Leading without position power: preliminary validation of the multiparty collaborative leadership scale (MCLS)

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Received 30 January 2023
Revised 16 June 2023
23 August 2023
29 August 2023
Accepted 30 August 2023

Abstract

Purpose – This paper aims to report the development of the multiparty collaborative leadership scale (MCLS) that assesses four dimensions of collaborative leadership that have been defined in the literature regarding the functions of collaborative leadership in intra- and interorganizational settings.

Design/methodology/approach – The authors have tested the validity and reliability of the MCLS in a sample of 110 managers and professionals who participated in five multiparty collaboration workshops, each lasting for two days. The authors used multilevel analyses to test the construct, discriminant and predictive validity of the MCLS.

Findings – The results generally supported the reliability and validity of the MCLS. The scale has good internal consistency and in terms of validation, the authors show that MCLS negatively predicts the conflictuality and positively predicts the collaborativeness of the leading party as well as trust in the multiparty system and its entitativity.

Research limitations/implications – The MCLS can be used to extend literature on collaborative leadership and generate insights on the antecedents and consequences of effective collaborative leadership in multiparty systems.

Social implications – Multiparty systems are set to deal with important societal challenges and mediators involved in multiparty issues are asked to settle important international disputes and conflicts. Understanding collaborative leadership in such systems and its role in establishing effective multiparty collaboration is key. The MCLS can be used as a research instrument and as a development tool toward realizing much-needed collaboration.

Originality/value – The authors present a first attempt to develop a short scale to assess collaborative leadership in complex systems in which participating stakeholders lack position power.

Keywords Collaborative leadership, Multiparty systems, Trust, Collaboration, Assessment, Scale

Paper type Research paper

Introduction

Early work on collaborative leadership understood it as a spontaneous collective process emerging in autonomous work groups. Finch (1977), for example, defined collaborative leadership as "a situation in which the work group provides its own leadership behaviors (task, relationship and decision making) and functions according to individual and group capacities and task requirements" (Finch, 1977, p. 297). Collaborative leadership was also

International Journal of Conflict Management
Vol. 35 No. 2, 2024
pp. 411-426

1044-4068
DOI 10.1108/IJCMA-01-2023-0014

explored in larger societal contexts and researched as a key component of participative governance (Morse, 2014; Wang and Ran, 2022), interorganizational relations (Connelly, 2007) and network dynamics (Silvia, 2011; Wegner and Verschoore, 2022). Common approaches of collaborative leadership refer to how individuals, or more generally stakeholders without position power, influence behaviors of others (Silvia, 2011; Ingraham and Van Slyke, 2006) and help multiple, legally independent parties to jointly define and realize a common goal (Chrislip and Larson, 1994). Overall, these collaborative leadership approaches embrace a functional approach to leadership. In line with Social Interdependence Theory (Deutsch, 1949), the core function of collaborative leadership is to build conditions for positive interdependence and to resolve emerging conflicts in social systems constructively (Vangen and Huxham, 2012). In other words, leadership behaviors emerging in various social contexts serve specific functions to foster social participation and concerted action toward goal achievement in social settings that lack a preestablished formal structure and hierarchy (Vangen and Huxham, 2003a).

Within this generic framework, our study sets out to investigate the functions of collaborative leadership in multiparty systems and to develop a short questionnaire that captures the specific leadership behaviors and the functions collaborative leadership serves in such contexts. Although various scales to assess intraorganizational collaborative leadership are in use, no such tool exists involving collaborative leadership across organizational boundaries. As interorganizational work is increasingly needed to address the wicked problems of our current society, such an instrument is useful and timely. It is useful for researchers, who want to investigate the characteristics of collaborative leadership and the determinants of its effectiveness, as well as for involved stakeholders, if they aim to study and develop the effectiveness of network leadership. We integrate the collaborative leadership functions identified in the intra- (McGuire, 2006; Hsieh and Liou, 2018) as well as interorganizational (Connelly, 2007; Vangen and Huxham, 2003a, 2003b; Wegner and Verschoore, 2022) literature to develop a scale that assesses the most important (functional) dimensions of collaborative leadership in multiparty settings.

