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ABSTRACT
Network managers engage in several day-to-day activities, including bridging, networking, and stabilizing relationships. Still, when should they opt for one activity or another? Our study shows that this choice needs to be taken in combination with certain network characteristics, such as network development stage, connectivity, and trust. It sheds light on four different combinations of activities and network characteristics that are simultaneously able to lead to perceived high network performance. It also suggests three approaches to network management in networks that differ in their development stage, connectivity and trust: stabilize, stabilize and connect, stabilize and develop.

Introduction

After an early focus on network structure and its impact on network performance (Provan and Milward 1995; Provan and Sebastian 1998; Huang and Provan 2007; Raab, Mannak, and Cambré 2015), the importance of network management for network performance has become a prominent topic within the literature on public networks (Kickert, Klijn, and Koppenjan 1997; Agranoff and McGuire 2001; Mandell 2001; Meier and O'Toole 2001; Koppenjan and Klijn 2004; Sørensen and Torfing 2009; Klijn, Steijn, and Edelenbos 2010a; Kort and Klijn 2011; Steijn, Klijn, and Edelenbos 2011; Ysa, Sierra, and Esteve 2014; Klijn et al. 2016).

Some scholars have focused on the differences between managing single organizations and managing organizational networks. They have shed light on the importance of nurturing and/or steering the network, and categorized these managerial activities into four groups: activating, framing, mobilizing and synthetizing (Agranoff and McGuire 2001; McGuire 2002). Other scholars have focused on the relationship between management and outcomes of public networks. They have proved the positive impact of network management on network performance, and grouped managerial activities into four strategies, such as creating new organizational arrangements, connecting network partners,

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establishing rules to govern partners interactions, and managing and collecting information (Klijn et al. 2010a; Kort and Klijn 2011; Steijn, Klijn, and Edelenbos 2011; Ysa, Sierra, and Esteve 2014; Klijn et al. 2016). In a recent study, Bartelings et al. (2017) have focused on the activities which network managers are engaged in during their working days, and distinguished between: operational work, preparing documents, travelling, networking, bridging, stabilizing and transferring information.

Moving from a general agreement about the importance of network management, scholars are nowadays more and more interested in understanding whether different managerial activities can help ensure high performance in different network settings (McGuire 2002).

In this perspective, our article aims to explore which combinations of network characteristics and managerial activities can simultaneusly lead to high network performance. For this purpose, we explore how three characteristics of public networks, chosen because they were identified by previous studies as able to influence network management (Provan and Sebastian 1998; Kenis and Provan 2009; Klijn et al. 2010b), combine with managerial activities to provide high network performance. These characteristics are network development stage, connectivity, and trust.

The configurational approach of Qualitative Comparative Analysis (Ragin 1987; Rihoux and Ragin 2009) was chosen to analyze the data. Rather than implying singular causation and linear relationships, this approach assumes complex causality and nonlinear relationships, thereby allowing to explore equifinality, causal asymmetry and complex interactions, and to identify different paths that lead to high network performance.

Data originated from a survey conducted in 2015. The questionnaire was administered to 311 directors of the Spitex networks operating in Switzerland and engaged in the provision of homecare assistance. Ninety-six directors participated in our survey, with a response rate of 30.86 per cent. Spitex directors were surveyed about network characteristics, the activities they engage in during their working days, and network performance. As a consequence, our study and its results deal more properly with a perceptual measure of network performance.

The results shed light on four different paths leading to (perceived) high network performance. They can be seen as four different 'recipes', or combinations of network characteristics and managerial activities. On one side, they confirm the importance of network managers' 'connective' capacities (Edelenbos, Van Buuren, and Klijn 2013) (bridging, networking and stabilizing), and, in particular, of the need to stabilize the relationships within the network, even if in different combinations, depending on certain network characteristics. On the other side, they allow to identify three approaches to network management, differently employed in combination with different configurations of network development stage, connectivity, and trust: *stabilize; stabilize and connect; stabilize and develop.*

The results contribute to existing studies and managerial practices in multiple ways. From a theoretical standpoint, firstly, they enrich the literature on the importance of network management and network managers and their impact on network performance (Agranoff and McGuire 2001; McGuire 2002; Edelenbos and Klijn 2006; Klijn et al. 2010a; Kort and Klijn 2011; Steijn, Klijn, and Edelenbos 2011; Markovic 2017). Secondly, they confirm the existence of a relationship between certain characteristics of public networks and managerial activities. Under the methodological point of view, our study contributes to enrich the emergent configurational approach to the study of public networks (Verweij et al. 2013; Raab, Mannak, and Cambré 2015; Wang 2016; Cristofoli and Markovic 2016). It

represents one of the few attempts to employ QCA in large-N settings (Fiss 2011; Greckhamer, Misangyi, and Fiss 2013), with all the advantages and disadvantages of this approach, as discussed later. From a managerial standpoint, our results provide public managers with insights about when to focus on one managerial activity or another, in combination with a few characteristics of their network settings.

The article is organized around three sections. The first section reviews the extant studies focusing on managerial activities and sheds light on the characteristics of the network settings that can impact on them; the second section describes the method, and the last one presents and discusses the results. Insights for future research are provided at the end of the article.

Literature review

There are many different definitions of network management in the literature (Popp et al. 2014). What all these definitions have in common is the fact that they shed light on the conscious nature of network management. As a consequence, in the following, we will define network management as the intentional use of managerial practices to govern processes in, of and at the boundaries of the network (Provan and Milward 2001; Klijn et al. 2010a).

Coherently with this approach, a long list of managerial tasks can be identified within the extant literature (for an overview, see Popp et al. 2014), where scholars have started to explore whether certain managerial activities rather than others should be chosen to ensure high performance in different network settings.

In his pioneering work, McGuire (2002) focused on activating, framing, mobilizing and synthetizing, and argued that the use of management behaviors varies across time and space. More specifically, he identified certain environmental characteristics and formulated a number of propositions about when, how and why managers choose one behavior over another. Managers' choices, he stated, depend on factors such as goal consensus, resource distribution, support, relationships between network partners, policy and strategic orientation. In particular, activating is the activity to choose when network goals are clear, resources are not limited and there is reliance on policy instruments. Conversely, framing is the best behavior with unclear and multiple goals, and when there is reliance on subsidies and regulation. With unclear goals, but wide distribution of resources, low support from key stakeholders and reliance on policy instruments, mobilizing is the activity to opt for. Lastly, synthetizing ensures effective network management when there is goal consensus, previous relationships between network partners, and reliance on policy instruments and regulations.

Based on the same approach, Verweij et al. (2013) distinguished between a more adaptive and a relatively closed style of network management, and explored their relation to network complexity and depth of stakeholder involvement. They showed how the adaptive style of network management ensures high network performance in combination with network complexity, or with high stakeholder involvement. On the other hand, a closed style of network management is preferable in combination with low network complexity and stakeholder involvement.

From a different perspective, Hovik et al. (2015) identified the four managerial roles of convener, mediator, catalyst and bridge-builder, and explored their relation to institutional complexity. They showed how the role of bridge-builder is the most promising

when institutional complexity is high; on the other hand, when institutional complexity is medium-low, it is the convener role that ensures high network performance.

