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## Team innovation through collaboration: how visionary leadership spurs innovation via team cohesion

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### ABSTRACT

Post-bureaucratic, collaborative organizational arrangements possess great potential for innovation, but alignment of the dissimilar goals, values and interests of participants is required. We propose and empirically test how visionary leadership can increase innovation in multidisciplinary teams, by fostering internal team cohesion and external team boundary management. We rely on longitudinal, multi-source data concerning social welfare professionals and their team leaders across 95 teams. Our results show that visionary leadership is positively related to improved team cohesion and team boundary management over time. The positive relationship between visionary leadership and team innovation is mediated by team cohesion, but not team boundary management.

**KEYWORDS** Visionary leadership; collaborative governance; collaborative innovation; innovation; teamwork

While its reputation as a vertically hierarchical and horizontally compartmentalized bureaucracy persists in the public eye, the public sector is increasingly characterized by hybrid organizational forms that blur the traditional distinction between the public and private sector, span organizational boundaries and bridge disciplinary divides (Ansell and Gash 2008; Hartley, Sørensen, and Torfing 2013; Kivleniece and Quelin 2012). A prominent example within professionalized policy areas, such as health care, social welfare and education, is the introduction of multidisciplinary teams that consist of members from multiple organizational entities, and operate in collaboration with external societal actors (Christensen and Lægread 2007). Collaborative governance arrangements – manifested as public–private partnerships, governance networks, strategic alliances, or multidisciplinary inter-organizational teams – are increasingly utilized to generate public value in a context of wicked societal problems, thinly stretched resources and limited capacities of individual public organizations (Bryson, Crosby, and Bloomberg 2014; Bryson, Crosby, and Stone 2015; Moore and Hartley 2008). Such collaborations provide opportunities to collectively utilize organizational capacities such as expertise, connections, knowledge and financial resources, potentially resulting in increased public value (Caldwell, Roehrich, and George 2017). In particular, a key promise of collaborative governance is its potential to create public

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value through innovation (Crosby, 't Hart, and Torfing, 2017; Torfing and Triantafillou 2016; Torfing 2019).

Despite their potential for innovation, collaborative governance arrangements are notoriously difficult to organize due to dissimilar goals, values and interests of participants (Kivleniece and Quelin 2012). A key challenge is the creation and coordination of alignment between participants (Ansell and Gash 2008). In order to unleash the potential benefits of collaborative governance for innovation, research highlights the creation of shared meaning through the communication of a vision as a critical leadership behaviour (Crosby and Bryson 2005, 2010; Crosby, 't Hart and Torfing, 2017). In the general management sciences, too, vision communication is recognized as 'the sine qua non of outstanding leadership' (Venus, Stam, and van Knippenberg, 2019, 2668), and as crucial to foster innovation through the creation of shared understanding (Eisenbeiss, Van Knippenberg, and Boerner 2008; Morgeson, DeRue, and Karam 2010).

The intended contribution of this study is to bridge research on leadership in collaborative governance and visionary leadership by examining vision communication as a driver of innovation of multidisciplinary teams. Based on multi-source, longitudinal quantitative data, we provide a strong empirical test of how vision communication contributes to team innovation in multidisciplinary teams through the fostering of collaboration within and beyond team boundaries. Specifically, we expect that visionary leadership strengthens internal team cohesion and enables team members to more effectively span the boundaries of the team and collaborate with external stakeholders. Both team cohesion and team boundary management are expected to be conducive for team innovation. We formulate the following research question: *To what extent is the relationship between visionary leadership and innovation in multidisciplinary teams mediated by team cohesion and team boundary management?*

We examine our research question in a setting of social welfare teams that are an example of collaborative governance, as team members from various public and non-profit stakeholders work together as a team and with external stakeholders to create public value. Empirically, we provide a quantitative analysis of 95 newly formed social welfare teams in The Netherlands. Through the use of online questionnaires in two consecutive years, we rely on longitudinal, multi-source data from team members and their leaders. By controlling for prior levels of team cohesion, team boundary management and team innovation in a structural equation model, we more accurately estimate the difference that can be made through the use of visionary leadership behaviour.

The analysis indicates that visionary leadership is positively related to increased team cohesion and team boundary management over time. This study thus provides evidence of how vision communication contributes to collaborative governance arrangements by stimulating shared understanding within and across organizational boundaries. Moreover, the analysis shows how team cohesion – but not team boundary management – mediates the positive relationship between visionary leadership and team innovation. The article thereby provides evidence for claims regarding the acclaimed but empirically undocumented role of visionary leadership in a context of collaborative governance.

In the next section, we elaborate on the main concepts and theoretical expectations. We then provide information regarding the research design, sample and our measurement instruments, before presenting our analysis and results. We conclude by

discussing our findings in light of the literature on collaborative governance and public innovation.

## Theory

Within a broader development towards collaborative government and post-bureaucratic organizational arrangements, the introduction of multidisciplinary teams can be seen as an organizational response to increasing complexity and dynamism of the work environment that public organizations face. In contrast to traditional work groups, teams emphasize a high complementarity of skills and high interdependence between workers in the accomplishment of tasks. For the purposes of this study, we define a team as ‘a collection of individuals who are interdependent in their tasks, who share responsibility for outcomes, who see themselves and who are seen by others as an intact social entity embedded in one or more larger social systems [for example, business unit or the corporation], and who manage their relationships across organizational boundaries’ (Cohen and Bailey 1997, 241).

