Leadership beyond hierarchies, toward public value: exploring, explaining and enhancing leadership in public sector networks

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The role of leadership behaviors in facilitating collaboration in interorganizational networks: A mixed-method study among members of interorganizational networks in the Dutch public sector

Author statement

This chapter was co-authored with one of my supervisors, Prof. Dr. Ben Kuipers. I developed the theoretical framework on which the measurement of leadership and the collaborative process was built. I designed and implemented the survey, conducted all analyses, and wrote the manuscript. My supervisors contributed by critically assessing the survey design, suggesting methodological improvements (including the use of Structural Equation Modeling), and providing feedback that strengthened the methodological rigor and conceptual clarity of the chapter.

4.1 Introduction

In recent decades, public organizations have increasingly engaged in interorganizational networks to create public value (Crosby and Bryson, 2010; Morse, 2010; Sullivan, Williams, and Jeffares, 2012). These networks involve three or more autonomous organizations working toward a collective goal while pursuing their own interests (Provan and Kenis, 2008). Compared to individual organizations, networks are less hierarchical and rely more on interaction on an equal basis (Klijn, 2005; O'Toole Jr., 1997; Powell, 1990), leading to distinct collaboration dynamics.

As interorganizational collaboration has become more common, research has increasingly focused on the role of leadership within these efforts. Leadership is viewed as a social process in which individuals use (repertoires of) behaviors to influence others to achieve shared objectives (Yukl, 2012; Van der Hoek, Groeneveld, and Beerkens, 2021). However, limited knowledge exists about how specific leadership behaviors contribute to collaborative processes.

Previous studies emphasize leadership's role in mobilizing actors (Morse, 2011), facilitating dialogue and reducing power imbalances (Ansell and Gash, 2008), and securing resources (Crosby, 't Hart, and Torfing, 2017). Other research highlights necessary activities to initiate collaboration (Agranoff and McGuire, 2001) and competencies required for network management (Getha-Taylor, 2008). Yet, empirical evidence about how leadership behaviors associate with collaboration remains scarce. This study aims to fill this gap by examining how task-oriented, relations-oriented, change-oriented, and externally oriented leadership behaviors relate to three core aspects of collaboration: operational capacity, member relations, and goal orientation in interorganizational networks. Therefore, the main research question is as follows: *How is leadership behavior associated with the process of collaboration in interorganizational networks?*

Applying a mixed-methods approach, combining survey data and semi-structured interviews, the study investigates these relationships within a national Crime Intervention Network in the Netherlands. This design enables both hypothesis-testing and a deeper understanding of leadership dynamics in practice.

4.2 Theoretical framework

In order to examine the relationship between leadership behaviors and collaborative processes in interorganizational networks, this section defines leadership and outlines a taxonomy of leadership behaviors. It subsequently introduces three core elements of the collaborative process and their relevance for network effectiveness. Finally, it presents six hypotheses linking specific leadership behaviors and distinct aspects of the collaborative process.

4.2.1 Leadership and leadership behavior

Leadership is commonly defined as "the process of influencing others to understand and agree about what needs to be done and how to do it, and the process of facilitating individual and collective efforts to accomplish shared objectives" (Yukl, 2012). Previous research on leadership in public sector networks highlights that leadership is not confined to specific individuals with a formal leadership position; rather, leadership can be exhibited by various network members (Akerboom, Groeneveld & Kuipers 2024). Within the concept of leadership, Yukl (2012) distinguishes four categories of leadership behaviors that each facilitate the pursuit of individual and shared goals: task-oriented, relations-oriented, change-oriented, and externally oriented behaviors. Akerboom, Groeneveld, and Kuipers (2024) applied this taxonomy to public sector networks, confirming and specifying its applicability to network contexts.

Task-oriented behaviors support members in clarifying objectives and coordinating activities. Relations-oriented behaviors aim to foster trust and strengthen interpersonal relations, often by encouraging open communication and building a shared identity. Change-oriented behaviors promote innovation and adaptability, helping network actors maintain focus on shared public values and collective learning. Externally oriented behaviors focus on monitoring the environment, building external relationships, and securing resources (Yukl 2012).

Previous studies suggest that both leadership and management influence collaborative processes (see, for instance Cristofoli, Markovic and Meneguzzo 2012; Fadda and Rotondo 2022; Klijn, Steijn and Edelenbos 2011), but few have systematically explored these dynamics within interorganizational networks. This is problematic, as the unique horizontal character of public sector networks, in which multiple network members collaborate on an

equal footing, is distinct from the more hierarchical context of individual organizations (O'Toole Jr. 1997).

Teamwork studies offer a valuable starting point in understanding the role of leadership in collaborative processes. For instance, studies on leadership in teams indicate that task-oriented leadership has a positive influence on employee engagement (Xu and Thomas 2011; Li, Castelli and Cole 2021) and on group efficacy – the belief of a team in its capabilities to organize efforts to attain its goals (Tabernero et al. 2009). Relations-oriented leadership enhances job satisfaction, commitment and leader-member exchange quality (Fernandez 2008; Mikkelson, York and Arritola 2015; Mahsud, Yukl and Prussia 2010). Furthermore, change-oriented leadership has a positive impact on team learning and psychological safety, employees' commitment, and employees' commitment to organizational change (Ortega et al. 2014; Lee, Wang and Yu 2023). Lastly, research indicates that externally oriented behaviors contribute to organizational change in teams (Van der Voet, Kuipers and Groeneveld 2015).

These findings, while situated in intra-organizational teams, offer important insights for leadership in interorganizational networks. Like teams, networks rely on commitment and shared purpose—yet they add layers of complexity due to organizational autonomy and different organizational goals (Kerrissey and Novikov 2024; Turrini et al. 2010; Lemaire 2020; Kerrissey et al. 2021).. Drawing on team research, we can expect that similar leadership behaviors—when enacted across organizational boundaries—may foster the collaborative process.

Therefore, the following (general) hypothesis was formulated:

Hypothesis (H1) = Leadership is positively associated with the quality of the collaborative process in interorganizational networks.

4.2.2 Quality of collaborative processes in interorganizational networks

In order to understand how these four behavioral categories of leadership behavior affect the collaborative process in networks, it is essential to specify what the quality of a collaborative process in networks entails. Previous research has identified a range of elements that contribute to the quality of collaboration in interorganizational networks (e.g. Provan and Milward, 2001; Huxham and Vangen, 2005; Klijn et al., 2010). Based on a review of the literature, this study distinguishes three core components that frequently

recur as critical conditions for effective collaboration: (1) operational capacity, referring to the availability of resources and clarity of roles; (2) member relations, reflecting the quality of interpersonal and interorganizational connections; and (3) (common) goal orientation, indicating the extent to which actors are aligned in their objectives and interdependent in their tasks to accomplish the shared objective. These three components emerged as central themes across multiple studies and serve as an analytical framework in this study. In selecting these three components — operational capacity, member relations, and (common) goal orientation — the aim was to develop an analytically useful framework that captures both structural and relational elements of interorganizational collaboration.

Operational capacity

Firstly, *operational capacity* is defined in this study as the presence of sufficient resources to execute tasks, and clarity on the distribution of tasks and responsibilities of each actor. Two elements are central in this regard: resource munificence and task clarity. In their integrative framework for collaborative governance, Emerson, Nabatchi and Balogh (2012) emphasize the necessity of capacity for joint action. Research indicates that networks with resource munificence and in which formalized coordination mechanisms to enhance clarity are in place predict positive network outcomes (Cristofoli and Markovic 2015; Turrini et al. 2010; Fawcett et al. 2000). Provan and Milward (1995) emphasized the importance of resource munificence as paramount for network maintenance. Furthermore, research indicates that resource munificence enhances networks' ability to achieve their goals (Agranoff and McGuire 2001), enhance client-level effectiveness (Provan and Milward 1995) and community-level outcomes (Fawcett et al. 2000). Prior research also suggests that task-oriented leadership behaviors can strengthen team members' confidence in their collective ability to achieve goals (Tebernero et al., 2009). In line with this, the study hypothesizes that task-oriented behaviors—such as planning, clarifying, monitoring, and problem-solving—support operational capacity in interorganizational networks. Furthermore, externally oriented leadership behaviors, which involve securing resources and fostering connections beyond the network, are expected to contribute positively to the network's resource base. Accordingly, the following hypotheses are formulated to examine the relationship between leadership behavior and operational capacity in interorganizational networks.