Similarly, Cristofoli and Markovic (2016) distinguished the three managerial activities of facilitating, mediating, and leading, and explored the importance of network management in combination with a selection of contextual, structural and functioning network mechanisms. They identified two paths simultaneously leading to high network performance in resource munificent contexts. When networks are centrally-governed, it is the strong exercise of managerial activities that leads to high performance. Conversely, when networks are shared-governed, high network performance is ensured by formalized coordination mechanisms, and network management is, in this case, not relevant.

Moving from these studies, our article aims to explore which managerial activities can simultaneously lead to high network performance in different combinations with network characteristics. For this purpose, we explore how three characteristics of public networks, chosen because they were identified by previous studies as able to influence network management (Provan and Sebastian 1998; Kenis and Provan 2009; Klijn et al. 2010b), combine with managerial activities to accomplish high network performance. These characteristics are network development stage, connectivity, and trust.

Network managers' activities

The list of managerial activities that scholars have identified is remarkable. Agranoff and McGuire (2001) talked about activating, framing, mobilizing and synthetizing. In their perspective, network managers are in charge of the following tasks: selecting the best partners and resources for the network, establishing the relevant rules to govern partner interaction, promoting partners' commitment, and balancing partners' contrasting goals so as to fit them into the network's goal. Klijn et al. (2010a) proposed the four managerial strategies of arranging, connecting, establishing rules and exploring contents. According to them, network managers are responsible for initiating and guiding interactions between actors, including establishing and managing network arrangements for better coordination. Hovik and Hanssen (2015) distinguished the roles of convener, mediator, catalyst and bridge-builder. In their view, managers facilitate collaboration by convening, managing conflicts, identifying and creating value, and moving across the political and administrative authorities. Bartelings et al. (2017) explored network managers' day-to-day activities in their role as network orchestrators. According to them, network managers employ most of their time in bridging, networking and travelling activities. Less time is devoted to stabilizing the network, transferring knowledge among network partners, and to operational activities such as operational work and preparing documents.

Among all these activities, Klijn et al. (2010a) shed light on the importance of connective activities, and Edelenbos, Van Buuren, and Klijn (2013) proved their impact on network outcomes.

On the basis of these premises, our aim is to explore which among network managers' most important day-to-day activities are related to certain network characteristics. More specifically, we will consider connective activities (namely networking, bridging, and stabilizing), and explore whether, in highly performing networks, managers opt for one activity or another in combination with network development stage, connectivity, and trust.

Network development stage

The maturity of the network is a crucial factor for network performance. Raab, Mannak, and Cambré (2015) showed how a certain minimum age is important for network effectiveness. This is because, during their first years, networks engage in several 'preliminary' activities that are critical for their functioning, such as building trust between partners and establishing rules to govern interaction (Van Raaij 2006). Networks are strongly committed to gain internal and external legitimacy. Only after this time, with a centralized governance structure and when operating in a context characterized by resource munificence and high levels of system stability, networks can achieve their objectives. Accordingly, Provan et al. (2009, 875) argued that when networks are newly emergent, the uncertainty about partner relationships makes it difficult to have networks characterized by trust, legitimacy and reputation. Only when the relationships between network partners 'strengthen over time as the network evolves from early development toward maturity', do trust, legitimacy and reputation develop. They seem to characterize networks in their mature stage. In a similar perspective, Kenis and Provan (2009, 451) argued that, during the early stages of a network's growth, 'most of the time and energy of network members will be spent developing network structures and processes, rather than on achieving outcomes'. Only once collaborative processes have started, mature networks can focus on the achievement of their goals. Similarly, Klijn et al. (2010a, 2016) argued that during the initial steps of a network's evolution, a manager needs to invest time and energy to identify actors, to create the institutional rules framing their interaction, and to connect their actions and strategies. Only once 'the game has begun' (Klijn et al. 2016), network managers can begin to clarify partners' goals and perceptions and develop shared solutions.

These considerations lead us to think that network managers should be engaged in different activities in combination with the various stages of a network's evolution.

Network connectivity

The 'level of connectedness among organizations in the network' (Provan et al. 2005, 605) is an important characteristic of public networks, able to influence both network functioning and management. A highly-interconnected network is a network where information, resources and support can circulate easily; it is also a network where trust can be easily built and maintained (Provan, Huang, and Milward 2009). This depends on the network manager's ability to create and manage network relationships. It is, in fact, a responsibility of the network manager to act as mediator and moderator among multiple and contrasting interests (Agranoff and McGuire 2001), to induce partners to trust each other (Klijn et al. 2010b), and to promote knowledge sharing (Koliba et al. 2017). At the same time, however, gaps in connectedness among clusters of strongly connected organizations can favor the circulation of new ideas and innovation, and thus lead to network success. This depends on the network manager's ability to act as broker and boundary spanner. Boundary spanners are, in fact, so strongly linked both internally and externally that they are able to gather and transfer information from one subgroup to another (Provan, Huang, and Milward 2009).

This leads us to think that network managers should engage in activities that are more or less related to the management of internal, external or cross-boundary relationships in relation to the connectivity of network ties.

Network trust

The importance of trust for network performance is nowadays an unquestionable issue. When Edelenbos and Klijn (2006) and Klijn et al. (2010b, 193) started to explore the importance of trust in governance networks, they stated that 'surprisingly, there is very little research on the impact of trust in achieving results in governance networks'. Since then, several studies have explored the topic with the same results: trust matters (Klijn et al. 2010b; Kort and Klijn 2011; Ysa, Sierra, and Esteve 2014; Klijn et al. 2016). Typically, trust is defined as 'a more or less stable, positive perception of the intentions of other actors, that is, the perception that other actors will refrain from opportunistic behavior' (Klijn et al. 2016, 113). In this perspective, trust can enhance collaboration and network performance (Klijn et al. 2016). Edelenbos and Klijn (2006) and Kort and Klijn (2011) listed the mechanisms through which trust favors collaboration and the achievement of network success. First of all, they argued, trust increases the predictability of partners' behaviour, thus reducing uncertainty and transaction costs, and thereby stimulating actors' investment in the network (Provan, Huang, and Milward 2009). Secondly, as trust stimulates actors' investment in the network, it enhances network stability. Thirdly, trust stimulates exchange of information and learning, and, finally, it encourages innovation. However, trust is not an innate characteristic of public networks. It needs to be promoted when a network is newly emergent (Provan, Huang, and Milward 2009), and needs to be maintained during the network's evolution. Conflicts among network partners can reduce the level of trust: it is then a managerial task to promote and maintain a sufficient level of trust within the network (Ysa, Sierra, and Esteve 2014; Klijn et al. 2016). Klijn et al. (2010b), in fact, showed that a positive relationship exists between managerial activities and network trust (Ysa, Sierra, and Esteve 2014; Klijn et al. 2016). 'Managers can facilitate certain behaviours, and create conditions that facilitate the development of relationships' (Klijn et al. 2016, 114). In particular, managers acting as facilitators have the task to ensure that trust is built within the network. According to Klijn et al. (2016), as network managers identify suitable partners, help them to develop relationships and identify common perspectives, they are paramount for the development of trust. In the same way, Herranz (2010) argued that network managers as network integrators build trusting relationships.

