships and building trust. While some actors received formal mandates to represent their organizations, others were included based on their substantive expertise. Addressing interactional challenges, such as clarifying membership criteria and representation, could enhance openness and inclusivity.

In terms of horizontal governance, formal advisory systems and GN structures initially were viewed as beneficial, particularly in organizing responses. However, the COVID-19 pandemic exposed their limitations. Political influence, the emergence of new networks across administrative levels and the introduction of new actors were viewed as disruptive to existing cooperation structures. As a result, not all GN actors had cooperative relationships, even when working within the same policy domain. Intra-organizational challenges – such as shifting roles, mixed mandates, extrinsic motivations and power hierarchies within GNs – demonstrate the complexity of organizing effective transboundary cooperation. The frames also count value conflicts among political interests that influence cooperation. Some network actors used GNs to promote their professional expertise and agendas. Hierarchical positions and imbalances in resources or representativeness contribute interactional challenges (Klijn et al. 2015; Krogh 2022). Despite these issues, many actors perceive cooperation as a way to mobilize communicative actions, as well as influence policymaking. Collegiality and dialogue were valued for facilitating sensemaking around crises, learning from

Table 2. Four frames of cooperation.

Benefits	Risks
Fostering collaboration: cooperation as strategic premise for collaboration	
Expressing personal relevance	Fragmenting interests
Gaining support and assistance in direct relations	Power struggles, lack of trust and information
Sense of low hierarchy	Resistance to policy implementation
Collegiality among experts	
Reconciling competing interests: cooperation as a complex web of interdependent relations	
Facing and addressing the demand for flexibility	Power struggles
Opportunity to influence	Confronting control and pressures (Re)centralized decision-making
Organizing responses: cooperation as management of joint problem-solving	
Network as governance-steering structure	Political guidance
Active network building	Changes in governance structures
Work division and delegation	Conflicting control mechanisms Coordination difficulties
Mobilizing communicative actions: cooperation as a process of creating mutual understanding	
Nurturing integrity	Meta-governance of interaction
Reflecting action	Regulation of communication
Influencing public opinion	

mistakes and rebuilding trust. However, cooperation was weakened by information asymmetries, internal power struggles and conflicting interests. Exclusion from decision-making or information-sharing disrupted cooperation. Notably, cooperation between central and local governments often was unidirectional, rather than dialogical. While new contacts and opportunities for direct dialogue were viewed as beneficial, risks emerged from regulating communication and limiting participation within and across GNs.

Overall, the frames helped us understand how cooperation works in practice; thus, the framings do not merely categorize perceptions – they also map social processes, power dynamics and relational complexities that define GN cooperation in practice. Table 2 synthesizes these insights, demonstrating how each frame of cooperation captures both the benefits and risks for GN cooperation, offering a more nuanced understanding of GNs' role in horizontal governance and how collective action in GNs is interpreted in interdependent and social encounters.

Discussion

This study explored the framings of GN cooperation to better understand the governance interactions and interactional dynamics within GNs. We used frame analysis to capture how network actors frame cooperation through their interactions within GNs during the COVID-19 pandemic in Finland. Four distinct frames emerged: cooperation as fostering collaboration; reconciling competing interests; organizing responses; and mobilizing communicative action. These frames represent real actions and various meanings for

cooperation as experienced by network actors. Although network actors' interactions are challenging to study, we believe that the perceptions of GN cooperation can reveal important aspects of social interaction, as network cooperation is inherently a social activity. Together, these four frames uncover diverse cooperation constellations within GNs and represent the complexities of joint policymaking more broadly – namely, the realities of cooperation, normative expectations of effective cooperation, and interactional challenges that illustrate dynamics in network integrity and joint problem-solving.

The frames are not static or specific to any single GN, as political interests, rhetoric or crisis conditions influence how actors reflect and frame cooperation (see Rein and Schön 1996). These frames of cooperation are interconnected and overlapping: cooperation can be interpreted in very different ways, even within the same GN. Network actors often interact not only within a single GN or on behalf of their own motives, but also across multiple areas and with other actors (Bressers 2009) that can influence their framing of cooperation. As a result, alternative framings can coexist, or else actors may combine or shift back and forth between frames during cooperation. The interplay between framings is interactive and intersubjective, reflecting political and power-sensitive engagement (van Hulst and Yanow 2016). This complexity helps explain why cooperation and social interaction processes are negotiated constantly, leading to potential power dynamics, conflicts and tensions (see Fortes et al. 2023; Klijn and Koppenjan 2014; Koppenjan and Klijn 2004; Maron and Benish 2022).

Interactional dynamics of cooperation within GNs

Cooperation within GNs is shaped by social interactions among network actors, which are likely to change and evolve over time. This study approached cooperation as a dynamic social interaction process that also influence policymaking. The framings of cooperation and the interaction dynamics within GNs are thus best understood as reflections of these processes, rather than static or merely changes in cooperation over time (see Bressers 2009). Each frame of cooperation identified in this study highlights both the benefits and risks inherent in network cooperation. Together, they inform how horizontal governance interactions are shaped by actors' cooperative relations, roles, ambitions and practices that define GN cooperation. These interactional dynamics explain the existence of multiple or parallel framings of cooperation and the complexity of GNs in horizontal governance.