Its decentralized nature makes teamwork an organizational arrangement that is particularly conducive to innovation. ‘[I]t is widely regarded that the real value of teamwork and collaboration lies in the ability to draw from diverse perspectives and expertise to solve complex problems’ (Thayer, Petruzzelli, and McClurg 2018, 363). This is especially true for multidisciplinary teams, as by definition multiple values and types of expertise are brought together in these teams. Operating in close conjunction with external actors, such teams possess great potential to address societal challenges in an innovative manner. According to West and Farr (1990), team innovation refers to the introduction and application in a team of ideas, processes, products, or procedures that are new to the team and are designed to be useful (see also Somech and Drach-Zahavy 2013). In contrast to the private sector, innovation in the public sector is not a means to gain competitive advantage but aims to improve governance and public service delivery in order to create public value for society at large (Torfing and Triantafyllou 2016; Moore and Hartley 2008). In a context of collaborative governance, team innovation thus concerns the introduction and application of novel practices that result in public value, and may be facilitated through collaboration within and beyond the boundaries of the team. With respect to the often made distinction between incremental and radical innovation (Bekkers, Edelenbos, and Steijn 2011, 14) innovation initiated on the team level will usually be more incremental involving minor changes in existing services and processes.

Both public management research and the general management research highlight the importance of visionary leadership as a driver of innovation. Van Knippenberg and Stam (2014) define visionary leadership as a (verbal) future image of a collective with the intention to persuade others to contribute to the realization of that future. Visions are abstract higher-level goals that reflect uncertain and open-ended outcomes. They provide followers with a sense of identity and purpose (Venus, Stam, and van Knippenberg 2019, 2668). According to Stam et al. (2014, 1172), vision communication holds ‘the dubious honor of being both one of the most crucial and mysterious aspects of leadership’. Its importance is often highlighted, but processes of vision pursuit and its outcomes are not yet fully understood (Venus, Stam, and van Knippenberg 2019), in part because research on outcomes of visionary leadership has emphasized the individual rather than group level of analysis. Van Knippenberg

and Stam (2014, 256) are critical about the state of the art of literature on visionary leadership – partly because visionary leadership is often studied independent of the content of the vision itself – but nevertheless state that the concept ‘potentially has tremendously importance as a motivator for change and innovation and may indeed more than anything else lie at the core of effective leadership’. However, visionary leadership can have a dark side too as noted by Ateş et al. (2018), who showed that team commitment to the overall organizational strategy can be hampered when the visionary leadership on the team level is not strategically aligned with the organization.

Public management research also emphasizes visionary leadership behaviour, as recent studies have delimited transformational leadership to its visionary dimension: leader behaviours aimed at the articulation, communication and sustainment of a vision to encourage employees to transcend their own self-interest and achieve organizational goals (Jensen, Andersen, Bro, et al. 2019; Jensen, Andersen, and Jacobsen 2019).

Morgeson, DeRue, and Karam (2010) propose that providing a vision is one of the main leadership functions in a team setting, and several studies have empirically linked visionary leadership behaviour to innovation and creativity (Stam et al. 2014; van Knippenberg and Sitkin 2013). For instance, Mumford et al. (2002, 716) argue that vision-based leadership behaviour is one of the three leadership characteristics that stimulate team innovation: ‘a work focused vision, or mission, may be promulgated that may enhance people’s creative efforts.’ Hülshager et al. (2009, 1139) state that ‘[m]anagement representatives and team leaders should consequently strive to provide their teams with clearly stated, visionary, and motivating higher order goals (...)’. Crosby, ‘t Hart, and Torfing (2017) highlight visionary leadership’s potential to facilitate and energize the collaboration process, create motivational narratives, challenge conventional wisdoms and provide new and bold ideas. We thus formulate the following hypothesis:

*Hypothesis 1: Visionary leadership is positively related to team innovation.*

Visionary leadership not only directly contributes to team innovation but we propose that its most important contribution occurs through the facilitation of team processes, defined as ‘members’ interactions directed toward task accomplishment’ (Mathieu et al. 2008, 412). Especially in a setting of multidisciplinary teams that operate in concert with external actors, a myriad of internal and external interdependencies require collaboration within and beyond the boundaries of the team (Hartley, Sørensen, and Torfing 2013). These interdependencies may be characterized by divergent values and conflicting interests, which visionary leadership may help to overcome (Crosby and Bryson 2005; Crosby, ‘t Hart, and Torfing 2017). Crosby and Bryson (2005) argue that a compelling vision is critical for successful collaboration, as this can weave an understanding of a public problem that is shared by everyone in a collective. By improving the team’s internal and external collaboration, visionary leadership has the potential to unleash multidisciplinary teams’ innovative potential.

Team research has identified a range of team process variables as antecedents of team innovation (Mathieu et al. 2008; Eisenbeiss, Van Knippenberg, and Boerner 2008; Hülshager, Anderson, and Salgado 2009; Morgeson, DeRue, and Karam 2010). We focus on team cohesion and boundary management as concepts that inform, respectively, the internal and external collaboration that multidisciplinary teams require. In

the following, we outline our theoretical expectations by elaborating on the relationships between team cohesion, team boundary management and team innovation. For each concept, we explain why and how visionary leadership affects these two team processes, which leads to the argument that team cohesion and team boundary management mediate the relationship between visionary leadership and team innovation.

Team cohesion is conceptualized as a multidimensional construct involving interpersonal attraction, task commitment, and group pride as its main dimensions (Beal et al. 2003). Research shows that group pride is less important with respect to outcome variables such as performance (Salas et al. 2015). Task commitment is the extent of ‘motivation towards achieving the organization’s goals and objectives’ (Carless and De Paola 2000, 73) and is according to Carless and De Paola more important for work outcomes than interpersonal attraction. Cohesion is a crucial condition for team innovation, as a cohesive team is a psychologically safe environment for team members to experiment, take risks, cooperate and exchange ideas (West and Farr 1990). Team cohesion is therefore expected to be positively related to team innovation.