This leads us to think that managers are engaged in different activities in relation to the level of trust within the network.

Method

The aim of our article is to explore which different combinations of managerial activities, network development stage, connectivity, and trust can simultaneously lead to high network performance. In accordance with the contingency approach that characterizes our study, we chose Qualitative Comparative Analysis (Rihoux and Ragin 2009) to be our research approach. QCA allows, in fact, to consider configurations of factors (or conditions, in QCA parlance), and not their independent effect on the outcome. In other words, on one side, QCA permits to look at the outcomes as the result of multiple combinations of factors (principle of conjunctural causation); on the other side, it allows to think of different paths of conditions as capable to lead to the same outcome (principle of equifinality) (Ragin 1987).

We opted for fuzzy-set QCA (fsQCA, Ragin 2009), which draws on fuzzy-set theory (Klir, St. Clair, and Yuan 1997) to address those cases where there is partial membership in

sets. Fuzzy sets allow researchers to calibrate partial membership in sets using values in the interval between 0 (non-membership) and 1 (full membership) without abandoning core set theoretic principles. The basic idea behind fuzzy sets is to permit the scaling of membership scores and thus allow partial membership. In this way, fsQCA is particularly suitable to analyze survey data. As Emmenegger et al. (2014, 1) in fact argue, 'Likert-scaled survey items let respondents make qualitative statements of agreement, disagreement and indifference. Fuzzy sets can capture these qualitative differences in a way that classical interval scaled indicators cannot'.

Moreover, we opted for the use of QCA in a large N-setting. Our study represents, in fact, one of the few attempts to employ the QCA approach in large N settings. Even if QCA was originally developed for small-N studies, recent studies have shown its potential for large N-studies (Fiss 2011; Greckhamer, Misangyi, and Fiss 2013, see also the articles published in a 2016 special issue on the Journal of Business Research). In particular, large N-studies allow to work with a higher number of conditions (up to 12), thus enriching, though also complicating, the results.

Empirical setting

The empirical setting is represented by the networks operating in Switzerland for the provision of homecare assistance, the so-called Spitex networks.

Originating from the German expression 'Spital' (hospital) and 'extern' (outside), the 'Spitex' system aims at providing healthcare outside hospital environments, based on the idea that patients should be treated as much as possible by specially trained personnel in a familiar setting, so as to increase their comfort, autonomy and self-determination. Its current form is the result of efforts carried out by Swiss municipalities that jointly set up specific organizations for home care assistance in forms such as consortia, foundations and associations, the so-called 'Spitex organizations'. These organizations provide certain home care services directly, and rely on other private and non-profit organizations for ancillary and complementary services (such as transportation, meal services, night care, psychological support, etc.). This collaboration results in the emergence of public networks (or Spitex networks in our parlance), consisting typically of three kinds of network partners: the Spitex organization (either as an administrative organization that coordinates partners, or as an operational organization that provides basic services); municipalities and the Cantonal government; and private and non-profit organizations that provide complementary services.

Spitex networks vary in the way they are established and in their governance forms due to the Swiss federalist structure. In some Cantons, the Cantonal Government directly activates Spitex and no-profit organizations to provide home-care assistance; in others, the Cantonal Government or various municipalities delegate to the Spitex organization the responsibility to supply services, activate other actors as necessary, and administer the network; in other Cantons still, the Cantonal Government entrusts the Spitex organization with all the latter responsibilities, but the Spitex organization modifies its structure into a headquarter in charge of administering the network, and a number of subsidiaries providing services and activating non-profit organizations, when necessary.

Data collection

Data were collected through a survey. The questionnaire explicitly enquired about network characteristics (development stage, connectivity and trust), the activities the network

managers were engaged in during their working days (bridging, networking and stabilizing) and network performance (see Table 2). Since we used a survey enquiring about managers' perceptions about the different factors, our study builds on self-reported measures.

The questionnaire was administered to the directors of 311 Spitex organizations operating in Switzerland in 2015. Due to the mergers involving several Spitex in recent years, and the fact that the survey was conducted only via web, it was possible to reach a smaller population than in the survey we conducted three years before. Two reminders were sent every two weeks to invite Spitex directors to fill in the questionnaire and increase the response rate.

Finally, 96 Spitex directors accepted our invitation and joined the survey, with a response rate of 30.86 per cent. The response rate of web-based surveys is typically lower than the response rate of surveys using both web-based and paper-based questionnaires. However, the relatively low response rate is coherent with the general accepted threshold of 30 per cent. Moreover, studies using QCA to analyze survey data often employ response rates that are lower than 30 per cent (Fotiadis et al. 2016). This is because, as Fiss (2011, 402) argued 'the nonparametric, fuzzy set methods … make sample representativeness less of an issue. This is the case because – unlike, for example, regression analysis – fuzzy set QCA does not rest on an assumption that data are drawn from a given probability distribution'.

Despite this, in order to ensure the external validity of our results, we checked that the analysis might not be affected by sample selection bias. As the relevant data for the entire population is unfortunately not available, we used a previous survey on the same topic that was submitted by one of the authors to the same population of Spitex in Switzerland in 2012, and which obtained a higher (about 50 per cent) response rate. Based on available aggregate administrative data, we took two variables which convey approximately the same information on the population structure in terms of catchment area and number of patients from the two surveys, and we analyzed their distributions across the two samples of respondents. We adopted a non-parametric statistical test to confirm that the two samples come from the same distribution (regardless of its type). According to the test, the difference between the two samples, as measured by the two structural variables, is not significant enough to say that they come from different distributions. Therefore, our analysis, based on the data gathered through the second and more recent survey, is not likely to be more affected by sample selection bias than the previous one. In other words, the 96 Spitex can be considered representative of the whole population.

The characteristics of the Spitex networks involved in our analysis are displayed in Table 1. They provide services to 41.86 per cent of the patients ordinarily assisted by the public Spitex networks in Switzerland, representing 33.35 per cent of the Swiss population.

Operationalization and calibration

All our conditions and the expected outcome consisted of questionnaire items (see Table 2), with response options measured on a seven-point Likert-type scale ranging from 1 (never/ totally disagree) to 7 (very often/totally agree). Some items are based on previous studies as indicated in Table 2; others were newly developed. In order to test the internal consistency and reliability of the proposed scales, we used Cronbach's alpha (see Table 2). All conditions had sufficient consistency in terms of internal item correlations and reliability: the

Table 1. Characteristics of the Spitex networks.

GEOGRAPHICAL AREA	87.6%	German-speaking Cantons
	12.4%	French-speaking Cantons
CATCHMENT AREA	650.00	Minimum
	755,369.00	Maximum
	31,224.51	Mean
NUMBER OF CLIENTS PER YEAR	11.00	Minimum
	30,300.00	Maximum
	1,046.35	Mean
NUMBER OF FULL-TIME EQUIVALENTS	2	Minimum
	1,970	Maximum
	117.49	Mean

Cronbach's alpha coefficients were, in fact, above the 0.70 cut-off for each condition and for the outcome (except for stage 3 of developmental stage, still close to 0.7).