Interactional dynamics stem from actors' differing expectations of effective cooperation and how these manifest in practice. While GNs are expected to foster horizontal governance through collaboration and coordination, doing so requires network actors' to engage cooperative interaction – reconciling competing (and often conflicting) interests and ensuring inclusive

problem-solving. The Finnish case provided insights into real-life interaction challenges within GNs, demonstrating the difficulties in horizontal governance during a pandemic. The frames of cooperation revealed interactional challenges, such as demands for flexibility, conflicting controls and external pressures on effective governance. These factors complicate GN cooperation and joint problem-solving (Koppenjan and Klijn 2004; Maron and Benish 2022), as well as influence policy outcomes (see Evans et al. 2023; Klijn and Koppenjan 2012). Our findings indicate weak cooperation strategies within GNs, particularly in addressing substantive complexity (Klijn and Koppenjan 2014), such as inadequate support for mutual interaction or learning among network actors.

In our study, real-life cooperative efforts revealed dynamics in network integrity between communicative actions and actors' competing interests. These issues are embedded in the social system, in which actors align their goals and interpretations. Sensemaking and shared pictures of crises are constructed through interactions among government bodies, advisers and policymakers (see Christensen and Lægreid 2020), but in transboundary cooperation, tensions often arise from conflicting responsibilities (Boin 2019; Koppenjan and Klijn 2004).

The framings of cooperation inform the interactional dynamics within GNs. Actors interpret cooperation through their own problem framings and preferred solutions. Without a shared frame, this kind of substantive complexity can lead to misinterpretations and knowledge conflicts among actors (Klijn and Koppenjan 2014). The interplay between problem framing and mutual interaction suggests that cooperation in GNs is a continuous balancing act between joint problem-solving and maintaining the integrity of a multi-actor system (see Table 3).

Table 3. Criteria to define risk and to assign the corresponding intervention priority.

<p>Cooperation as</p>	<p>Ensuring efficient decision-making</p>	<p>Nurturing interactions in a network</p>
<p>Problem-solving</p>	<p>Organising responses</p>	<p>Fostering collaboration</p>
<p>Social system</p>	<p>Reconciling competing interests</p>	<p>Mobilising communicative actions</p>

GNs' role in horizontal pandemic governance

The frames of cooperation demonstrate the complexity of GNs in horizontal governance, reflecting twofold interactional challenges: high expectations for effective pandemic response and real-life cooperation by multiple actors involved. Such interactional challenges are common in transboundary crises and cooperative efforts (Boin 2019; Læg Reid and Rykkja 2023; Nohrstedt et al. 2018), in which network actors must navigate each other's ambitions. Effective cooperation, particularly during pandemic governance, required coordination, expert networks and preparedness capacity (see Ansell, Sørensen, and Torfing 2021; Arkorful 2023; Christensen and Læg Reid 2020; Kapucu and Hu 2022). However, GN cooperation tensions between accountability and autonomy, centralization and decentralization, effectiveness and efficiency or integration and differentiation (see van den Oord et al.) complicate social interactions further.

The frames of cooperation revealed interactional challenges in Finnish pandemic governance around communication, fragmented administrative culture and political power struggles – issues that inform broader cooperation problems in horizontal governance. Simultaneously, efforts to nurture interaction and integrity through GNs illustrate interactional dynamics typical of crisis governance. In turbulent contexts that require rapid adaptability and swift action, actors tend to prioritize efficient decision-making (see Ansell, Sørensen, and Torfing 2023; Læg Reid and Rykkja 2015, 2023; Saban 2015). If GNs are expected to support horizontal pandemic governance, they must enable joint knowledge formation (Klijn and Koppenjan 2014), seamless coordination and interactive crisis management (Læg Reid and Rykkja 2023; Lai 2012). However, in Finland, centralized decision-making and strong ministerial steering during acute pandemic governance weakened interaction with local governance bodies and disrupted the Finnish tradition of consensus-oriented policymaking. A shared understanding of the crisis situation would have entailed surpassing traditional governance structures and advancing collective problem framing across administrative boundaries.

Addressing the interactional challenges across GNs would require proactive governance strategies that emphasize collaboration and interactional capacity (see van Buuren and Gerrits 2008). And yet, as our study found, governance interactions between political control and expert knowledge were viewed as limiting cooperation within GNs and risking network integrity in horizontal policymaking. The central government shaped GN cooperation in a largely unidirectional manner, creating tension between national-level steering and local decision-making. This highlights the need for collective frame reflection and knowledge formation in public administration (see Laihonen, Kork, and Sinervo 2023). The trade-off between

interactional governance capacity and legitimacy illustrates the general difficulties in transboundary cooperation and communication during crisis management (Christensen and Læg Reid 2020).

Our findings suggest that successful GN cooperation in horizontal pandemic governance depends heavily on social interaction among governance levels and how network actors perceive and navigate cooperation. Controlling communication and limiting interactions weaken horizontal governance and affect GN's ability to act legitimately and deliberately (see Kooiman 2008; Sørensen and Torfing 2018).