Hypothesis (H2): Task-oriented leadership is positively associated with operational capacity in interorganizational networks.

Hypothesis (H3): Externally-oriented leadership is positively associated with operational capacity in interorganizational networks.

Member relations

A second critical element of the collaborative process in networks is the quality of relations between participating members. Effective collaboration depends on the presence of strong interpersonal connections and a supportive relational climate (Klaster et al. 2017; Provan and Kenis 2008). This study conceptualizes member relations through three relational mechanisms which are consistently linked to collaborative success in interorganizational settings: trust, psychological safety, and shared identity. These concepts represent essential conditions for cooperation and mutual engagement, as they shape the way actors interact, share information, and cooperate with each other.

Firstly, *trust* is defined in this study as a psychological state in which an actor is willing to be vulnerable towards another actor. This vulnerability is based on the expectation that the intentions or behavior of the other party will be positive (Morgan and Hunt, 1994, Rousseau et al., 1998). Previous studies indicate that trust spurs collaboration among actors (Bond-Barnard, Fletcher and Steyn 2018), and that managerial involvement may enhance trust within the specific context of networks (George et al. 2024; Klijn et al. 2015). According to Vangen and Huxham (2003), network participants need to continuously engage in a process of nurturing trust, and that trust in networks requires managerial efforts. In addition, Klijn et al. (2016) found that trust is a predictor of network performance.

Secondly, *psychological safety* refers to the shared belief that the team or collaboration is safe for interpersonal risk-taking (Edmondson 1999). It includes key dimensions such as voice, learning behavior, support, and familiarity (O'Donovan and McAuliffe 2020), and has been linked to higher organizational learning, innovation, and employee engagement (Liu et al. 2014; Ortega et al. 2014). In network settings, psychological safety is essential to ensure open communication and mutual support between actors from different organizations (Edmondson 1999; Liu et al. 2014).

Shared identity refers to a situation in which individuals feel a sense of belonging or recognition towards those around them versus individuals external to the "in-group" (Van Dick, Ciampa and Liang 2018). The notion of shared identity contains an affective, a behavioral and a cognitive component (Henry, Arrow and Carini 1999). Research indicates that actors who identify themselves with other actors are more likely to interact

and collaborate with them (Conner 2015). Within organizations or teams, the presence of a shared identity is related to various positive outcomes, such as employee satisfaction and motivation. While these insights originate from intra-organizational settings, the concept of shared identity is arguably even more crucial—and more complex—in interorganizational networks. Collaborative networks bring together actors from different organizations, each with distinct mandates, interests, and institutional logics. This diversity can hinder the emergence of a shared identity, yet such a sense of collective "we" is critical to effective collaboration (Hardy, Lawrence & Grant 2005). As Shannon and Rhodes (2023) argue, the presence of shared identity among network actors significantly enhances the functioning of collaborative networks. Developing such identity across organizational boundaries is therefore both a key enabler and a challenge for leadership in networked settings.

Trust, psychological safety, and shared identity are not static features of a network; they require continuous nurturing and reinforcement. According to Huxham (2003), organizations who aim to collaborate effectively, should be willing and able to nurture them. This requires continuous and permanent effort (*ibid.*). Research indicates that leadership behaviors play a role in shaping these relational dynamics. Relations-oriented leadership behaviors, such as supporting and empowering others, are directly aligned with fostering trust and psychological safety (Yukl 2012). Similarly, change-oriented leadership has been shown to promote open communication and adaptability, conditions that facilitate both psychological safety and shared identity (Edmondson and Lei 2014).

As research suggests that building trust, creating a shared identity among actors and creating a safe environment for network partners requires careful orchestration, this study departs from the expectation that that relations-oriented behaviors such as supporting, empowering and helping other members to develop skills positively encourage member relations in inter-organizational networks. Similarly, as research suggests that change-oriented behaviors enhance psychological safety in teams, this study departs from the expectation that change-oriented behaviors are positively associated with member relations in networked contexts.

Hence, this study includes the following hypotheses regarding the relationships between leadership and member relations in interorganizational networks:

Hypothesis (H4): Relations-oriented leadership is positively associated with member relations in interorganizational networks.

Hypothesis (H5): Change-oriented leadership is positively associated with member relations in interorganizational networks.

Goal orientation

A third, and last, key dimension of effective collaboration in interorganizational networks is the presence of a common goal orientation. Networks are more likely to succeed when actors recognize their mutual interdependence, approach challenges collaboratively, and commit to shared goals (Turrini et al. 2010; Lemaire 2020; Kerrissey et al. 2021). In this study, common goal orientation is conceptualized as consisting of three interconnected dimensions: mutual interdependence, joint problem-solving orientation, and goal commitment. Together, these components capture the degree to which network members align their efforts and motivations toward collective outcomes.

Mutual interdependence consists of goal interdependence, task interdependence and perceived reward interdependence (Wageman, Hackman and Lehman, 2005). Goal interdependence entails the notion that actors depend on each other to attain their goals. Task interdependence refers to the mutual dependence actors experience in achieving their tasks. Lastly, reward interdependence refers to the perception that actors depend on one another to obtain rewards (Pee, Kankanhalli and Kim 2010). Research on interorganizational collaboration indicates that perceived mutual interdependence is a predictor of network effectiveness (Turrini et al. 2010).

Joint problem-solving orientation (JPS) is described as placing emphasis on problems as collective – rather than individual - challenges and seeing solutions as requiring collaborative effort (Kerrissey and Novikov 2024). Research on dynamic teams indicates that the presence of a JPS orientation among team members promotes team effectiveness (Kerrissey et al. 2021). Although JPS has not yet been extensively studied in interorganizational contexts, its emphasis on shared ownership of challenges aligns with the collaborative nature of networks, where solutions often require input across organizational boundaries.

Goal commitment

Commitment represents a deliberate psychological connection that demonstrates dedication to and accountability for a specific goal or objective (Klijn et al., 2012). Research indicates that common goals are essential for the initiation and implementation of interorganizational networks (Feys and Devos 2015; Koranyi and Kolleck 2017). Goal commitment is also associated with positive network outcomes (Clarke 2006), as the orientation toward network

goals among engaged network partners enables the coordination of actions and behaviors among network partners (Cremers et al. 2023). Yet, identifying and building commitment towards a shared goal among different organizations can be challenging (Huxham 2003). Within networks, organizations may pursue different – even conflicting – individual goals. According to Lemaire (2020), network governance and management need to encourage goal congruence in order to attain positive network outcomes.

Leadership behaviors play a pivotal role in fostering common goal orientation in networks. Change-oriented leadership—through its emphasis on articulating vision, promoting innovation, and encouraging forward momentum—can strengthen commitment to shared objectives and foster a mindset of joint responsibility (Ortega et al. 2014; Lee et al. 2023). Likewise, relations-oriented leadership behaviors help to build interpersonal connections and trust, which are crucial preconditions for aligning individual and collective goals (Fernandez 2008).

Concludingly, this study departs from the following hypotheses regarding the relationships between leadership and the presence of a common goal orientation in interorganizational networks:

Hypothesis (H6): Change-oriented leadership is positively associated with (common) goal orientation in interorganizational networks.

Hypothesis (H7): Relations-oriented leadership is positively associated with (common) goal orientation in interorganizational networks.

4.2.3 Conceptual model

On the basis of the literature review, the conceptual model (See Figure 4.1) includes six sets of relationships between (types of) leadership behavior and (components of) the quality of the collaborative process. Taken together, the three dimensions of the collaborative process —operational capacity, member relations, and goal orientation— form a comprehensive framework for understanding collaborative quality in interorganizational networks. Each is expected to be shaped by leadership behavior in distinct, yet interrelated ways. The conceptual model summarizes the expected relationships between task-, relations-, change- and externally-oriented leadership on each aspect of the collaborative process.