All the conditions, with the exception of network development stage, are constructed as the sum of the relevant items as detailed below and in Table 2.

Network manager activities

Bridging was measured as the sum of twelve items (α = 0.984), developed on the basis of Bartelings et al. (2017). These items refer to activities performed by the network manager in order to form bridges between actors, establish the institutional framework for partner collaboration, and solve contrasts and conflicts among them (Bartelings et al. 2017). *Networking* was measured as the sum of four items (α = 0.85), and reflects the continuous search for new partners and relationships in order to enrich the network itself (Bartelings et al. 2017). *Stabilizing the network* was measured as the sum of four items (α = 0.952), developed on the basis of Bartelings et al. (2017) and reflects the effort by the network manager to support trust and ensure that the contacts among Spitex partners are stable and long-lasting.

Network development stage

Networks evolve across different developmental stages (Kenis and Provan 2009) or phases of their life cycle. Kenis and Provan (2009) identified three developmental stages in the network's evolution, where each is characterized by different activities and priorities to ensure the network's establishment and survival. During the first stage, it is a priority for the network to strengthen relations among partners, govern the collaboration, and favor the assimilation of the partners' mission with the network mission. In the second stage, network development requires to establish and develop common processes and procedures. In the last stage, the network is mainly engaged in increasing the number of network partners and widening the range of services provided. Network development stage was then constructed as a categorical ordinal variable – where scores 1, 2, and 3 correspond to a network's three main development stages – each measured respectively by the sum of three items (Stage 1, α = 0.77), two items (Stage 2, α = 0.842) and two items (Stage 3, α = 0.638) as detailed in Table 2. More specifically, network managers were surveyed through these items in relation to which kinds of activities and priorities they engage in. Based on their answers, we then placed each network in stage 1, 2, or 3 and assigned the relevant score correspondently. The networks where the highest value, as the sum of the individual items, was reached in stage 1 were assigned a score equal to 1. Similarly,

Table 2. Operationalization and calibration.

Condition or outcome		Measure/Items	Calibration
Bridging	Cronbach alpha: .984	Questionnaire items (no accepted scale given; new scale developed based on Bartelings et al. 2017) [How often do you engage in the following activities? 1 = never/7 = very often]	If BRIDG ≥ 70.231 1 (full membership)
		(1) Trying to form bridges between Spitex partners.	If BRIDG = 40.000 0.5 (cross-overpoint)
		(2) Ensuring that the Spitex partners are facilitated enough to do their job properly;	If BRIDG ≤ 20.000 0 (full nonmembership)
		(3) Making sure that the operating rules for partner collaboration work;	
		(4) Making sure that Regular meetings for partner coordination are scheduled.	
		(5) Making sure that the standard operating procedures (like rules, policies, forms) work.	
		(6) Helping the Spitex partners to collaborate regardless their contrasting interests;	
		(7) Solving conflicts among the Spitex partners when they occur;	
		(8) Supporting the commitment of all the Spitex partners on the same objectives;	
		(9) Keeping Spitex partners to want the same goals;	
		(10) Connecting Spitex partners with each other's;	
		(11) Giving room at the Spitex partners for new ideas;	
		(12) Coaching and supporting Spitex partners.	
Networking	Cronbach alpha: .85	Questionnaire items (no accepted scale given; new scale developed based on Bartelings et al. 2017) [How often do you engage in the following activities? 1 = never/7 = very often]	If NTW ≥ 21.000 1 (full membership)
		(1) Looking for new network partners that can enrich the network;	If NTW = 12.000 0.5 (cross-overpoint)
		(2) Looking for new (private or no profit or institutional) relationships that can enrich the network;	If NTW ≤ 5.000 0 (full nonmembership)
		(3) Managing the relationships with actors (private or no profit or institutional) external to the network;	
		(4) Going to meetings where you expect to enrich your (private or no profit or institutional) relationships	
Stabilizing	Cronbach alpha: .952	Questionnaire items (no accepted scale given; new scale developed based on Bartelings et al. 2017)) [How often do you engage in the following activities? 1 = never/7 = very often]	If STAB ≥ 27.000 1 (full membership)
		(1) Ensuring that the contacts among Spitex partners remain stable;	If STAB = 16.000 0.5 (cross-overpoint)
		(2) Ensuring that Spitex partners rely on each other's;	If STAB ≤ 7.140 0 (full nonmembership)
		(3) Supporting/promoting trust among Spitex partners;	
		(4) Ensuring that the contacts among Spitex partners are long-lasting	

(*Continued*)

Table 2. (Continued).

Condition or outcome	Measure/Items		Calibration
Connectivity	Cronbach alpha: .904	Questionnaire items (no accepted scale given; new scale developed based on Provan and Milward 1995; Provan and Kenis 2008) [If you think at the network of organizations (e.g. Cantonal governments, municipalities, non-profit organizations) collaborating with your Spitex for the provision of heathcare services… 1 = totally disagree/7 = totally agree] (1) Spitex partners contact each other's to improve the provision of their services (2) Spitex partners collaborate with each other for the provision of homecare services (3) Some relationships exist among the Spitex partners (4) Spitex partners normally interact to provide their services	If CONN ≥ 28.000 1 (full membership) If CONN = 16.000 0.5 (cross-overpoint) If CONN ≤ 8.000 0 (full nonmembership)
Trust	Cronbach alpha: .844	Questionnaire items (adapted from Klijn et al. 2010b) [1 = totally disagree/7 = totally agree] (1) In general, all of the Spitex partners (including my Spitex) fulfil their agreements with each other. (2) All of the Spitex partners (including my Spitex) give each other the benefit of the doubt. (3) All of the Spitex partners (including my Spitex) keep in mind the interests of the other parties (4) All of the Spitex partners (including my Spitex) refrain from using the contributions of other parties to their own advantage. (5) All of the Spitex partners in this project (including my Spitex) can assume that the intentions of the other parties are good in principle	If TRUST ≥ 33.003 1 (full membership) If TRUST = 26.000 0.5 (cross-overpoint) If TRUST ≤ 15.000 0 (full nonmembership)

(Continued)

Table 2. (Continued).