We propose that visionary leadership behaviour can strengthen team cohesion. By utilizing a vision as a shared frame of reference, leaders build personal and social identification between followers and goals of the collective. In such a way, leadership contributes to the ‘collective confidence’ necessary to deal with difficult challenges (Bass et al. 2003, 209), and the ‘collective creativity’ to address such challenges in novel ways (Crosby, ‘t Hart, and Torfing 2017). Envisioning a future direction for the team and attaching meaning to the mission can make teams more cohesive and is considered a core team leadership function, especially in relatively newly formed teams (Morgeson, DeRue, and Karam 2010). By attaching shared meaning to team goals, visionary leaders can contribute to team cohesion among a group of diverse team members, which enables them to utilize complementary resources and collectively address the challenge at hand. We expect such a climate of internal collaboration to be conducive for team innovation, and propose the following hypothesis:

*Hypothesis 2: The positive relationship between visionary leadership and team innovation is mediated by team cohesion.*

In a context where the solution of societal problems increasingly relies on cooperation between (public and private) partners, teams are increasingly characterized by a high degree of interdependency with external stakeholders (Caldwell, Roehrich, and George 2017; Hartley, Sørensen, and Torfing 2013). This requires that teams actively manage external dependencies through boundary spanning: the team’s actions in establishing linkages and managing interactions with parties in the external environment (Marrone 2010, 914). We refer to such collaborative behaviour here as boundary management. Boundary management consists of two separate aspects. First, managing team boundaries requires establishing clear boundaries concerning the membership, resources and responsibilities for the team (Morgeson, DeRue, and Karam 2010). Second, team boundary management requires establishing and maintaining information exchange across the boundary of the team, in order to mobilize resources, collaboration and commitment to the team’s mission among external actors.

There is evidence that external collaboration can increase innovation. Generic management research indicates that external information searching is positively

related to innovation on the organizational level (Laursen and Salter 2006). Van der Vegt and Bunderson (2005, 534) argue that ‘Interaction with dissimilar others promotes learning and innovation by exposing individuals to new paradigms and perspectives and by enabling (and often requiring) the cross-fertilization of ideas.’ Public administration researchers echo such findings by stating that external collaboration can strengthen the capacity for innovation at all stages of the innovation cycle (Sørensen and Torfing 2011). The definition and understanding of problems, the generation of potential solutions, the selection of a solution and the implementation of this solution are all argued to benefit from the combined insights and resources of multiple actors (Hartley, Sørensen, and Torfing 2013). In accordance with this, Hülshager, Anderson, and Salgado (2009) demonstrate in their meta-analysis of team-level drivers of innovation that communication with external actors drives innovation since the interaction with actors beyond the team’s boundaries opens new perspectives and sparks the development of new ideas.

Caldwell, Roehrich, and George (2017) conclude that managers must strive for goal alignment between partners in order to utilize the advantages of collaboration. Ancona (1990) describes how leader behaviour aimed at a ‘widening of team members’ perspectives’ (1990, 347) increases team interaction with the external environment. The communication of an inclusive compelling visions may be a means towards such goal alignment and widening of perspectives. We expect visionary leadership to facilitate external collaboration by providing a vision that can be utilized to create a common understanding of a public problem. The formulation and communication of a compelling vision can make the importance of boundary management clear to the team members, as the realization of this vision will depend on collaboration with external actors. As shared frame of reference, a vision may thus encourage and enable team members to more effectively connect with external stakeholders. In turn, boundary management activities may provide the team with more diverse feedback and resources which will stimulate team innovation. We propose the following hypothesis:

*Hypothesis 3: The positive relationship between visionary leadership and team innovation is mediated by team boundary management.*

## **Methodology**

In this methodology section, we describe the setting and design of our study, outline our methods and procedures of data collection and describe the measures for the central concepts.

### ***Social welfare teams in the Netherlands***

In a context of increased financial stress, many countries have introduced reforms that aim to decentralize responsibilities for social welfare provision from the national to the local level. The main argument put forward to support this decentralization process is that ‘local authorities are supposed to be more effective than central authorities in adapting policy measures to local needs, priorities and partnerships’ (Nowak et al. 2015, 705). In the Dutch context, this reform coincides with the establishment of multidisciplinary neighbourhood teams as an organizational arrangement through which social welfare services are provided. The formation of these multidisciplinary

teams can be interpreted as a governance innovation in itself (Andersson and Liff 2012). We consider these multidisciplinary teams a collaborative governance arrangement at the meso-level, given its dependence on collaboration of professionals from different backgrounds *within* the team, as well as collaboration *beyond* the boundaries of the team with a range of public, private and societal actors.

The multidisciplinary neighbourhood teams are comprised of professionals that work for a range of professional care organizations and are jointly responsible for providing social welfare services within a determined geographical district (the neighbourhood). By uniting a diverse range of professionals within the teams, the neighbourhood team aspires to better bundle expertise and reduce transaction costs. Across the boundaries of the team, the professionals are required to collaborate and exchange information with a range of public, private and societal actors, including municipal health services, housing corporations, general practitioners, schools, charity and religious organizations, as well as neighbourhood organizations and the informal network of clients. Innovative welfare provision is an explicit aim of the neighbourhood teams, as their internal multidisciplinary nature and external collaborations with partners in the neighbourhood are expected to result in more responsive, tailored and integrated welfare provision. This novel collaborative governance arrangement has been deemed a major transformation in the Dutch social welfare system.