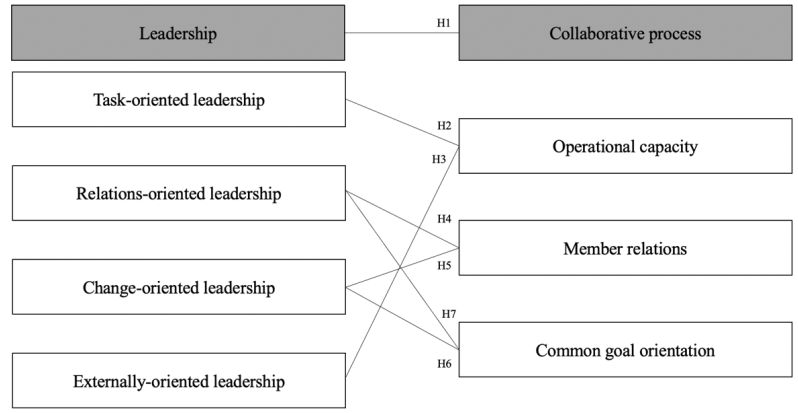

Figure 4.1: Conceptual model of leadership behaviors and (aspects of) collaborative processes in networks

4.3 Research design

A case study approach was employed, utilizing a concurrent mixed-methods design combining a quantitative survey and semi-structured interviews. The survey aimed to test seven hypotheses concerning the relationships between leadership behaviors and elements of the collaborative process. Semi-structured interviews provided deeper, context-rich insights to illustrate and explain the survey findings, thereby offering a more comprehensive understanding of leadership behaviors within interorganizational networks.

This mixed-methods design was chosen to capture both the breadth and depth required to study leadership dynamics effectively. This approach aligns with recent methodological insights emphasizing the added value of qualitative strands in mixed-methods research. As Hendren et al. (2023) argue, qualitative methods can strengthen mixed-methods studies by enhancing contextual richness, uncovering the mechanisms behind quantitative patterns, and deepening the credibility of findings. A quantitative method provides a means to assess the association between leadership behaviors and collaboration outcomes across the network. At the same time, qualitative methods allow for deeper insight into how these behaviors are perceived, enacted, and shaped by network context. By combining these methods, the study enhances validity through triangulation and mitigates the inherent limitations of relying solely on either quantitative or qualitative data (Mele and Belardinelli 2019).

4.3.1 Case selection

The research setting was selected based on several criteria to ensure relevance and richness. First, the collaboration had to meet the definition of an interorganizational network, involving at least three autonomous organizational partners working toward a collective goal (Provan and Kenis, 2008). Second, the network had to include public sector actors, as the focus of the study is on public sector collaboration. Third, the network needed to be well-established, ensuring participants could reflect on leadership behaviors over an extended period. Furthermore, regular face-to-face interaction among participants was necessary to observe leadership as a social process. Finally, the network required a relatively stable core of participants to ensure informed reflections on collaborative dynamics.

Based on these criteria, the study focused on the national Crime Intervention Network in the Netherlands, comprising ten regional sub-units and a national coordination unit. This embedded case design (Yin, 2009) allows for meaningful comparison across regions while maintaining a shared structural and institutional context.

The Dutch National Police functions within an increasingly interconnected system of public sector organizations, where joint efforts and the exchange of information are critical for addressing complex issues at the intersection of public safety, social services, and mental health care (Lakerveld et al., 2019; Matthys & De Weger, 2023). As such, a network active in these areas provides a particularly pertinent and insightful context for examining leadership within inter-organizational collaboration. The Crime Intervention Network includes key public organizations from the security and justice sector: the public prosecutor's office, national police, child protection services, victim support services, the juvenile offender foundation, the parole office, and the domestic violence emergency line. Additional stakeholders, such as municipalities and the national detention agency, may differ per regional sub-unit. The network has operated for over a decade, focusing on determining and implementing appropriate interventions for criminal cases. Collaboration is case-based, requiring partners to pool information and collectively decide on interventions, ranging from prosecution to mediation or restorative justice options.

The network operates on multiple levels. At the national level, top executives meet quarterly to set strategic priorities. At the regional level, each unit includes a strategic layer composed of mid-level managers and a tactical layer consisting of lower-level managers or informal leaders. Finally, at the operational level, frontline professionals collaborate on daily case decisions.

The network's structured interaction patterns and long-standing cooperation provided a suitable environment for studying leadership behaviors across organizational boundaries. It is important to note, however, that the formalized nature of the network and the pre-existing relationships among actors may have encouraged the visibility and interpretation of certain leadership behaviors. Access to the network was facilitated through the researcher's prior professional contacts, which enabled smoother entry but may have introduced bias that was mitigated through rigorous methodological triangulation.

The research design selected for this study offered several advantages. First, combining quantitative and qualitative data enhanced construct validity through triangulation. Second, the use of interviews allowed for the exploration of leadership behaviors not easily observable through surveys, thereby enriching the contextual understanding. Third, the embedded case design facilitated comparisons across different regional contexts, thereby increasing the robustness and generalizability of the findings. Overall, this research design provides a robust foundation for examining the complex interplay between leadership behaviors and collaborative processes within interorganizational networks.

4.3.2 Survey

Sample

The sample comprised participants from all ten regional units and the national unit of the Crime Intervention Network. An invitation to participate in the survey was extended to all 238 members, encompassing individuals from the national police, the public prosecutor's office, victim support services, the juvenile offender foundation, the parole office, the child protection services, and the domestic violence emergency line. In addition, stakeholders such as lawyers, municipalities, and representatives from the national detention agency were invited where applicable.

A total of 144 valid responses were obtained, though not all respondents answered all survey questions. To assess sample representativeness, Chi-square goodness-of-fit tests were conducted. The results indicated that the distribution of gender ($\chi 3.178 = ^2$; df = 2; p = 0.204), regional sub-units ($\chi 2.986 = ^2$; df = 10; p = 0.982), organizational affiliation ($\chi 3.652 = ^2$; df = 8; p = 0.887), and network layer participation ($\chi 1.589 = ^2$; df = 3; p = 0.662) did not significantly differ from the distribution in the population. The sample consisted of approximately %35 male and %65 female respondents, closely reflecting the

population composition of the network. Such alignment strengthens the validity of the survey findings.

Measurement

Validated survey items were employed for each key variable where available, supplemented by newly developed items when necessary. The survey items and their theoretical basis can be found in Appendix C.1. To handle missing data in the survey dataset, the value "99" was used as a placeholder to indicate missing responses. These values were excluded from the statistical analyses to ensure they did not distort parameter estimates. The dataset was examined for outliers using descriptive statistics. No extreme or implausible values were identified, and thus no data points were removed or transformed on the basis of outlier detection.

Leadership behaviors

Leadership behaviors were measured following Yukl's (2012) taxonomy, distinguishing between task-oriented, relations-oriented, change-oriented, and externally oriented leadership. Task-oriented leadership was assessed through nine items measuring behaviors such as clarifying, planning, monitoring operations, and technical problem-solving (Cronbach's $\alpha = 0.863$). Relations-oriented leadership was measured through eleven items capturing supporting behaviors, empowerment, recognition of efforts, and assistance in skill development ($\alpha = 0.910$). Change-oriented leadership was assessed using six items measuring advocacy for change, envisioning, promoting collective learning, and encouraging innovation ($\alpha = 0.855$). Externally oriented leadership was measured with four items addressing networking, external monitoring, and representation activities ($\alpha = 0.908$). To assess the internal consistency of the leadership scale, a reliability analysis was conducted for the four dimensions of leadership behavior: task-oriented, relations-oriented, change-oriented, and externally oriented leadership. The analysis yielded a Cronbach's alpha of 0.812, indicating good internal consistency (George & Mallery, 2003). This suggests that the four dimensions, while conceptually distinct, collectively form a coherent and reliable measure of leadership behavior in the context of interorganizational collaboration. Given this level of reliability, it is appropriate to use these dimensions both individually and as indicators of a broader leadership construct in subsequent analyses.