Condition or outcome		Measure/Items	Calibration
Development stage	Cronbach alpha: Stage 1: .770 Stage 2: .842 Stage 3: .638	Questionnaire items (no accepted scale given; new scale developed based on Kenis and Provan 2009) [Development stage: please think about the current situation in your Spitex and let us know what you think about the following statements on a scale from 1 = totally disagree to 7 = totally agree]	If DEVSTAGE ≥ 3.000 1 (full membership) If DEVSTAGE = 2.000 0.5 (cross-overpoint) If DEVSTAGE ≤ 1.000 0 (full nonmembership)
		Stage 1 (1) Right now, a priority for the development of your Spitex network is strengthening the relationships among the Spitex partners. (2) Right now, a priority for the development of your Spitex network is governing the Spitex partners' collaboration. (3) Right now, a priority for the development of your Spitex network is strengthening Spitex partners' to the Spitex mission.	
		Stage 2 (1) Right now, a priority for the development of your Spitex network is creating common procedures for the provision of homecare services. (2) Right now, a priority for the development of your Spitex network is developing common processes and structures.	
		Stage 3 (1) Right now, a priority for the development of your Spitex network is increasing the number of partners in the network. (2) Right now, a priority for the development of your Spitex network is widening the range of services provided by the Spitex partners (including my Spitex).	
Network Performance	Cronbach alpha: .761	Questionnaire items (no accepted scale given; new scale developed based on Provan and Milward 1995; Provan and Milward 2001; Provan and Kenis 2008; Kenis and Provan 2009) [The network activities carried out by your Spitex and its partners in the homecare provision allow….1 = totally disagree/7 = totally agree]	If PFM ≥ 42.000 1 (full membership) If PFM = 37.000 0.5 (cross-overpoint) If PFM ≤ 24.700 0 (full nonmembership)
		(1) … patients to live in their known environment, without being forced to go to hospitals or nursing homes (2) … to properly serve the community (3) … to support patients' autonomy (4) … to induce patients' independence (5) … to increase the clients' quality of life (6) … a reduction in the costs of the homecare assistance	

a score equal to 2 or 3 was assigned to each Spitex based on whether the highest value (again measured as the sum of the items that belong to each stage) was obtained in stage 2 or 3 respectively.

Network connectivity

Connectivity measures the extent to which all network organizations are interconnected, or linked to one another, and reflects network cohesiveness (Provan and Milward 1995; Provan and Kenis 2008). In this study it was measured as the sum of four items (α = 0.904) which examine the extent to which Spitex partners are interrelated and interact with each other.

Trust

Trust was measured as the sum of five items (α = 0.844), adapted from Klijn et al. (2010b): agreement trust (the parties generally live up to the agreements made with each other); benefit of the doubt (parties give one another the benefit of the doubt); reliability (parties keep in mind the intentions of the others); absence of opportunistic behavior (parties do not use the contributions of other actors for their own advantage); and goodwill trust (parties can assume that the intentions of the others are good in principle).

Network performance

The outcome measure is linked to network effectiveness, or network performance, which has been widely addressed by the literature (e.g. Provan and Milward 1995, 2001; Provan et al. 2005; Provan and Kenis 2008; Kenis and Provan 2009). Provan and Milward (2001) observed that 'networks must be evaluated as service-delivery vehicles that provide value to local communities in ways that could not have been achieved through the uncoordinated provision of services by fragmented and autonomous agencies' (2001, 416–17). This implies that the goal of most public networks is to enhance client services through improved access, utilization, responsiveness, and integration, while maintaining or reducing costs. Desired outcomes might include strengthened community capacity to solve public problems like crime, homelessness, or health care; improved integration of critical services to vulnerable populations; regional economic development; and responsiveness to natural or man-made disasters (Provan and Kenis 2008). From a stakeholder perspective, a network must satisfy the expectations of those groups within a community that have both a direct and indirect interest in ensuring that client needs are adequately met (Provan and Milward 2001). Based on this literature, *network performance* in this study was measured as the sum of six items (α = 0.761) that investigate the respondent's perception in terms of the Spitex' ability to improve the quality of life of their patients and address the wider community needs that are linked to them (see Table 2).

Analysing data in fsQCA requires a translation of the raw data related to the causal conditions and the outcome into fuzzy set values (Ragin 2000, 2007) by transforming the data into set membership scores ranging between 0 and 1. Calibration of the data (i.e. the transformation of conventional variables into set membership) requires the definition of three different anchors: full membership (1), full non membership (0), and a cross-over point (0.5) reflecting the point of maximum ambiguity. After defining the set membership anchors, the specific software fs/QCA 2.5[1] was used and the log-odds method was applied for the automatic calibration procedure. We used the fsQCA software 'calibrate' procedure to create the fuzzy set. The threshold values for full membership, full non-

membership and the crossover point were set at the 95th, 5th and 50th percentile respectively. The specific values for each condition and the outcome variables are listed in Table 2.

Common method bias

Finally, as a survey questionnaire was used to collect data for the conditions as well as the outcome, a source of bias, commonly named 'Common Method Bias' (CMB), may affect our analysis, and therefore needs to be taken into consideration. The estimated effect of our conditions on the outcome is at risk of being biased, due to the common variance induced by the survey instrument itself, and systematically shared among the expected outcome and its conditions. Indeed, the source of such a bias may be due to the measurement method rather than the theoretical constructs that the measures represent (Podsakoff et al. 2003; Richardson, Simmering, and Sturman 2009; Podsakoff et al. 2012).

In order to control for CMB, we used both ex-ante procedural remedies for the survey design and ex-post statistical controls (Jarvis, MacKenzie, and Podsakoff 2003). Firstly, the survey was designed to prevent common method bias problems: we used different scale labels and, hence, defined different response settings. Secondly, we performed two frequently used techniques to verify the presence of common method variance (e.g. Chang, Van Witteloostuijn, and Eden 2010; Toth et al. 2015).

The first technique (Harman 1960) uses exploratory factor analysis, where all variables are loaded onto a single factor and constrained so that there is no rotation (Podsakoff et al. 2003) to verify the presence of CMB. This new factor is typically not in the researcher's model; it is introduced solely for this analysis and then discarded. The general rule requires that if the newly introduced common latent factor explains more than 50 per cent of the variance, then common method bias may be a relevant issue. We performed the Harman Single Factor Test on our data, obtaining a proportion of variance explained by the first factor well below the 50 per cent threshold (namely 27 per cent).

Given that Harman's Single Factor test is believed to be characterized by a number of weaknesses (Wlliams et al. 2010; Jakobsen and Jensen 2015), we relied on an additional method to test for common method variance in our survey data: the Common Latent Factor method (CLF). This technique introduces a new latent variable in such a way that all the observed variables are related to it with paths that are constrained to be equal and with the variance of the common factor constrained to be 1. The common variance is estimated as the square of the common factor of each path before standardization. The common heuristic is to set the threshold to 50 per cent. The CLF value in our sample is equal to 0.13 for all variables shown and their t-value indicates significance. The common method variance is the square of that value. Therefore, also the CLF technique suggests that there is no significant common method bias in the data, since the calculated variance is well below the threshold.

Findings

Descriptive statistics and correlations are displayed in Tables 3 and 4.[2]

Coherently with the QCA approach, in the following we will present our findings in terms of analysis of both necessary and sufficient conditions.

Table 3. Descriptive statistics.

	N	Min	Max	Mean	std. dev
devstage	96	.05	.95	.34	.32
conn	96	.01	.95	.53	.31
trust	96	.02	.98	.52	.30
bridg	96	.02	.99	.48	.31
ntw	96	.03	.97	.47	.31
stab	96	.02	.96	.50	.32
pfm	96	.02	.95	.56	.31

Table 4. Correlations.