In the Dutch situation, neighbourhood teams operate within a geographical district of a municipality and consist of professionals with diverse disciplinary backgrounds such as (personal) safety, pedagogy and education, employment, addiction, youth care and financial support. The organization of these teams allows welfare professionals to be in close proximity to their clients, to better utilize multidisciplinary insights and to reduce bureaucracy (Van Zijl et al. 2019). Organizational arrangements and team structure differ between municipalities, but the teams are relatively homogenous in the sense that they all consist of professionals providing care in a local setting. Our sampling strategy was to maximize the amount of teams while attempting to reduce variation in contextual differences. We therefore sampled the largest city regions, in which relatively many teams operate under identical policy circumstances. We conducted our study in the three largest Dutch cities (Amsterdam, Rotterdam, and The Hague) and also a conglomerate of teams working in the vicinity of The Hague (Holland Rijnland).

### ***Methods and procedures for data collection***

Our research design investigates the population of teams in the selected areas through a quantitative survey consisting of two waves. All team members and team leaders were invited to participate in the survey. Our analysis strategy is to investigate the relationships between our key variables at T1, while controlling for values of the endogenous variables of the model (mediating and dependent variables) at T0. Lagging the endogenous variables on their prior levels is done because it is likely that levels of team cohesion, team boundary management and team innovation depend heavily on past levels. Omitting past levels for these variables might therefore result in inaccurate estimation of the relationships between these variables, as well as their relationships with visionary leadership.

The first wave of our research (T0) was held between May 2016 and February 2017, with the second wave (T1) one year later between May 2017 and February 2018. This



amounts to 140 teams with 2222 employees at T0 and 139 teams with 2294 respondents at T1. Response at T0 was 1067 respondents (response rate 48,0%) and 1106 respondents at T1 (response rate 48,2%). For our analysis, we can only use teams with responses on the key variables for both T0 and T1. Our final sample therefore consists of 772 respondents at T0 and 803 respondents at T1 across the same 95 teams. The number of responses per team ranges between 3 and 20 at T0 (mean = 8.1 and standard deviation = 3.2) and between 2 and 22 at T1 (mean = 8.5 and standard deviation = 4.4). The individual responses are aggregated to the team level, for which intraclass correlation coefficients are calculated in the analysis section. Kline (2005) suggests that statistical precision will be adequate when the ratio of sample size to observed variables exceeds 5 to 1. In this study, the ratio between number of teams and observed variables is 8.6 to 1.

## Measures

Each variable was measured on a five-point scale ranging from '1: fully disagree' to '5: fully agree'. Visionary leadership, team cohesion and team boundary management were measured using team member perceptions, and team innovation measure was measured among team leaders. This latter measure was based on the four-item measure for team innovation by De Dreu (2006). This measurement instrument concerns a validated general measure of the degree in which a team introduces innovative services, methods or procedures. The measurement does not make a distinction between incremental and radical innovation. A five-item measure for visionary leadership by Jensen, Andersen, Bro, et al. (2019) was used in the team member survey. The measure for team cohesion consists of five items (based on Carless and De Paola 2000). Team boundary management, finally, is measured with a scale by Ancona and Caldwell (1992), based on the Dutch translation by Groeneveld and Kuipers (2014), and consists of five items. In this scale, items were contextualized to our study's setting by referring to examples of external partners as 'external partners such as police, medical practitioners, housing corporations or welfare'. The full measurement scales are given in the Appendix. In order to control for different organizational arrangements between the teams in our sample, we model control variables for team size, the average tenure of team members, the gender of the team leader, and a dummy variable for team leaders who supervise more than one team.

## Analysis and results

As an analysis strategy for testing this study's hypotheses, we rely on structural equation modelling (SEM) using AMOS 25. First, Bollen and Scott Long (1992) recommend to examine the model fit of the individual components of the model. Second, a measurement model is estimated to enable a confirmatory assessment of construct validity (Anderson and Gerbing (1988)). Third, multiple structural models are specified in order to estimate the relationships between constructs. To determine model fit, Kline (2005) recommends use of the Chi-Square test, the Comparative Fit Index (CFI), the Root Mean Square Error of Approximation (RMSEA), and the Standardized Root Mean Residual (SRMR). In addition, Hooper, Coughlan, and Mullen (2008) also advocate the use of one parsimony fit index such as the Parsimonious Normed Fit Index (PNFI). Together, these fit indexes 'have been found to be the most insensitive to sample size, model misspecification and parameter

estimates' (Hooper, Coughlan, and Mullen 2008, 56). Additionally, we also report the minimum value for the Squared Multiple Correlations (SMC) of individual items, as these indicate how well the individual observed indicators explain a latent construct.

Table 1 reports the selected fit indices of the measurement scales for the central concepts: a single factor model for visionary leadership (T1), a two factor model for team innovation (T0 and T1), a two factor model for team cohesion (T0 and T1), and a two factor model for team boundary management (T0 and T1). The fit indices indicate that, overall, the constructs have reasonable fit to the data. For each construct, however, respecification can be warranted in order to improve one or more indicators of model fit. For the models of visionary leadership and team cohesion, the values for CFI and RMSEA urge respecification of the model. For team boundary management, RMSEA is slightly above the desired threshold of .08. For team innovation, the overall model fit indices are satisfactory, but one item has an SMC value that is well below .20, which indicates high levels of measurement error. As the improvement of model fit through the correlation of error terms is a practice that is not undisputed (Gerbing and Anderson 1984), this study takes the approach of removing individual items based on fit and modification indices. This results in the removal of four items from the analysis, which are given in Appendix. With the exception of RMSEA values for visionary leadership and team cohesion that slightly exceeds the most stringent thresholds, the fit indices for the modified constructs in Table 1 indicate satisfactory model fit for all constructs.