An exploratory factor analysis (Principal Axis Factoring with Oblimin rotation) on the four types of leadership behavior resulted in a seven-factor solution. Externally oriented leadership emerged as a distinct and coherent dimension, while change-oriented behaviors

showed partial clustering across multiple factors. Relations-oriented and task-oriented behaviors were more dispersed, with weaker and less consistent loadings, indicating conceptual overlap. These findings support analyzing the leadership dimensions separately, though they also suggest caution in interpreting them as fully distinct constructs.

Quality of the collaborative process

The collaborative process variables included operational capacity, member relations, and goal orientation. Operational capacity was measured through five items related to both resource munificence and clarity of tasks (Cronbach's $\alpha = 0.701$). Member relations were operationalized through psychological safety (four items, $\alpha = 0.753$), trust (five items, $\alpha = 0.797$), and shared identity (four items, $\alpha = 0.837$). Goal orientation was captured through mutual interdependence (four items, $\alpha = 0.674$), joint problem-solving orientation (four items, $\alpha = 0.810$), and goal commitment (four items, $\alpha = 0.865$). A reliability analysis was also conducted to assess the internal consistency of the three dimensions conceptualized as components of a higher-order construct of the quality of the collaborative process. The analysis yielded a Cronbach's alpha of 0.674, indicating moderate internal consistency among the three dimensions. Although this value is slightly below the conventional threshold of 0.70, it is considered acceptable in the context of exploratory research or when constructs are conceptually distinct but related (Kline 2015). The relatively modest alpha is not problematic for the purposes of the present study. The three dimensions, though theoretically linked, represent analytically distinct facets of collaboration. Accordingly, the effects of different leadership styles are examined separately for each dimension. This approach allows for a more precise understanding of the differentiated relationships between leadership and each aspect of collaborative functioning.

An exploratory factor analysis (Principal Axis Factoring with Oblimin rotation) was conducted on the items measuring operational capacity, member relations and goal orientation. The analysis resulted in a seven-factor solution and converged in 13 iterations. The results indicate that several subdimensions within the broader constructs emerged clearly. Within goal orientation, items related to joint problem solving, commitment, and dependence on partners each formed distinct clusters, supporting the conceptual differentiation of these subcomponents. Similarly, trust within the member relations dimension appeared as a coherent factor. In contrast, items intended to measure identity and operational capacity were more dispersed across multiple factors, suggesting conceptual overlap or multidimensionality within those constructs. For operational capacity, the items

related to resource munificence loaded on a different factor than those focusing on task clarity.

Table 4.1 *Overview of mean, std. deviation Chronbach's alpha and minimum and maximum values for independent and dependent variables*

Variable	Mean	Std. dev.	Cronbach's α	Min.	Max.
Operational capacity	3,49	0,64	0,701	1	5
Member relations					
Psychological safety	3,88	0,67	0,753	1	5
Trust	3,86	0,59	0,797	1	5
Shared identity	3,88	0,67	0,837	1	5
Goal orientation					
Mutual interdependence	4,12	0,52	0,674	1	5
Joint Problem-Solving Orientation (JPS)	3,78	0,60	0,810	1	5
Goal commitment	4,46	0,55	0,865	1	5
Leadership					
Task-oriented leadership	3,10	0,73	0,863	1	6
Relations-oriented leadership	2,94	0,73	0,910	1	6
Change-oriented leadership	3,05	0,79	0,855	1	6
Externally-oriented leadership	2,31	0,85	0,908	1	6

Control variables

Control variables included gender, age, managerial position, network layer (strategic, tactical, operational), and the amount of time respondents spent working within the network. These variables were included to account for individual characteristics that might independently shape perceptions of leadership behavior or collaborative processes. For example, managerial role may affect how respondents recognize certain types of leadership, while network layer may shape one's exposure to different leadership dynamics. The amount of time spent in the network relative to other tasks may alter one's exposure to leadership behaviors. Controlling for these variables helps isolate the specific associations between leadership behavior and collaboration outcomes.

Testing for common method bias

Because all data in this study were collected through self-report surveys completed by a single respondent per collaboration, the risk of Common Method Bias (CMB) must be considered. CMB refers to the systematic variance shared among variables measured with

the same method, which can inflate correlations and threaten the validity of conclusions about the relationships between constructs (Podsakoff et al., 2003).

To explore the potential impact of CMB, a bivariate correlation analysis was conducted between all four types of leadership behavior and the three dimensions of the collaborative process (operational capacity, member relations, and goal orientation). The results revealed several significant correlations, particularly between task-oriented and relations-oriented leadership and the various collaboration outcomes. While these associations may reflect true conceptual relationships, the strength and consistency of the correlations—especially among leadership dimensions (r = .747 between task- and relations-oriented leadership)—raise the possibility of inflation due to shared method variance. However, the findings also suggest that CMB is unlikely to fully explain the observed relationships. Most notably, externally oriented leadership—despite being measured using the same method—did not show significant bivariate correlations with any of the collaboration dimensions. If CMB were driving the relationships across all variables, similar levels of correlation would be expected for all leadership types. The selective nature of the associations, along with variation in correlation strength across dimensions, indicates that the observed patterns are likely not solely attributable to methodological artifacts, but instead reflect meaningful distinctions in how leadership styles relate to collaborative processes.

Statistical testing: Structural Equation Modeling

Two Structural Equation Models (SEM) were used to explore the relationships between leadership and components of the collaborative process in interorganizational networks.

This approach was chosen for several methodological reasons. First, the model includes four independent variables—task-oriented, relations-oriented, change-oriented, and externally-oriented leadership behaviors—which may be empirically interrelated. SEM is particularly suitable for modeling such interdependencies, as it allows for the simultaneous estimation of multiple paths while accounting for correlations among predictors. Second, SEM enables the analysis of complex relationships within a single, integrated model, thereby increasing efficiency and reducing the likelihood of Type I errors associated with conducting multiple separate analyses. Third, SEM supports the use of latent variables, which is advantageous when working with constructs such as leadership behavior and collaboration that are measured through multiple observed indicators. Finally, SEM provides a robust set of model fit indices, offering a rigorous means of evaluating how well the hypothesized model corresponds to the observed data.

In the SEM, leadership was treated as the independent variable and the components of the collaborative process as the dependent variables. The assumption that leadership behaviors encourage collaborative processes—rather than being merely shaped by them—is grounded in the view that leadership consists of deliberate actions intended to steer organizational dynamics. Leaders engage in such behaviors to enhance coordination, cultivate trust, stimulate innovation, or attract external support. As these behaviors are goal-oriented and proactive, it is reasonable to expect that they act as drivers of collaborative quality, rather than being solely reactive responses to it.

After testing the relationships between leadership in general – combining all four types of leadership – on the outcome variable, a second SEM was used to retrieve potential relationships between *specific* types (task-, relations, change- and externally oriented behaviors) of leadership and components of the collaborative process. To analyze the relationships between leadership behaviors and the process of collaboration within the network, Structural Equation Modeling (SEM) was employed.

Directionality

The conceptual model shown in Figure 4.1 illustrates the expected directionality of the relationship between leadership and the collaborative process. The theoretical rationale for assuming that leadership behaviors enhance collaborative processes, rather than the reverse, rests on the premise that leadership actions are purposive interventions aimed at shaping organizational dynamics. Leadership behaviors are typically enacted with the intention to foster coordination, build trust, promote innovation, or mobilize external resources. Thus, it is expected that leadership behaviors precede and condition the collaborative process, rather than emerging solely as a response to existing collaborative quality. However, as the directionality of the relationship cannot be demonstrated through the statistical tests used in this study, semi-structured interviews were used to provide a better understanding of the (potential) directionality of this relationship. By using both quantitative and qualitative methods, this study aims to uncover the mechanisms between leadership and the collaborative process and provide more contextual richness to the survey data (Hendren et al. 2023; Mele and Belardinelli 2019).