	DEVSTAGE	CONN	TRUST	BRIDG	NTW	STAB
DEVSTAGE	,1	,011	,018	,133	,045	,115
CONN	,011	1	,427**	,360**	,341**	,495**
TRUST	,018	,427**	1	,185	,227*	,446**
BRIDG	,133	,360**	,185	1	,487**	,717**
NTW	,045	,341**	,227*	,487**	1	,439**
STAB	,115	,495**	,446**	,717**	,439**	1

Analysis of necessary conditions

The analysis of necessary conditions determines if any of the conditions can be regarded as necessary for causing the outcome. This required to examine whether a single condition is always present or absent in all cases where the outcome is present (Fiss 2007; Ragin, Drass, and Davey 2006). A condition is regarded as necessary if the consistency score exceeds the threshold of 0.9 (Schneider, Schulze-Bentrop, and Paunescu 2010), where consistency measures the degree to which the cases align to the particular rule: the more cases that fail to meet this rule for necessary conditions, the lower will be the consistency score (Ragin, Drass, and Davey 2006). In the case of our conditions, consistency scores range from 0.48 to 0.72 (see Table 5), with the implication that none of the six conditions, both in their presence as well as their absence, is necessary for causing high network performance.

Analysis of sufficient conditions

The analysis of sufficient conditions lists causal combinations of the given conditions and the expected outcome in a present/absent dichotomy. In other words, it allows to identify the multiple causal paths (or combinations of conditions) simultaneously leading to the expected outcome. The analysis of sufficient conditions involves the construction and analysis of the so-called Truth Table (Fiss 2011; Ragin 2000; Ragin, Drass, and Davey 2006, 2008). We used the fs/QCA 2.5 software to obtain the Truth Table (Table 6).

In our study, 64 theoretical causal combinations (2^k, with k equal to the number of conditions) are possible. Coherently with what is suggested for large surveys (e.g. Ragin 2008; Fiss 2011), the frequency threshold, referring to the number of cases in each row, was set equal to 2 in our study, covering 77 per cent of the cases. Thus, configurations with one or zero observations are treated as remainders. Moreover, a minimum acceptable level of consistency was set at 0.9 for the remaining rows (PRI > 0.5), which is more restrictive than the minimum recommended threshold of 0.75

Table 5. Overview of necessary conditions.

	Presence of outcome variable: PFM	
Conditions tested:	Consistency	Coverage
DEVSTAGE	0.485988	0.808687
~DEVSTAGE	0.722649	0.610310
CONN	0.682341	0.726251
~CONN	0.569098	0.673099
TRUST	0.709021	0.770547
~TRUST	0.556430	0.643364
BRIDG	0.631286	0.733824
~BRIDG	0.625144	0.676007
NTW	0.623992	0.734855
~NTW	0.627447	0.670427
STAB	0.663340	0.740519
~STAB	0.590979	0.664580

Table 6. Truth table.

DEVSTAGE	CONN	TRUST	BRIDG	NTW	STAB	Number	PFM	Raw consist.	PRI consist.	SYM consist
1	1	1	0	1	1	4	1	0.974661	0.921348	0.921348
1	1	0	1	1	0	2	1	0.943647	0.810996	0.810996
0	1	1	0	1	1	3	1	0.936215	0.728916	0.749226
1	0	1	0	0	0	3	1	0.933213	0.784257	0.784256
1	1	1	1	1	1	8	1	0.927843	0.795876	0.795876
1	1	0	0	1	0	3	1	0.924873	0.730909	0.730909
1	1	1	1	0	1	3	1	0.923213	0.752137	0.752137
1	1	0	1	1	1	4	1	0.917391	0.744624	0.744624
0	0	1	1	1	1	2	1	0.91251	0.680672	0.680672
1	1	0	1	0	1	3	1	0.908443	0.68085	0.680851
0	1	1	0	0	1	4	1	0.905466	0.645783	0.647343
0	1	1	1	1	1	7	0	0.896166	0.696734	0.712241
1	0	0	0	0	0	5	0	0.891869	0.674242	0.674242
0	1	1	0	0	0	2	0	0.891837	0.580475	0.580475
1	0	0	1	0	1	3	0	0.886973	0.658959	0.697247
0	1	0	1	1	1	3	0	0.876502	0.578588	0.578588
0	1	0	0	0	0	2	0	0.828042	0.456067	0.456067
0	0	0	0	1	0	2	0	0.812723	0.459793	0.459793
0	0	0	0	0	0	9	0	0.692898	0.328436	0.345475

(Ragin, Drass, and Davey 2006, 2008). Configurations that exceed this predefined consistency cut-off value of 0.9 are regarded as sufficient for the outcome, and configurations below are considered as not sufficient. Thus, the Truth Table in our case displays 11 successful combinations, involving 39 cases.

The process of fuzzy minimization leads to a reduced set of logic statements that describe the underlying causal patterns (Ragin 2007). In line with the approach adopted by other public management scholars (e.g. Verweij et al. 2013; Raab, Mannak, and Cambré 2015; Wang 2016), we opted for the complex solution, that is the solution reached without logical remainders, i.e. without the configurations that are not empirically observed (Ragin 2009), and which contains more details (Uruena and Hidalgo 2016).

Table 7 shows the results of our analysis: seven possible configurations of network managers' activities, development stage, connectivity and trust are possible which lead to high network performance. The overall solution coverage is 0.54. It measures the proportion of memberships in the outcome that is explained by the complete solution

Table 7. Overview of the configurations leading to (perceived) high network performance.

	1	2	3	4	5	6	7
DEVSTAGE	○	●	●	●	○		●
CONN	●	●	●	○	○	●	●
TRUST	●	○		●	●	●	●
BRIDG	○		●	○	●	○	
NTW		●		○	●	●	●
STAB	●	○	●	○	●	●	●
Raw coverage	0.299578	0.193901	0.278481	0.198312	0.228040	0.308017	0.267549
Unique coverage	0.034523	0.023590	0.020138	0.040468	0.025892	0.004603	0.006713
Consistency	0.892062	0.917423	0.884288	0.933213	0.912510	0.945819	0.930620
Solution coverage: 0.539893 Solution consistency: 0.849427							

Black circles represent the presence of a causal condition. and white circles represent the negation of a causal condition; blank cells represent irrelevant conditions.

Note: in the case of DEVSTAGE a negation of the condition implies a 'young' network (i.e. a network in its early stage of development).

(Ragin 2008). In our model, the seven configurations account for about 54 per cent of the membership in the outcome. The solution consistency is 0.85. It 'assesses the degree to which the cases sharing a given condition or combination of conditions … agree in displaying the outcome in question' (Ragin, Drass, and Davey 2006, 292).

Two additional measures allow to determine the fit of each configuration: raw consistency and raw coverage. *Raw consistency* displays the proportion of cases consistent with the outcome – that is, the number of cases that exhibit a given configuration of attributes as well as the outcome, divided by the number of cases that exhibit the same configuration of attributes but do not exhibit the outcome (Fiss 2011). *Raw coverage* assesses the proportion of instances of the outcome that exhibit a certain causal combination or path (Fiss 2007). A solution or path is informative when its consistency is above 0.75–0.80, and its raw coverage is between 0.25 and 0.65, although small variations are also acceptable (Urueña and Hidalgo 2016). All our configurations exhibit a raw consistency above 0.8. The raw coverage is above 0.25 for configurations 1, 3, 6 and 7 and below for configurations 2, 4 and 5 (exhibiting a raw coverage equal to 0.194, 0.198 and 0.228 respectively). We therefore decided to exclude the latter three configurations from our discussion: in the following we will focus on configurations 1, 3, 6 and 7.