Overall model fit is examined by estimating model fit indices of an overall model and comparing these fit indices to alternative models. For the measurement model, we conduct a Confirmatory Factor Analysis (CFA) that consists of seven constructs: visionary leadership (T1), team innovation (T1), team innovation (T0), team cohesion (T1), team cohesion (T0), team boundary management (T1) and team boundary management (T0). The results in Table 2 indicate that the seven-factor model meets thresholds of satisfactory model fit. We compare this measurement model to a single-factor model (all items in one factor), a two-factor model (all items for T1 in one factor and all items for T0 in one factor) and a four-factor model (separate factors for visionary leadership (T1), team innovation (T1 and T0), team cohesion (T1 and T0)

**Table 1.** Model fit of individual components of the model.

Constructs	Chi		Chi square/		CFI	RMSEA	SRMR	PNFI	Minimum value SMC
	Square	DF	DF						
<i>Estimation of constructs</i>									
Visionary leadership	39.908	5	7.982		.928	.273	.048	.460	.650
Team innovation	14.185	19	.747		1.000	.000	.064	.558	.062
Team cohesion	134.021	34	3.942		.878	.177	.061	.639	.557
Team boundary management	62.970	34	1.852		.954	.095	.072	.684	.565
<i>Modified estimation of constructs</i>									
Visionary leadership	6.306	2	3.153		.988	.151	.028	.327	.622
Team innovation	3.221	8	.403		1.000	.000	.028	.508	.368
Team cohesion	35.970	19	1.893		.966	.097	.043	.632	.437
Team boundary management	21.897	19	1.152		.993	.040	.051	.647	.594

DF: Degrees of Freedom; CFI: Comparative Fit Index; RMSEA: Root Mean Square Error of Approximation; SRMR: Standardized Root Mean Residual; PNFI: Parsimonious Normed Fit Index; SMC: Squared Multiple Correlations.

**Table 2.** Model fit of measurement model and structural models.

Model	Chi Square	DF	Chi square/DF	CFI	RMSEA	SRMR	PNFI
<i>Measurement models</i>							
1 factor model	1468.860	299	4.913	.294	.204	.192	.238
2 factor model	1128.369	298	3.786	.499	.172	.181	.395
4 factor model	821.313	393	2.803	.681	.138	.155	.528
7 factor model	378.878	278	1.363	.939	.062	.074	.692
<i>Structural models</i>							
Baseline model	473.359	332	1.426	.916	.067	.095	.677
Mediation model	468.389	337	1.390	.922	.064	.096	.689
Mediation model including control variables	587.452	414	1.419	.903	.067	.086	.621

DF: Degrees of Freedom; CFI: Comparative Fit Index; RMSEA: Root Mean Square Error of Approximation; SRMR: Standardized Root Mean Residual; PNFI: Parsimonious Normed Fit Index.

and team boundary management (T1 and T0)). Since none of the alternative models provide an adequate fit to the data, we conclude that the seven-factor measurement model is thus a significantly better fit.

As a structural model, a mediation model is estimated. The mediation model accounts for the direct and indirect relationships between visionary leadership (T1) and team innovation (T1) via team cohesion (T1) and team boundary management (T1), and includes the lagged variables team innovation (T0), team cohesion (T0) and team boundary management (T0) as antecedents of all endogenous variables in the model. The results in Table 2 indicate that this mediation model has adequate model fit, and is a marginally better fit than the baseline model that consists of team innovation (T1) as a dependent variable and all other constructs as independent variables. As a third structural model, a mediation model that includes all control variables is estimated. The fit indices of this structural model are indicative of acceptable model fit. The mediation model including control variables is used for testing this study's hypotheses.

Average Variance Extracted (AVE) and Composite Reliability (CR) are calculated and reported in Table 3. As recommended by Fornell and Larcker (1981), the AVE of all constructs exceed the threshold of .50, as well as the squared multiple correlations between constructs (correlations are given in Table 4). This indicates that convergent and discriminant validity can be established for all constructs. CR exceeds the threshold of .70 for all constructs and thus demonstrates good internal consistency. In addition, Table 3 reports intraclass correlation coefficients ICC1 and ICC2 in order to examine to what extent individual measures can meaningfully be aggregated to the team level. ICC1 refers to the variance accounted for by group membership, while ICC2 expresses the reliability of group means (Bliese 1998). We conclude from these coefficients that the variance for team boundary management (T1 and T0) is to a lesser extent explained

**Table 3.** Average Variance Extracted (AVE), Composite Reliability (CR) and intraclass correlations (ICC) of constructs in the seven-factor measurement model.

Construct	Average Variance Extracted	Composite reliability	ICC1	ICC2
Team innovation T1	.66	.85	-	-
Team innovation T0	.54	.78	-	-
Visionary leadership T1	.77	.93	.15	.61
Team cohesion T1	.72	.91	.20	.68
Team cohesion T0	.66	.89	.17	.62
Team boundary management T1	.63	.87	.08	.43
Team boundary management T0	.72	.91	.11	.51

**Table 4.** Descriptive statistics and correlations (n = 95).

	M	S.D.	1	2	3	4	5	6	7	8	9	10
1 Visionary leadership T1	3.49	.49	-									
2 Team innovation T1	3.22	.72	.23*	-								
3 Team innovation T0	3.41	.62	.15	.51***	-							
4 Team cohesion T1	3.97	.38	.30**	.32**	-.05	-						
5 Team cohesion T0	3.98	.37	.08	.04	-.03	.47***	-					
6 Team boundary management T1	3.69	.30	.35***	.25*	.10	.42***	.15	-				
7 Team boundary management t0	3.67	.34	.19	.02	-.04	.22	.67***	.36**	-			
8 Leader: gender	.82	.39	-.13	-.05	.08	.06	.11	.14	.00	-		
9 Leader: multiple teams	.80	.78	-.12	.10	.06	-.08	.14	-.19	.02	.08	-	
10 Team: size	17.51	9.20	.10	.25*	.18	-.22	-.39***	-.16	-.28*	-.46***	-.17	-
11 Team: tenure	24.04	6.51	-.29**	.10	.02	.01	-.10	.16	-.21	-.02	.10	.06

\*p &lt; .05.