4.3.3 Semi-structured interviews

In addition to survey data, 39 semi-structured interviews were conducted using purposive sampling to deepen understanding of leadership behaviors within the network. Three regional sub-units were selected to reflect the network's diversity, each representing an

urban, suburban, or rural setting. This selection criterion was based on the assumption that crime dynamics might vary across geographical contexts, potentially influencing collaborative processes. Furthermore, members of the national sub-unit were also invited to participate in interviews. Within each selected regional unit, all network participants were approached, ensuring that every organization involved had the opportunity to share its perspective.

The interview protocol, comprising open-ended questions and probes, was designed to elicit participants' viewpoints and experiences regarding leadership in the network. The interview protocol can be found in Appendix B.1. Initially, participants were asked to articulate the collective goal of the network and to comment on the degree of consensus or divergence surrounding this goal among network members. Subsequently, participants were invited to reflect on individuals who had demonstrated leadership behaviors, offering concrete examples where possible. Participants were also encouraged to recount instances where they themselves, or others, displayed or refrained from leadership behaviors, and to discuss the organizational factors that supported or hindered their involvement in the network.

Interviews were conducted either online or at a location of the participant's choosing, recorded with consent, and transcribed verbatim. Each interview had a duration of between 50 to 90 minutes. To enhance the study's validity, the interview guide was reviewed by field experts and pilot-tested with a network participant prior to data collection (Bryman, 2016). All transcripts were subsequently reviewed for accuracy and completeness.

Qualitative coding process

The qualitative data obtained from the interviews were analyzed through an iterative coding process that combined both inductive and deductive strategies. Analysis was guided by the grounded theory methodology articulated by Strauss and Corbin (1990), with the software package Atlas.ti facilitating the systematic coding, categorization, and retrieval of data segments.

In the initial phase, open coding was applied by reading the transcripts line by line to identify meaningful fragments concerning leadership behaviors and their perceived effects on collaboration. Codes were assigned to fragments closely reflecting participants' language and perspectives. For instance, statements such as "keeping people on track" were coded as 'monitoring,' while "we decided who does what" was labeled as 'dividing tasks.' This

step was both data-driven, allowing themes to emerge organically, and theory-driven, using sensitizing concepts from the leadership and collaboration literature.

In the second phase, axial coding was employed to group open codes into broader conceptual categories. Patterns and relationships between codes were identified, facilitating the clustering of concepts such as 'monitoring,' 'dividing tasks,' and 'problem-solving' under the overarching category of task-oriented leadership. This coding process was informed by the theoretical framework established for the study (see Table 4.2), which predefined leadership behaviors and collaborative process elements. Nevertheless, the analysis remained flexible to incorporate emergent themes that extended beyond the initial framework.

In addition to categorizing types of leadership behavior, the analysis also focused on participants' perceptions of the effects of these behaviors on collaboration. Segments expressing a positive view (e.g., "this really helped us move forward") were coded as 'positive sentiment,' while those indicating negative experiences were labeled as 'negative sentiment.' This dual coding approach enabled the study to examine not only the occurrence of leadership behaviors but also participants' evaluations of their impact.

To ensure reliability, a subset of transcripts was independently double-coded by a second researcher, with discrepancies resolved through discussion until consensus was reached. Throughout the analytical process, memos were maintained to document interpretations, thereby enhancing transparency in the analysis.

Table 4.2 *Overview of deductive codes*

Concept	Operationalization	Code
Components of the collaborative process	*Operational capacity*	Resource munificence
		Clarity (formalization)
	Member relations	Trust
		Psychological safety
		Shared identity
	(Common) goal orientation	Mutual interdependence
		Commitment
		Joint Problem-Solving Orientation
Leadership behaviors	*Task-oriented leadership*	Planning
		Dividing tasks
		Monitoring
		Problem solving
	Relations-oriented leadership	Supporting
		Empowering
		Developing skills
		Recognizing achievements
	Change-oriented leadership	Developing a vision
		Sharing and promoting vision
		Encouraging innovation
		Facilitating collective learning
	Externally oriented leadership	Networking
		Representing
		External monitoring
Outcome	*Collaborative process*	Positive sentiment
		Negative sentiment

4.4 Findings

In the following sections, the hypotheses regarding the impact of leadership behaviors on each component of the collaboration process (operational capacity, member relations, common goal orientation) are tested. This section first presents leadership in general as a latent variable on all elements of the collaborative process to test hypothesis 1. Consequently, the results related to the other hypotheses will be provided. Thereafter, findings from the qualitative interviews are provided for the interpretation of the statistical analysis.

4.4.1 Survey results and hypotheses testing

The results of the first model, assessing general correlations between leadership and components of the collaborative process, are summarized in Table 4.3. Model fit was evaluated using multiple indices. The chi-square test was statistically significant, $\chi 57.22 = (28)^2$, p = .001, indicating that the model differed from the saturated model. The RMSEA was %90) 0.105 CI: 0.144–0.065), and the pclose value of 0.015 suggests the model does not meet the criteria for close fit. The Comparative Fit Index (CFI) was 0.884 and the Tucker–Lewis Index (TLI) was 0.768, reflecting a modest fit relative to the baseline model. However, the Standardized Root Mean Square Residual (SRMR) was 0.073, indicating an acceptable level of residuals. The Coefficient of Determination (CD) was 0.855, showing that the model explains a substantial proportion of variance in the data. While the overall model fit falls slightly below conventional thresholds, the indices suggest a moderately acceptable model for the purposes of exploratory analysis.

Table 4.3 presents the results of the first model, which indicates that leadership is significantly associated with all three aspects of the collaborative process: Operational Capacity (β = 1.295, p = 0.012), Member Relations (β = 1.61, p = 0.021) and Goal Orientation: β = 0.89, p = 0.006. According to the Structural Equation Model, leadership was significantly associated with all three elements of the collaborative process: Operational Capacity (β = 1.30, p = 0.012), Member Relations (β = 1.61, p = 0.021) and Goal Orientation: β = 0.885, p = 0.006. Hence, the data support Hypothesis 1, stating that leadership is positively associated with the quality of the collaborative process in interorganizational networks.

Furthermore, the control variable Time was significantly associated with goal orientation (β = 0.003, p = 0.003), suggesting that respondents who spend a larger percentage of their work on the network report a better score on goal orientation in the network. Other control variables, such as respondent age (β = -0.01, p = 0.108), gender (β = -0.04, p = 0.738), and management position (β = 0.16, p = 0.201), were not significantly associated with the outcomes.

Table 4.3 *Associations between leadership (general) and aspects of the collaborative process in interorganizational networks*

Predictor of: operational capacity	Coefficient	SE	t	p	95% CI (Lower)	95% CI (Upper)
Leadership	1.295	0.560	2.15	0.012	0.285	2.308
Network layer	-0.012	0.0568	-0.19	0.852	-0.243	0.119
Gender	-0.040	0.119	-0.33	0.738	-0.273	0.193
Age	-0.012	0.037	-1.61	0.108	-0.135	0.013
Management position	0.159	0.124	1.28	0.201	-0.085	0.403
Time spent on network	-0.002	0.002	-1.05	0.296	-0.005	0.002

Predictor of: member relations	Coefficient	SE	t	p	95% CI (Lower)	95% CI (Upper)
Leadership	1.611	0.699	2.30	0.021	0.240	2.983
Network layer	0.039	0.054	0.72	0.472	-0.067	0.145
Gender	0.169	0.098	1.73	0.083	-0.022	0.360
Age	-0.001	0.006	-0.23	0.818	-0.013	0.010
Management position	0.064	0.102	0.63	0.528	-0.135	0.264
Time spent on network	0.002	0.001	1.51	0.130	-0.006	-0.004

Predictor of: goal orientation	Coefficient	SE	t	p	95% CI (Lower)	95% CI (Upper)
Leadership	0.885	0.322	2.75	0.006	0.253	1.517
Network layer	0.033	0.044	0.76	0.446	-0.05	0.119
Gender	0.079	0.078	1.02	0.306	-0.073	0.233
Age	-0.002	0.005	-0.34	0.731	-0.011	0.008
Management position	-0.018	0.081	-0.22	0.827	-0.178	0.142
Time spent on network	0.003	0.001	2.97	0.003	0.001	0.005
LR test of model vs. saturated: chi2(28) = 57.22		Prob > chi2 = 0.0009				

Note: SE = standard error; CI = confidence interval; *p*-values < 0.05 are considered significant. Model fit: $\chi 57.22 = (28)^2$, RMSEA %90) 0.105 CI: 0.144–0.065), CFI = 0.884, TLI=0.768, SRMR 0.073, CD=0.855. N=96.