As usual in large-N studies with a high number of conditions, the results of the analysis offer a relatively high number of configurations that can be difficult to interpret and discuss (Greckhamer, Misangyi, and Fiss 2013). In this perspective, following other extant studies (Greckhamer, Misangyi, and Fiss 2013), we chose not to discuss each of our configurations. We organized the presentation and discussion of the results in two steps. First, we compare our four configurations in order to identify commonalities and differences. Secondly, we group similar configurations and build different 'approaches' to pursue high network performance (Fiss 2011).

When comparing the four configurations, two considerations seem to emerge.

First, the four paths that lead to high network performance suggest that the network manager's connective capacities play a critical role in ensuring successful outcomes for the Spitex networks. In fact, at least one among these connective activities (bridging, networking and stabilizing) is present in each configuration,

though in different combinations with the networks' structural features. For instance, in young and connected networks where trust among partners is present (configuration 1), the network manager performs stabilizing activities; that is, in those early stages of network development, s/he tries to ensure that members contribute to the network as they are expected to do, especially in terms of cooperative attitude and willingness to share their knowledge and skills. Conversely, when connected networks become mature, bridging activities become important for network performance (configuration 3). The network manager plays an essential role not only by stabilizing the relationships among network partners, but also by building bridges among them. S/he tries to form bridges between actors that facilitate cooperation based on equality, in order to increase trust among network partners. This suggests that network management, and bridging in particular, plays an important role in reconciling multiple objectives and interests, especially in those cases where cooperation may be inhibited by a lack of trust among partners. Last but not least, as trust spreads within mature and connected networks, another activity becomes important, in combination with stabilizing: networking (configurations 6 and 7). Once networks are in their mature stage of development, with dense relationships and trust among network partners, network managers can start to invest in developing new relationships and expanding the network's boundaries.

A second consideration refers to the importance of stabilizing activities. Stabilizing is performed in all four configurations, thus suggesting its critical role for network performance both in the short and in the longer term. This activity appears to contribute to networks' functioning in their early as well as mature stages of development, as it deals with ensuring that each partner contributes to the network as expected, addressing tensions and disputes, and sustaining long-lasting interactions among partners. In this way, stabilizing facilitates network functioning in the short term, but at the same time fosters enabling and nurturing conditions for the future of collaboration.

If we group together similar configurations, three network management approaches seem to emerge. Whereas our configurations can be understood as four causal recipes that are individually sufficient for causing the outcome, they can also be read as three types of *network management approaches* (as combination of activities) that are conducive to high network performance given certain features of the network (Table 8). These approaches result from grouping configurations that show a certain degree of similarity in their network characteristics as well as in the presence or absence – rather than irrelevance – of managerial activities.

The first approach – *stabilize* – includes configuration 1 and characterizes connected and trust-based networks in their early stage of development. Here the

Table 8. Managerial approaches to (perceived) high network performance.

	STABILIZE	STABILIZE & CONNECT	STABILIZE & DEVELOP	
	1	3	6	7
DEVSTAGE	○	●		●
CONN	●	●	●	●
TRUST	●		●	●
BRIDG	○	●	○	
NTW			●	●
STAB	●	●	●	●

network manager performs stabilizing activities, in order to ensure that all partners contribute as expected and create the basis for the endurance of collaboration.

The second approach – *stabilize and connect* – includes configuration 3 and characterizes connected networks in their mature stage, where the presence or absence of trust is irrelevant. Here the network manager performs stabilizing together with bridging activities, which aim to ensure that all partners contribute as expected together, but also to facilitate collaboration and solve contrasts (while networking aimed at enlarging and enriching the network is in this case irrelevant for high network performance). These activities may reflect an inward-looking attitude linked to the need to promote reciprocal acquaintance and sustain the development of internal ties among members.

The third approach – *stabilize and develop* – groups together configurations 6 and 7, which characterize mature networks with high connectivity among members as well as presence of trust. Here network managers perform stabilizing activities together with networking, thereby adding an outward-looking dimension. They show a focus on consolidating existing ties together with the creation of new relations beyond the boundaries of the network itself. In configurations 6, the network manager also refrains from bridging (while in configuration 7 bridging is not relevant), possibly reflecting the fact that the presence of integration and trust make the need to build ties among members less pressing.

Discussion and conclusion

This article aimed at gaining empirical insights into whether and how particular combinations of network management activities, in association with certain characteristics of the network itself, are simultaneously able to lead to high network performance. More specifically, it purported to empirically explore which combinations of connective activities (such as stabilizing, bridging and networking) together with network development stage, connectivity and trust simultaneously lead to high network performance. Data were collected through a survey. As a consequence, the article builds on the perceptions of the leading public manager within the networks. We therefore should be careful in generalizing the results. Especially self-reported data on performance have been proved to exhibit certain drawbacks (see for instance Meier and O'Toole 2013). In the following, we therefore explicitly use the term 'perceived' network performance to discuss the results.

With these cautions in mind, our article provides the following insights.

First, it confirms the need to enact different managerial activities in combination with the network's structural characteristics. This is coherent with recent developments in the public network literature (Verweij et al. 2013; Raab, Mannak, and Cambré 2015; Wang 2016; Cristofoli and Markovic 2016) and confirms the combined effects of structural, functional and managerial factors on network performance. In this perspective, we contribute to the extant literature by presenting an evidence-based categorization of approaches that network managers may wish to adopt, in connection with certain network characteristics, if they seek to achieve (perceived) high network performance. Our results, in fact, invite network managers to adopt an approach that may be oriented to *stabilize, stabilize and connect*, or to *stabilize and develop*, depending on their network's specific combination of development stage, connectivity and trust. In the first approach, the network manager is intensely involved in stabilizing the network, in order to ensure that each partner contributes

to the collaboration as expected, and to create the conditions for the development of the collaboration in the longer term. In the second approach, a higher network maturity combined with high connectivity allows the manager to add bridging to existing stabilizing activities, in order to improve the relationships within the network and develop trust among partners. In the third approach, mature, connected and trust-based networks allow the network manager to adopt an outward-looking approach, and to focus on networking in order to expand the network's boundaries. This categorization indicates that not just any configuration of connective activities may be expected to produce positive outcomes. It also suggests that network managers, based on existing network features, need to think carefully how to distribute their attention among connective activities, and especially between those that extend beyond the network's boundaries and those that are more inward-looking. A potential positive impact of performing a certain activity may be made redundant by not performing another activity, or by the absence of a certain structural condition. Moreover, this categorization adds to our understanding of the determinants of network performance: various conditions interact in causing (perceived) high performance (conjunctural causation) and different configurations of conditions may result in similar positive outcomes (equifinality). On the other side, it allows to identify paths towards (perceived) high network performance involving alternative combinations of managerial activities. This is like to say that network managers should opt for one activity or another in relation to the network's structural characteristics, if they want to succeed.