Limitations and future research

By introducing an inductive frame analysis approach to uncover interactional dynamics of cooperation, this study contributes empirical insights into how GN cooperation works in horizontal pandemic governance. Unlike extant studies that often have relied on predefined categories or quantitative modelling of network behaviour and strategies (see Huang, Chen, and Yi 2021; Provan and Kenis 2008), our approach allowed the frames to emerge inductively from the empirical data, enabling us to capture how GN actors construct and interpret cooperation. Our resulting four frames of cooperation – fostering collaboration, reconciling competing interests, organizing responses and mobilizing communicative actions – offer a novel lens through which to understand the multifaceted and sometimes conflicting conceptions of cooperation in GNs.

However, the study contains limitations. Our qualitative, exploratory and inductive research approach focussed on uncovering governance interactions in GNs, rather than testing the predefined frames and causal relationships or tracking cooperation's evolution over time. This methodological choice may limit the transferability and generalizability of our findings. Finnish pandemic GNs might not be the most demanding context for cooperation, but the governmental silos make it a compelling case for examining GNs in joint policymaking. The data were collected from leading and influential actors in Finnish pandemic governance. As such, the experiences of those lower in the administrative or social hierarchy may be under-represented. The Finnish governance system traditionally has low hierarchies, short power chains and a decentralized administrative culture that may differ from more centralized or hierarchical governance systems, potentially affecting the transferability of findings. Despite the contextual differences, our study resonates well with the complexities found in extant studies of GNs.

If network cooperation during crises is as challenging as our results suggest, then future research should further explore interactional dynamics involved in GNs and how the identified frames operate in more stable times.

For example, by examining temporality of cooperation, practices, or decision-making processes at different phases of a crisis would be highly beneficial in fostering resilient and responsive governance strategies. Future research could build on our inductive framing approach by applying it to various types of disasters or other governance contexts that support cooperation across governance levels. With the Finnish health system now reformed, follow-up also is needed on how GNs operate in this new governance structure. Shifting the research focus towards governance interactions' evolution could reveal more dynamics.

Conclusion

Analysing how GN actors frame cooperation enhances our understanding of GNs' interactional dynamics and governance interactions. This study contributes to the literature on complex GNs by focusing on interactional dynamics that shape horizontal pandemic governance. Our findings indicate that effective GN cooperation relies not only on structural arrangements, but also on actual opportunities for network actors to interact and engage in policymaking. The identified frames of cooperation reveal that cooperation failures often stem from limited engagement, fragmented communication and undervaluing network actors' expertise.

Theoretically, this study advances a practice-oriented approach to cooperation, responding to recent calls (Wang and Ran 2023; Ansell and; Boin 2019). Our study demonstrates how network actors perceive real-life cooperation in GNs and the interactional challenges found in joint problem-solving. Methodologically, our use of an inductive frame analysis approach offers new insights into GN practices and the varied expectations surrounding effective cooperation.

GNs are vital interaction systems that are expected to support horizontal policymaking and reduce siloed governance. However, in transboundary crises, GNs become more complex, as such situations demand shared situational awareness and clear accountability. While GNs can facilitate collaboration and collective sensemaking, cooperation also may lead to blame avoidance, contradictions or even chaos during policy implementation. Fragmented problem framings and weak actor interactions can result in conflicting communication and erode public trust. To address this, collective frame reflection among network actors is critical for effective cooperation.

This study's findings pose two implications for public management. First, the four frames of cooperation revealed how network actors perceive and navigate cooperation in complex, multi-actor settings. These frames help identify both the benefits and risks of cooperation, offering a practical tool for designing cooperative processes and implementing effective network governance. In horizontal governance, collective problem framing within

GNs is crucial. Addressing the complexity of design demands transboundary cooperation, horizontal steering, knowledge integration, interactive engagement and joint meaning making (see Head 2022; Klijn 2020; Laihonen, Kork, and Sinervo 2023; Ansell and Boin 2019).

Second, the interplay between framings highlights the interactional challenges of cooperation. To support horizontal governance and joint problem-solving, network managers must nurture interaction and encourage frame reflection among actors. Our study illustrates various cooperation constellations and how actors' encounters shape these perceptions. While a shared mindset can enhance crisis management effectiveness and resilience, power struggles within GNs may disrupt cooperation. The framings we identified make underlying interactional dynamics visible and offer tools for addressing these challenges.

For policymakers and practitioners, the findings emphasize the need to foster dialogue, trust and reflective learning from past experiences when establishing GNs. Strengthening these interactional foundations is essential for enhancing transboundary cooperation and horizontal governance. In preparing for future pandemics or other transboundary crises, our study highlights the value of collective frame reflection and draws greater attention to the intricate interactional dynamics within GNs. By drawing lessons from recent pandemics, our approach can help redefine governance systems' cooperative capacity and inform the design of cooperative governance arrangements. Ultimately, this study highlights that responsiveness and resilience in multi-actor systems are essential for managing interactional dynamics of cooperation and sustaining social interactions and network integrity.

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