\*\* = p &lt; .01.

\*\*\* = p ≤ .001.

through team membership, and that the group means of these constructs are less reliable. Aggregation of the variables is nonetheless deemed acceptable since such variation is likely due to a substantial range in team sizes (Bliese and Halverson 1998).

We now turn our attention to testing the study's hypotheses based on the structural mediation model including control variable. Correlations, means (M) and standard deviations (S.D.) for all variables are shown in Table 4. The bivariate correlations indicate that visionary leadership behaviour of the team leader at T1 is positively related to team innovation, team cohesion and team boundary management at T1. Teams with higher tenure on average perceive the team leader as less visionary. Levels of team innovation, team cohesion and team boundary management at T1 are positively related to one another. The correlation matrix suggests that the strongest predictors of team innovation, team cohesion and team boundary management at T1 are the team's respective values on these indicators at T0.

We rely on the structural mediation model including control variables to test the study's hypotheses in a multivariate path analysis. As an analysis strategy, we model team innovation, team cohesion and team boundary management at T0 as control variables so that the effect sizes and statistical significance of visionary leadership, team cohesion and team boundary management at T1 can be more accurately estimated. The results of the structural mediation model including control variables are shown in Table 5. Table 5 reports unstandardized regression coefficients ( $b$ ), standard errors (S.E.), standardized regression coefficients ( $B$ ) and  $p$ -values ( $p$ ). While the bivariate correlations reported in Table 4 showed a statistically significant positive relationship between visionary leadership and team innovation ( $r = .23$ ), the multivariate analysis indicates that there is no support for a direct positive relationship between visionary leadership and team innovation. While controlling for team innovation, team cohesion and team boundary management at T0, as well as for team cohesion and team boundary management at T1, the effect size of the relationship between visionary leadership and team innovation is close to 0. Based on this analysis, hypothesis 1 is thus rejected. The strongest predictor of team innovation (T1) is prior levels of team innovation at T0. All else equal, leaders of larger teams perceive more innovation than leaders of smaller teams. Finally, the analysis provides support for the claim that team cohesion can contribute to team innovation, as

**Table 5.** Results from structural mediation model including control variables ( $n = 95$ ).

	Team cohesion (T1)				Team Boundary management (T1)				Team Innovation (T1)			
	$b$	S.E.	$B$	$p$	$b$	S.E.	$B$	$p$	$b$	S.E.	$B$	$p$
<i>Control variables</i>												
Leader: gender	.01	.10	.01	.919	.13	.08	.16	.122	.02	.21	.01	.936
Leader: multiple teams	-.10	.07	-.14	.135	-.13	.06	-.21	.028	.32	.15	.19	.033
Team: size	-.00	.00	-.10	.397	-.01	.00	-.14	.221	.03	.01	.29	.007
Team: tenure	.01	.01	.15	.123	.02	.01	.38	.000	.01	.01	.05	.630
<i>Lag variables</i>												
Team cohesion (T0)	.76	.22	.58	.000	-.20	.17	-.17	.227	-.37	.47	-.12	.432
Team boundary management (T0)	-.27	.18	-.22	.133	.48	.16	.44	.003	.22	.42	.08	.608
Team innovation (T0)	-.04	.07	-.06	.596	.04	.06	.08	.457	.66	.16	.45	.000
<i>Explanatory variables</i>												
Visionary leadership (T1)	.25	.08	.35	.000	.25	.07	.40	.000	.02	.19	.01	.934
Team cohesion (T1)	-	-	-	-	-	-	-	-	.96	.27	.41	.000
Team boundary management (T1)	-	-	-	-	-	-	-	-	.29	.33	.11	.374
Adjusted $r^2$	.36				.43				.48			

the relationship between team cohesion (T1) and team innovation (T1) is positive and statistically significant. The coefficient of team boundary management (T1) is also positive, but the relationship lacks statistical significance.

Furthermore, the results in Table 5 indicate that visionary leadership behaviour by the team leader can increase team cohesion and team boundary management over time. While controlling for prior levels of team cohesion (T0) and team boundary management (T0), visionary leadership is positively related to team cohesion and team boundary management at T1. Positive changes in team cohesion and team boundary management between T0 and T1 can thus in part be explained by visionary leadership behaviour ( $b = .25$  for both relationships). In order to test the mediating relationship expressed in hypothesis 2, a bootstrapping procedure with 2000 iterations was executed in order to estimate the effect size and statistical significance of the indirect relationship. The results indicate a statistically significant relationship with  $b = .31$  and  $p = .022$ . This result supports hypothesis 2 and indicates that the positive relationship between visionary leadership and team innovation is mediated by team cohesion. As the coefficient between team boundary management (T1) and team innovation (T1) is not statistically significant, we reject the hypothesis that team boundary management mediates the relationship between visionary leadership and team innovation.<sup>1</sup>

## Discussion and conclusion

Collaborative governance arrangements are increasingly introduced to tackle wicked societal problems. The introduction of multidisciplinary teams is an example of such arrangements at the meso level, as team members from various public and non-profit stakeholders collaborate both internally as well as with external stakeholders to create public value by providing social welfare services to the community. We have argued that innovation in these teams relies on the internal team cohesion within the team, as well as the external boundary management of relevant stakeholders beyond the boundaries of the team. Our article provides an analysis of how visionary leadership can spur team cohesion and external collaboration of multidisciplinary welfare teams, and how these team processes are related to team innovation.