The second model tested the associations between specific leadership behaviors and collaborative processes. This model also demonstrated deviation from the saturated model, $\chi 2(3) = 49.23$, p = 0.0000. Model fit was further assessed using multiple indices. The RMSEA was 0.403 (90% CI [0.308, 0.505]), with a pclose of 0.000, indicating poor model fit. Both the CFI (0.460) and TLI (−4.404) fell below acceptable thresholds, suggesting the model does not adequately improve on the baseline model. The SRMR was 0.064,

which falls within the acceptable range (< 0.08), and the coefficient of determination (CD) indicated that the model explained approximately 47% of the variance in the dependent variables. Taken together, these results suggest that the model's overall fit to the data is poor and may require re-specification. This is most likely due to the low N (144 total respondents, of which 96 answered all questions). While the fit indices suggest that the model does not meet conventional thresholds of statistical adequacy, the model was retained because it reflects a theoretically informed framework grounded in prior research. The goal of this study was to explore hypothesized associations rather than to establish a final model of best fit. This model should therefore be interpreted as exploratory, offering a starting point for future confirmatory studies with larger samples and refined model structures.

Table 4.4 presents all findings of Model 2. Here, it shows there is no statistically significant association between Task-oriented leadership and the different aspects of collaboration: Operational Capacity ($\beta = 0.18$, $p = 0.161$), Member Relations: ($\beta = -0.01$, $p = 0.896$) and Goal Orientation: $\beta = 0.11$, $p = 0.157$. Based on this, the hypothesis of a positive association between task-oriented leadership and operational capacity (H2) is rejected.

The table also demonstrates that there is a significant, positive association between relations-oriented leadership and member relations. ($\beta = 0.27$, $p = 0.014$). Hence, the hypothesis that relations-oriented leadership is associated with member relations (H4) is accepted. Relations-oriented leadership did not show a significant effect on goal orientation ($\beta = 0.09$, $p = 0.277$). Therefore, the hypothesis that relations-oriented leadership associates with common goal orientation (H7) is rejected.

Change-oriented leadership showed no significant association with member relations ($\beta = 0.01$, $p = 0.872$). This suggests that its impact on interpersonal dynamics may be limited in this sample. Hence, the hypothesis that change-oriented leadership is positively associatied with member relations (H5) is rejected. The results also demonstrate that change-oriented leadership is not significantly associated with goal orientation ($\beta = 0.08$, $p = 0.177$). Therefore, the hypothesis that change-oriented leadership is positively associated with common goal orientation (H6) is rejected

Lastly, externally-oriented leadership was not significantly associated with operational capacity ($\beta = -0.08$, $p = 0.320$). Therefore, the hypothesis that externally-oriented behaviors are positively associated with operational capacity (H3) is rejected.

Table 4.4 *Associations between specific types of leadership and collaborative processes in networks*

Predictor of: operational capacity	Coefficient	SE	t	p	95% CI (Lower)	95% CI (Upper)
Task-oriented leadership	0.179	0.128	1.40	0.161	-0.071	0.432
Relations-oriented leadership	0.074	0.138	0.54	0.591	-0.196	0.344
Change-oriented leadership	-0.013	0.093	-0.14	0.889	-0.195	0.169
Externally-oriented leadership	-0.076	0.077	-0.99	0.320	-0.023	0.074
Network layer	-0.021	0.0679	-0.31	0.759	-0.154	0.112
Gender	-0.014	0.123	-0.11	0.909	-0.254	0.226
Age	-0.010	0.008	-1.34	0.181	-0.025	0.005
Management position	-0.131	0.128	1.02	0.306	-0.119	0.380
Time spent on network	-0.002	0.002	-1.08	0.279	-0.005	0.002

Predictor of: member relations	Coefficient	SE	t	p	95% CI (Lower)	95% CI (Upper)
Task-oriented leadership	-0.014	0.104	-0.13	0.896	-0.217	0.189
Relations-oriented leadership	0.272	0.111	2.45	0.014	0.054	0.489
Change-oriented leadership	0.012	0.075	0.16	0.872	-0.135	0.159
Externally-oriented leadership	-0.06	0.062	-0.91	0.364	-0.177	0.065
Network layer	0.039	0.055	0.71	0.476	-0.068	0.147
Gender	0.156	0.099	1.58	0.114	-0.037	0.350
Age	-0.002	0.006	-0.31	0.757	-0.014	0.010
Management position	0.076	0.103	0.74	0.460	-0.126	0.278
Time spent on network	0.002	0.001	1.55	0.120	-0.001	0.005

Predictor of: goal orientation	Coefficient	SE	t	p	95% CI (Lower)	95% CI (Upper)
Task-oriented leadership	0.110	0.078	1.42	0.157	-0.042	0.263
Relations-oriented leadership	0.091	0.084	1.09	0.277	-0.073	0.255
Change-oriented leadership	0.076	0.056	1.35	0.177	-0.034	0.186
Externally-oriented leadership	-0.026	0.047	-0.57	0.572	-0.118	0.065
Network layer	0.038	0.041	0.93	0.354	-0.042	0.119
Gender	0.099	0.074	1.33	0.183	-0.047	0.245
Age	-0.001	0.005	-0.24	0.810	-0.010	0.008
Management position	-0.033	0.077	-0.42	0.673	-0.185	0.119
Time spent on network	0.003	0.001	2.93	0.003	0.001	0.005
LR test of model vs. saturated: chi2(3) = 49.23		Prob > chi2 = 0.0000				

Note: SE = standard error; CI = confidence interval; *p*-values < 0.05 are considered significant. Model fit: $\chi 49.23 = (28)^2$, RMSEA %90) 0.403 CI: 0.505–0.308), CFI = 0.460, TLI=4.404-, SRMR 0.064, CD=0.473. N=96

The findings as illustrated in Figure 4.2 indicate that overall, leadership is significantly associated with the process of collaboration in interorganizational networks. However, the specific dimensions of leadership demonstrated varying levels of association. Relations-oriented leadership demonstrated a significant positive association with member relations, highlighting its potential role in fostering interpersonal connections between members within networks. Other leadership behaviors, such as task-oriented and change-oriented leadership, showed no significant relationships with the specified outcomes.

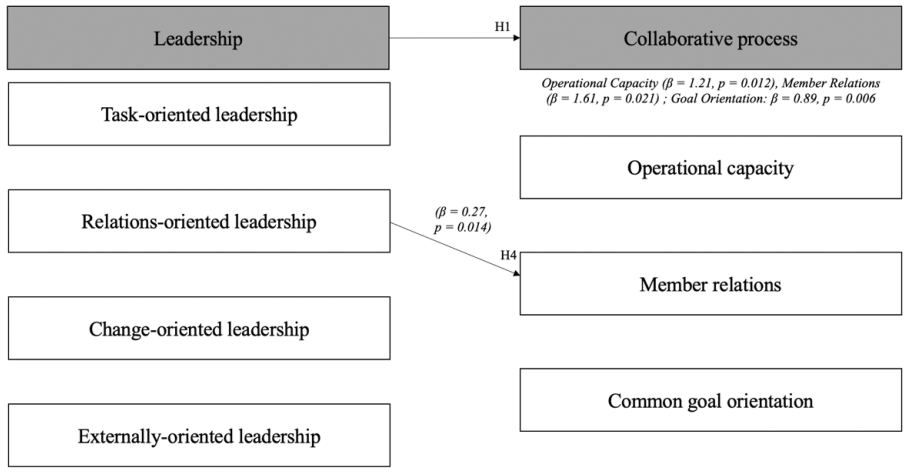

Figure 4.2: Overview of relationships between leadership and (aspects of) collaborative processes in networks.