Second, our results are coherent with Klijn et al. (2010a)'s and Edelenbos, Van Buuren, and Klijn (2013)'s claim of the importance of network managers' connective capacities. They contribute to the extant literature, on one hand, by highlighting which connective capacity (among bridging, networking, and stabilizing) should be employed in which circumstances, and on the other hand, by shedding new light on the importance of stabilizing. Stabilizing and consolidating the relationships among network partners seem to be 'nonstop' activities for the network manager. Stabilizing appears to be critical both in early stage and in mature networks, in presence as well as absence of trust, in connected and dispersed networks. This result contributes to the literature that looks at the tensions faced by network managers (see Popp et al. 2014 for a review) by addressing in particular the tension between the need for flexibility and the need for stability (Provan and Kenis 2008). Networks are often praised for being more flexible than hierarchies (Huxham and Vangen 2005) because of their greater ability to quickly respond to threats and opportunities, by combining members' resources and expertise. In fact, the drive towards 'organizational fluidity' has become increasingly popular both in theory development and in practice, with organizational scholars advocating a shift 'from hierarchies to networks, from formal programs and coordination rules to spontaneous interaction' (Schreyögg and Sydow 2010, 1251). Nonetheless, 'stability is critical for maintaining legitimacy, both inside and outside the network. Stable networks mean that participants can develop long-term relationships with at least some other members, so that each understands the other's strengths and weaknesses and respond accordingly to maximize network outcomes' (Provan and Kenis 2008, 244–245). As they look at network governance forms, Provan and Kenis (2008) also note that NAO- and lead organization–governance will likely be more conducive to stability than shared-governance. Our results suggest that increasing

focus should be placed on behavioral features, such as deliberate and persistent network management activities that support and reinforce such long-term relationships, independently of the presence of other characteristics that may also promote long-term relations, such as dense interactions or the presence of trust. These stabilizing activities could then become a means to at least mitigate the trade-off between flexibility and stability that appears to characterize the different forms of network governance according to Provan and Kenis (2008).

Third, we found that none of the six conditions as related to network management activities and structural network features – in their presence or absence – are necessary to reach network objectives. This might have been expected, as public networks (and networks more generally) are complex entities with multiple features, and numerous activities that contribute to their management. Even stabilizing activities, which have to do with ensuring that members contribute to the network as expected and display the anticipated cooperative attitude, and might therefore appear to play a vital role, do not emerge as being necessary for network success from the study of this empirical setting. However, the presence of stabilizing activities turns up as a sufficient condition in five out of our seven configurations. This appears to be often the case in combination with an early stage of network development, which is not surprising, but also in combination with connected and mature network where trust is also present, suggesting that no definitive pattern of association can be identified.

All these considerations are conducive to some implications for network managers.

From the viewpoint of practice, it should be noted that the results of the analysis suggest areas of activities that deserve particular attention on the part of network managers when certain features of the network are present or absent. In addition to confirming those studies that propose that network management matters greatly to produce good outcomes (Meier and O'Toole 2001; Huang and Provan 2007; Klijn et al. 2010a), and that connective activities are especially important (Edelenbos, Van Buuren, and Klijn 2013; Bartelings et al. 2017), this work delves deeper into the actual strategies – and especially the combinations thereof – that have proved to lead to (perceived) positive network performance in a public service delivery setting. In empirical terms, and as insights for public managers, our study offers the following 'pointers' on how to manage public networks successfully:

(1) *In young, connected and trust-based networks, (perceived) high network performance is favoured by a focus on stabilizing activities.*
(2) *In mature and connected networks, (perceived) high network performance is favoured by the combination of stabilizing and bridging activities.*
(3) *In mature, connected and trust-based networks, (perceived) high network performance is favoured by the combination of stabilizing and networking activities.*

This work and the proposed categorization, however, present certain limitations.

First, it was developed based on service-delivery networks: further studies should apply this approach also to 'governance networks', that is networks comprising government, business and civil society actors involved in public policy making and implementation (Klijn et al. 2010a). The categories of organizations that constitute these governance networks are often similar to those of service-

delivery networks, but their individual and collective objectives are fundamentally different. This will likely impact on a number of structural and managerial dimensions, including those considered by this study. Also, we studied a specific setting consisting of the Swiss Spitex healthcare networks: future research may investigate the reach of these results in other sectors and other countries. This may include different political and institutional contexts, for instance where actors may be characterized by lower or higher degrees of autonomy from government. Appropriate additional data would need to be collected. It should be noted, however, that including too many conditions (i.e. more than eight) in a QCA analysis is not recommended, because the number of logically possible configurations of conditions will increase, which will make it difficult for QCA to find commonalities across cases in explaining the outcome (Greckhamer, Misangyi, and Fiss 2013). Other network features (such as, for example, autonomization, centralization, and size) and network management activities (including transferring knowledge, operational work, etc.) are likely to contribute to network performance in various combinations.

Secondly, as previously said, this work deals with a perceptual measure of network performance, or better, a measure of network performance as perceived by Spitex directors. In 2013 Meier and O'Toole discussed the drawbacks of perceptual measures of performance, in particular as they relate to the risk of overestimation of performance and of correlated errors. We recognize these considerations and, as a consequence, we explicitly discussed our results against a measure of 'perceived network performance', and invited to proceed with caution about their generalizability. Nevertheless, as the use of objective or archival measures of performance in the public sector is also not free from limitations, we resolved to discuss our results (even if with caution) and their possible implications for the public network literature. Unfortunately, we do not have data about objective measures of network performance, so as to use them in the analysis and compare the results, in order to better reflect on the validity and reliability of subjective measures of network performance. Future studies might be developed in this direction. A different measure of network performance may also be adopted, so as to explore which configurations of conditions are sufficient for causing a different outcome, which may have a distinct value for the actors involved (e.g. a higher level authority, as opposed to the network manager herself). Therefore, the types of network management approaches described here should not be understood as design blueprints that are guaranteed to result in positive network outcomes, or designs for networks of healthcare provision that necessarily improve the wellbeing of patients. Further studies may wish to apply an fsQCA approach to better understand how the role of other activities or contextual conditions affect outcomes.

Lastly, our paper represents one of the few attempts to use QCA in a large N-setting with a high number of conditions, with all the disadvantages but also the richness of this approach. It is not our aim, in this study, to test hypotheses or give easy recipes. Our aim is to shed light on the richness and complexities of situations that we can find in the real world. Moving from our study, future researchers can formulate and test hypotheses about managerial behaviors in different network settings.

Notes

1. Ragin, C. and S. Davey. 2014. Fs/QCA (Computer Programme), Version (2.5/3.0). Irvine, CA: University of California.
2. The correlation between networking and stabilizing is relatively high (0.717) and this may raise an issue of multicollinearity among the conditions selected for the QCA procedure. Multicollinearity is not an issue for QCA, as one of the key assumptions of QCA is that multi-dimensional social phenomena generally appear in clusters and the conditions appearing in clusters exert their causal impact on the outcome in conjunction (Wagemann and Schneider, 2007). Nevertheless, we computed the Variance Inflation Factor (VIF) among the selected conditions to exclude possible multicollinearity, with a resulting value (1.14) well below the critical threshold (10 or above), thereby confirming that multicollinearity does not arise in our case.

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