Our findings contribute to the literature in several ways. First, we provide an analysis of how visionary leadership is related to improved internal and external collaboration of multidisciplinary teams. As such, we provide empirical evidence for claims regarding the acclaimed but empirically undocumented role of visionary leadership in collaborative governance (Crosby and Bryson 2005, 2010; Crosby, 't Hart, and Torfing, 2017). Goal alignment has been identified as a crucial condition for the outcomes of collaborative arrangements (Caldwell, Roehrich, and George 2017; Ansell and Gash 2008). In our investigation of multidisciplinary teams, the analysis informs collaboration by investigating team cohesion and team boundary management. Controlling for levels of team cohesion and team boundary management one year earlier, we show that visionary leadership is positively related to both variables. Thus, visionary leadership helps to create a collective identity as team members are attracted to each other and are committed to the tasks of the team. As noted by Ancona (1990), the shared vision also helps them to widen their perspective and to seek interaction with the external environment. This provides compelling quantitative evidence based on longitudinal data for the acclaimed importance of visionary leadership.

Our study accounts for team cohesion and team boundary management, but the teamwork literature offers a broader range of team process variables that are indicative of internal and external collaboration, and that might determine innovation. A team level perspective invites research into a range of team process variables such as information elaboration, team reflexivity and self-management (e.g. Eisenbeiss, Van Knippenberg, and Boerner 2008; Hülshager, Anderson, and Salgado 2009; Morgeson, DeRue, and Karam 2010). Despite some notable recent studies (Vashdi 2013; Groeneveld and Kuipers 2014; Van der Hoek, Groeneveld, and Kuipers 2018; Van Zijl et al. 2019), an explicit emphasis on teamwork is relatively absent in the public management literature. Future work on collaborative governance on the meso-level can utilize such teamwork concepts in order to provide a broader understanding of internal and external collaboration in multidisciplinary teams.

Second, our study provides empirical evidence of the relationship between visionary leadership and team innovation, and in particular of the mechanisms through which visionary leadership is related to team innovation. General management research on visionary leadership has mostly emphasized the individual level of analysis (Stam et al. 2014, 1173). Van Knippenberg and Stam (2014) observed in their critical description of the visionary leadership literature that mediating mechanisms between visionary leadership and outcomes are seldom studied. In our study, we identify team cohesion as such a mediating mechanism on the group level. Our result that the relationship between visionary leadership and team innovation should be understood as an indirect relationship is also reflective of arguments in the collaborative governance literature that a vision may facilitate goal alignment between a diverse range of actors, through which innovation is able to flourish. Our study indicates that the relationship between visionary leadership and team innovation occurs through team-level processes. The vision of the team leader unites the team members by creating shared understanding which in turn helps the team to innovate their service provision and processes.

Our result that team cohesion mediates the relationship between visionary leadership and team innovation informs an apparent paradox about the role of leadership in public sector innovation: 'heroic', leader-centric perspectives such as visionary leadership are critiqued in favour of more distributive and integrative leadership perspectives, while the potential benefits of inclusive, shared visions for collaboration are also emphasized in the literature (Crosby, 't Hart and Torfing 2017). Our view, supported by the results of our study, is that while visionary leadership may concern the behaviour of a singular, formal supervisor of a collective, its influence on innovation is dependent on vision pursuit by the collective of followers. Visions are not concrete implementable innovations, but merely provide followers with a shared frame of reference through which they jointly pursue innovation. Visionary leadership, then, does not resemble the lone 'hero-innovator' that creates innovation single-handedly (Meijer 2014), but rather represents an influencing process that may be initiated by the leader but is ultimately dependent on the vision internalization and vision pursuit of followers (Stam et al. 2014; Venus, Stam, and Van Knippenberg. 2019). Similar to recent research that shows how the potential impacts of transformational leadership may be constrained by the value congruence between leader and individual followers (Jensen, Andersen, and Jacobsen 2019), our study is in accordance with an emerging line of research that underlines not only the potential but also the limits of leadership behaviour in a public sector context.

In our study, we do not find empirical evidence of a positive relationship between team boundary management and team innovation. Both generic management

(Laursen and Salter 2006) as well as public management research (Hartley, Sørensen, and Torfing 2013) have offered compelling arguments for the potentials of external collaboration for innovation. In recent issues of *Public Management Review*, in particular, authors have presented external collaboration as a promising mode for developing public sector innovations (Torfing 2019), but have also highlighted blind spots and limitations of collaborative innovation research (Wegrich 2019). We follow Wegrich (2019, 18) in arguing that future research should move on from studying whether external collaboration increases innovation, to studies that illuminate what situational circumstances strengthen or impede the relationship between collaboration and innovation. Although not its primary focus, our study offers some starting points on theorization regarding the boundary conditions of external collaboration.