Other statistical findings

Significant covariances were observed among the leadership dimensions, indicating interrelationships between different styles of leadership, for instance, between Task-oriented and Relations-oriented leadership (covariance = 0.288, $p < 0.001$). Task-oriented and Change-oriented leadership also show interrelatedness (covariance = 0.230, $p < 0.001$). Thirdly, Task-oriented and Externally-oriented leadership demonstrate a Covariance of 0.251, $p < 0.000$. In addition, Relations-oriented and Change-oriented leadership show a Covariance of 0.251, $p < 0.000$. Lastly, covariances were found between Externally-Oriented Leadership and Relations-oriented Leadership (0.267, $p = 0.000$) and Change-oriented Leadership (0.217, $p = 0.003$). These results suggest that the leadership dimensions often coexist or encourage each other. Therefore, it is more difficult to distinguish between the effects of specific leadership types. Both models did not provide estimates for covariance among the dependent variables.

4.4.2 Interview findings

Whereas the explorative quantitative findings indicate a significant positive relationship between leadership in general and the perceived quality of the collaborative process, the statistical analysis provided limited insight into how or why specific types of leadership behaviors relate to elements of the collaborative process — with the exception of a positive association between relations-oriented leadership and member relations. To deepen our understanding of how leadership behaviors operate within the Crime Intervention Network, this section draws on interview data to contextualize, illustrate, and explain the mechanisms through which leadership may encourage collaboration. The interviews were analyzed to assess whether participants recognized forms of leadership and how these were perceived to affect different elements of the collaborative process. In doing so, the qualitative material helps to interpret the statistical results while providing deeper insights into causal directionality.

Task-oriented leadership and operational capacity

Although the statistical analysis did not identify a significant relationship between task-oriented leadership and operational capacity, interview data suggest that task-oriented leadership behaviors were present within the Crime Intervention Network. Members from one of the partner organizations were described as key players in organizing and structuring meetings, leading discussions, determining agendas, and appointing speakers. These behaviors align with task-oriented leadership, which seeks to coordinate activities and ensure procedural clarity to improve collaboration. For instance, Respondent 30 explains: "They hold the role of chair and are definitely the driving force in setting the agenda and initiating speakers. Others do this as well, but they are the ones who shape the agenda." However, respondents typically associated these actions with the organization's formal responsibilities rather than as collective leadership behavior. The fact that task-oriented behaviors were strongly associated with a single organization and perceived as part of their formal role may have affected how they were interpreted by other network members. Such leadership might have been seen as routine or administrative, rather than as a shared or influential force shaping collaboration, potentially explaining its limited visibility in the statistical analysis.

Relations-oriented leadership and member relations

The interviews reinforce the statistical finding that relations-oriented leadership enhances member relations. Several respondents emphasized the importance of involving quieter members or smaller organizations in decision-making processes. For instance, Respondent

31 remarked, *"I have told them: if you don't find yourselves important, then how will we make sure you do?"* Similarly, Respondent 33 stated, *"I always try to involve the people I never hear from."* Such actions foster inclusivity and provide all network members a voice in decision-making. Respondents also highlighted deliberate efforts to build a shared identity, such as through a joint 'news bulletin' (Respondent 18). In contrast, in network units where relational behaviors were less evident, respondents reported lower relationship quality and a lack of mutual understanding. Respondent 23, for instance, wished for more focus on questions like "how do we help each other out?" and "how do we strengthen each other?" These accounts illustrate how relations-oriented leadership contributes to member relations by cultivating trust and a sense of shared identity, influencing the collaborative process in ways aligned with the leadership behaviors intentionally enacted.

Relations-oriented leadership and goal orientation

Although the statistical analysis did not detect a significant link between relations-oriented leadership and goal orientation, qualitative findings suggest that relations-oriented leadership may subtly strengthen shared goals. Several respondents described how reflective dialogue took place in the network, particularly when facing difficult dilemmas. Respondent 34 explained, *"We discuss the difficult issues and collectively decide on a course of action. And hence, achieve commitment with each other."* Respondent 32 added, *"Do we do the right things? That's something you can do by listening and asking questions."* These reflections indicate that relations-oriented leadership fosters spaces for joint reflection and dialogue about shared goals. However, the absence of specific attribution to individual leaders, often using terms like "we" and "you," suggests that these behaviors were perceived as collective rather than individually driven, which may account for the lack of statistical significance in the quantitative analysis.

Change-oriented leadership and goal orientation

Change-oriented leadership behaviors were most visible at the strategic level, particularly in discussions about the future direction of the network and its role in society. Respondents described how values and long-term priorities were articulated during steering group meetings. For example, Respondent 17 emphasized, *"We have a duty towards society—suspects, victims, and our member organizations—to commit ourselves to ensuring quality. Uphold those values! That is what I aim to do in our steering board."* This statement illustrates a mechanism where change-oriented leadership operates as a moral compass, articulating and sustaining the network's long-term purpose.

However, several respondents noted a gap between strategic intentions and operational realities. Although steering group discussions emphasized quality and values, day-to-day decision-making often leaned toward efficiency and meeting key performance indicators (KPIs). Respondents mentioned that the network had sometimes implicitly prioritized "efficiency" and "KPI-drivenness" over qualitative interventions without open discussion. These findings suggest that while change-oriented leadership shaped strategic narratives, its translation into operational behavior was inconsistent, potentially explaining the absence of significant statistical associations.

Externally-oriented leadership and operational capacity

Although no statistical relationship was found between externally-oriented leadership and operational capacity, interviews revealed several instances where externally-oriented leadership behaviors enhanced collaboration. One network partner, for example, expanded the network by inviting a new organization with expertise in domestic abuse, thereby broadening the network's knowledge base and intervention options. This illustrates how externally-oriented leadership behaviors can indirectly strengthen operational capacity. However, these behaviors, often occurring outside regular network meetings, may not have been salient to survey respondents focused on internal dynamics, thus eluding cross-sectional survey measurement.

Together, the interview findings provide important insights into how leadership behaviors function within the Crime Intervention Network and why certain associations were or were not found in the statistical analysis. In particular, the qualitative data help to identify mechanisms—such as including all actors, articulating shared values, and expanding resources—through which leadership behaviors enhance different aspects of the collaborative process. The findings also underscore why leadership is conceptualized as preceding and shaping the collaborative process, rather than the reverse, given the purposive and intentional nature of leadership actions aimed at enhancing collaboration.

4.5 Discussion

This study explored the relationship between leadership behaviors and collaborative processes in interorganizational networks, using a mixed-methods approach within a well-established Crime Intervention Network in the Netherlands. Drawing on both a structural equation model and qualitative interviews, four key insights emerged.

First, our findings indicate that leadership behavior in general positively encourages the collaborative process. This supports existing research that highlights the importance of coordination and administrative leadership in networks (Landsperger, Spieth and Heidenreich, 2012). However, we did not find evidence that task-oriented leadership specifically contributes to operational capacity, as suggested by Cepiku and Mastrodascio (2020). While task-oriented roles—such as setting agendas and leading meetings—were acknowledged in interviews, these behaviors did not statistically stand out as predictors of network functioning.

Second, our study discovered an association between relations-oriented leadership and the quality of member relations. This finding aligns with studies from organizational team settings (Williams, 2023), but adds nuance by showing how relational leadership manifests in networks—through inclusive behavior, attention to marginalized voices, and fostering a shared identity. Interview data reinforced the idea that relational leadership fosters trust, psychological safety, and a sense of shared commitment among network members. This finding, however, should be approached carefully. It is important to critically consider potential sources of bias in this association. Specifically, there may be conceptual and methodological overlap between the two constructs. Both relations-oriented leadership and member relations emphasize interpersonal dynamics such as trust, building rapport, and communication. As a result, respondents may perceive and report on these elements in a similar way, inflating the observed relationship. Although the study employed distinct survey items for each construct and exploratory factor analysis suggested discriminant validity, caution in interpreting this finding as purely causal is warranted. Future research could address this issue through longitudinal designs or multi-source data to better disentangle the direction and nature of this relationship.

Third, leadership behavior as a whole was found to be positively related to goal orientation. However, contrary to expectations, the analysis did not confirm a specific effect of change-oriented leadership on shared goal orientation. This finding is noteworthy because theoretical models—particularly those on transformational or visionary leadership—often suggest that inspiring a shared vision and mobilizing actors around collective goals is a key leadership function (e.g., Bass & Avolio, 1993). Although this study did not examine these leadership styles directly, it drew on related behavioral indicators such as articulating a vision, seeking innovative approaches, and signaling the need for change. The absence of a clear effect may indicate that such behaviors, when enacted in network contexts, are

less directly linked to shared goal orientation than these theories suggest—or that other contextual or relational factors moderate this link.

Similarly, externally-oriented leadership did not show a significant relationship with any element of the collaborative process. Still, qualitative data suggest that externally-oriented behaviors may contribute indirectly. For instance, network members described how certain actors initiated contact with new organizations, expanding the network's expertise and capacity. These types of external engagement may enhance the collaborative process over a longer term or through more diffuse pathways not directly captured in the model.

When interpreting these findings, it is important to consider that it is difficult to draw conclusions about the causality of the relationship between leadership and the collaborative process. Referring back to Yukl's (2012) definition of leadership as a *process*, one could argue that leadership in public sector networks is not a fixed input but rather dynamic and interactive. Conceptualizing leadership as a process implies that it is both shaped by and shapes its context. Accordingly, collaborative dynamics—such as trust among members or a common goal—may not only be shaped by leadership behaviors but may also generate or enable them. This recursiveness complicates efforts to draw clear causal inferences and raises broader methodological questions about how to study processual phenomena like leadership. To better unpack these dynamics, future research could benefit from longitudinal or real-time data that captures how leadership and collaboration evolve in tandem over time.

Similarly, it is important to consider the co-occurrence of various types of leadership behaviors. The bivariate analyses revealed significant correlations between conceptually distinct leadership styles—namely task-oriented, relations-oriented, and change-oriented leadership. Although these correlations could be due to Common Method Bias (CMB), these associations may also reflect the real-world co-occurrence of leadership behaviors. In practice, individuals often draw on multiple leadership behaviors – or repertoires of leadership behaviors - simultaneously, adapting their approach to the specific context (Van der Hoek, Beerkens and Groeneveld 2021). This behavioral overlap likely contributes to the empirical associations observed between leadership dimensions. As such, the correlations may be the result of an interplay between methodological, conceptual, and behavioral factors, which should be taken into account when interpreting the results of this study.

Taken together, these findings contribute to earlier calls (Cristofoli, Markovic and Meneguzzo, 2012; Fadda and Rotondo, 2022; Klijn, Steijn and Edelenbos, 2011) to take leadership seriously as a factor in collaborative governance and network performance. This study adds specificity by showing which leadership behaviors are associated with particular aspects of the collaborative process, and by demonstrating that especially relations-oriented leadership appears to foster high-quality collaboration. Additionally, the finding that respondents who had been part of the network longer reported higher goal alignment suggests that the perceived quality of collaboration may also develop over time, independent of leadership style. This points to the importance of continuity, trust-building, and familiarity in collaborative settings—elements that leadership can support but may not fully determine.

4.6 Limitations and directions for future research

This study faces several limitations that should be considered when interpreting the findings. One key limitation relates to construct validity. Although composite reliability scores provided support for the internal consistency of the constructs, the factor loadings of some items were lower than ideal. This aligns with previous concerns in leadership studies where the multifaceted and context-specific nature of leadership complicates clean categorization. It is important to consider the possibility that the collaborative process is enhanced not by isolated leadership styles but by a dynamic interplay between them. The findings suggest conceptual and empirical overlap between task- and relations-oriented leadership behaviors, and the relatively small sample size limited our ability to examine potential interaction effects or explore leadership configurations. Recent scholarship has argued for the importance of leadership repertoires—combinations of behaviors that adapt to evolving network demands (Van der Hoek, Groeneveld and Beerkens, 2021). Future studies, ideally with larger datasets, could explore how these combinations or shifts in style affect collaboration quality and network outcomes.

A second limitation of this study concerns the model fit of the structural equation models. While both models were grounded in theory and demonstrated meaningful associations between leadership behaviors and collaborative processes, their overall fit to the data fell below conventional thresholds. In the first model, fit indices such as RMSEA = 0.105 and CFI = 0.884 indicated modest but insufficient model fit. The second, more complex model, includes a model fit of RMSEA > 0.40 and CFI < 0.50, suggesting a considerable mismatch between the model and the observed data. These outcomes suggest caution

in interpreting the results as confirmatory. The models should therefore be viewed as exploratory, offering insight into potentially important relationships that require further testing in larger or longitudinal datasets. The small sample size in particular limits the stability of parameter estimates and the reliability of global fit statistics, a known challenge in applied SEM research.

A third limitation concerns causal inference. Although the theoretical model is based on well-established assumptions in the literature, the cross-sectional nature of the data prevents us from drawing definitive conclusions about the directionality of the observed relationships. While we assume that leadership behavior shapes collaborative processes, it is also conceivable that high-quality collaboration fosters the emergence or recognition of leadership behaviors. Longitudinal designs would offer a more robust basis for causal inference, allowing researchers to track the evolution of leadership and collaboration dynamics over time.

In addition, the study's external validity is limited. The research was conducted within a single, nationally operating interorganizational network in the Netherlands, with a relatively modest sample size. As such, findings may not be generalizable to other networks, particularly those operating in different policy domains, cultural contexts, or governance structures. Network-specific characteristics such as history, scale, and institutional setting may significantly affect how leadership is enacted and perceived. Future research would do well to replicate and extend this study across diverse network types and national settings, to identify which patterns hold across contexts and which are context-dependent.

Lastly, a brief note on potential Common Method Bias (CMB) is appropriate. The use of self-reported survey data, in which respondents assessed the frequency of observed leadership behaviors using Likert scales, may have influenced the strength of the statistical associations.

4.7 Conclusion

This study set out to explore how different forms of leadership behavior relate to the quality of collaborative processes in interorganizational networks. Drawing on a mixed-methods design that combined structural equation modeling with qualitative interview analysis, the research makes several contributions to the literature on network governance and public leadership.

First, the study reinforces the idea that leadership plays a role in shaping how collaboration unfolds across organizational boundaries. Most notably, the second model suggests relations-oriented leadership behavior is positively associated with the quality of member relations within networks. This underscores the importance of inclusive, attentive, and trust-building practices in environments where authority is diffuse and participation is voluntary. While earlier work has highlighted such behaviors within teams or hierarchical organizations, this study extends those insights to horizontal, networked governance structures. These insights align with a growing body of literature emphasizing the need for leadership in complex network settings in which actors create public value collectively (Crosby and Bryson 2010; Crosby, 't Hart and Torfing 2017; Kuipers and Murphy 2023).

Second, although leadership (in general) was found to be associated with operational capacity, member relations and goal orientation, the statistical analysis did not confirm specific links between task-, change-, or externally oriented leadership and these elements of collaboration. Rather than suggesting that these behaviors are ineffective, the interview findings point to the complex,contextual and recursive nature of leadership in networks. Interview data indicated that many leadership behaviors co-occur, and that their effects may only become visible when exercised in combination or over time. Similarly, the interview data also indicate that leadership and collaboration ought not to be seen as a one-directional relationship, but rather a recursive process in which leadership and the collaborative process strengthen one another, without a distinct 'starting point.'

Finally, this study supports the argument that leadership deserves equal attention alongside structural and institutional explanations of network effectiveness. Leadership provides a mechanism through which collaboration is initiated, sustained, and steered toward shared goals. The findings suggest that cultivating a broad set of leadership behaviors is important for the quality of collaborative processes. Training programs and organizational policies should support the development of diverse leadership behaviors in their employees and recognize contributions to collaboration beyond formal authority structures. Understanding, fostering, and strategically exhibiting these behaviors can significantly enhance the prospects for successful collaborations in the public sector.