A first variable of interest concerns organizational heterogeneity, which is very present in the multidisciplinary teams that we studied. The main argument for collaborative innovation is that a greater diversity of experiences, skills and knowledge increases the potential for innovations to be generated and implemented (Torfing 2019). The social welfare teams that we studied in this research are because of their heterogeneity characterized by such a richness of information, possibly reducing the potential contribution of involving external actors in bringing about innovation. This suggests that the added value of external collaboration is contingent on the diversity of resources that are already present internally. A second variable of interest is the degree of professionalization. Social welfare workers are highly professionalized. Differences in professional backgrounds between team members and external actors may result in clash between norms and values (Liao et al. 2015), which prevents the information exchange and mutual learning which is required for innovation (Mitchell and Boyle 2015). A third variable is team or organizational maturity. Our study took place in a setting with newly-formed teams facing mounting workloads. In such teams, a scarcity of time and attention may prevent collaboration with external actors from developing into joint innovative solutions. For instance, the study by Andersson and Liff (2012) suggests that multi-professional collaboration can be impeded when professionals have not yet established internal team routines for collaboration.

This article has relied on longitudinal, quantitative data to investigate team innovation. Through our research design (e.g. multisource data, aggregation from the individual level to team level), we have attempted to overcome concerns for common-source bias (George and Pandey 2017; Favero and Bullock 2014), although issues of endogeneity remain (Jensen, Andersen, and Jacobsen 2019). A limitation to the generalizability of our findings across specific policy domains in the public sector is that teams in a particular policy domain were studied. Nevertheless, although social welfare teams are not reflective of the wide range of teams that exist in the public sector, these teams share many contextual features that are commonly attributed to the public sector, such as high degrees of goal ambiguity and task complexity, high levels of red tape, and strict professional norms and prosocial motivation (O'Toole and Meier. 2014). Finally, our measure of team innovation is a general measure and does not inform different types of innovation. In this respect, it must be noted that our measurement of team innovation does not make a clear distinction between incremental and radical innovation. Future research can consider utilizing the typologies such as exploitative and explorative innovation or incremental and radical innovation to inform the type of innovation that is spurred through visionary leadership (e.g. Gieske et al. 2019).

Our results guide policy makers and public managers in making collaborative governance arrangements at the meso-level work in practice. Multidisciplinary teams that operate in concert with a broad range of external actors possess the potential to



create public value through the development and implementation of innovations. However, merely organizing a diverse range of professionals into a team is not sufficient to reap its innovative potential. Our study indicates that team innovation of multidisciplinary teams is contingent on their internal cohesion, and shows in turn that visionary leadership is a means to strengthen team cohesion.

Whereas policy makers in The Netherlands have begun to introduce structural reforms as the intended solutions for limited collaboration, our analysis shows that that vision communication may be an alternative – and potentially less disruptive – manner of fostering collaboration across institutional, organizational and disciplinary divides. The development of visionary leadership capacity on the team leader level should therefore be firmly on the agenda of policy makers and public managers. Such efforts can focus on vision content by uncovering what characteristics of visions prove especially effective as a shared frame of reference across disciplinary and organizational boundaries, as well as the interpersonal skills that facilitate the process of effective vision development and communication. In collaboration with public management researchers, practitioners must seek to strengthen innovation in multidisciplinary teams by developing the vision content and vision process of team leaders. However, in doing so they should be aware of the potential dark side of visionary leadership. As noted by Ateş et al. (2018), strengthening visionary leadership at the team level should coincide with alignment between visions at the team level and the strategic goals of the organization at large.

## Note

1. As a robustness check for the test of hypotheses 2 and 3, a separate structural model was estimated in which team cohesion was omitted and team boundary management functions as the sole mediating variable. Similar to the results reported in Table 5, the relationship between team boundary management (T1) and team innovation (T1) is not statistically significant. This strengthens the evidence that team boundary management does not mediate the relationship between visionary leadership and team innovation.

## Disclosure statement

No potential conflict of interest was reported by the author(s).

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## Appendix. Measurement scales

### Visionary leadership (Jensen, Andersen, Bro, et al. 2019)

My team leader ...

- (1) Concretizes a clear vision for the team's future.\*
- (2) Makes a continuous effort to generate enthusiasm for the team's vision.
- (3) Has a clear sense of where our team should be in five years.
- (4) Strives to get the team to work together in the direction of the vision.
- (5) Strive to clarify for the team members how they can contribute to achieve the team's goals.

### Team cohesion (Carless and De Paola 2000)

- (1) In my neighbourhood team, we are united in trying to reach our goals for team performance.
- (2) In my neighbourhood team, we take our responsibilities for setbacks or poor team performance.
- (3) In my neighbourhood team, we help each other to perform the tasks.
- (4) In my neighbourhood team, we get along well together.
- (5) In my neighbourhood team, we trust each other.\*

### Team boundary management (Ancona and Caldwell 1992)

- (1) My team members make contact with relevant stakeholders in the neighbourhood (like the police, general practitioners, housing corporations and welfare authorities).
- (2) My team members inform relevant stakeholders in the neighbourhood (like the police, general practitioners, housing corporations and welfare authorities) about the working methods of our team.
- (3) My team members proactively ask relevant stakeholders in the neighbourhood (like the police, general practitioners, housing corporations and welfare authorities) for advice and support.
- (4) My team members convince relevant stakeholders in the neighbourhood (like the police, general practitioners, housing corporations and welfare authorities) that the team's activities are important.
- (5) My team members keep relevant stakeholders in the neighbourhood (for example, the police, the general practitioner, housing corporations and welfare authorities) informed of our team's activities.\*

### Team innovation (De Dreu 2006)

- (1) Team members often implement new ideas to improve the quality of our products and services.
- (2) This team gives little consideration to new and alternative methods and procedures for doing their work. (reverse coded)\*
- (3) Team members often produce new services, methods, or procedures.
- (4) This is an innovative team.

\* indicates item was removed from the analysis based on the Confirmatory Factor Analysis.