We use data collected in five behavioral multiparty simulations to investigate the reliability and validity of the multiparty collaborative leadership scale (MCLS). We report the internal reliability of the scale, its factorial structure and we build on Social Interdependence Theory (Deutsch, 1949) and theoretical insights from the multiparty systems and collaborative leadership literature to investigate its validity. Our paper thus contributes to the literature on leadership by developing a short questionnaire to accurately assess collaborative leadership in interorganizational systems where position power is lacking. Second, as part of the validation process, we provide initial empirical evidence for the critical role of collaborative leadership in multiparty dynamics and how certain stakeholder characteristics (e.g. power, autonomy) influence the assessment of collaborative leadership.

Theoretical framework

McGuire (2006) and Hsieh and Liou (2018) distinguish between four dimensions of collaborative leadership, namely:

(1) activating resource assistance (identifying an active pool of relevant resources for collective use);

(2) framing of the work environment (initiating and maintaining a collaborative task structure and defining the leadership and administrative roles);

(3) mobilizing stakeholder support (engaging and securing collaborative support from all relevant stakeholders); and

(4) synthesizing a collaborative process (creating conditions for a reflective climate aimed at fostering collaborative processes).

Their empirical attempts focused on assessing collaborative leadership within organizations only (Hsieh and Liou, 2018). In their micro-governance model of collaborative networks, Wegner and Verschoore (2022) distinguish between aligning partners, mobilizing support, organizing collaboration, integrating perspectives and arbitrating and monitoring progress as functions of collaborative leadership in interorganizational networks. These functions overlap with those identified and described for intraorganizational settings (Hsieh and Liou, 2018). As mentioned, we set out to assess collaborative leadership in social systems that transcend organizational boundaries – a setting in which various legally independent organizations explore their interdependencies and aim to work together to address a jointly defined concern.

Multiparty systems bring together various stakeholders to deal with complex issues that cannot be addressed by groups or organizations alone. Such multiparty systems have to operate in an uncertain task environment and to cope with the lack of formal structure or forms of hierarchical control (Curşeu and Schruijer, 2023; Trif *et al.*, 2020; Hellmüller and Salaymeh, 2023; Zhang *et al.*, 2021), yet power differences and power asymmetry naturally emerge during intergroup interactions (Fleştea *et al.*, 2017; Schruijer and Vansina, 2008; Vansina *et al.*, 1998). As stakeholders engage in formulating a shared task definition and try to build a common understanding of the situation at hand, they need process facilitation and support. Such collaborative leadership functions are often emergent and are not based on formally assigned roles. We build on the concepts of collective leadership (Ospina, 2017), collaborative leadership (Chrislip and Larson, 1994; Hsieh and Liou, 2018) as well as on the experiences with leadership in multiparty simulations (Schruijer, 2008; Schruijer and Vansina, 2008; Curşeu and Schruijer, 2020) to develop a short questionnaire that assesses the central dimensions of collaborative leadership.

We investigate various forms of validity by relying on insights derived from Social Interdependence Theory (Deutsch, 1949), namely, that collaboration and conflict reflect two distinct forms of interdependence (positive respectively negative). We intend to test the construct validity of the scale by exploring the extent to which the scores of the scale predict positively the perceived collaborativeness of the leading party and we test the discriminant validity as the extent to which it predicts negatively the perceived conflictuality of the leading party. Moreover, building on previous research on multiparty systems, we expect that collaborative leadership in multiparty systems will be positively related to trust in the system (Schruijer and Curşeu, 2021; Curşeu and Schruijer, 2017; Vangen and Huxham, 2003b) and with the perceived entitativity of the system (Gray, 2008; Vangen and Huxham, 2003a).

Multiparty collaborative leadership scale

Item generation

Reflecting on the preconditions for successful collaboration in multiparty systems (Schruijer, 2008; Schruijer and Vansina, 2008) as well as on the previous conceptualizations of collaborative leadership (Chrislip and Larson, 1994; Hsieh and Liou, 2018; Ospina, 2017; Vangen and Huxham, 2003a, 2003b; Connelly, 2007), we have developed several items that relate directly to collaborative leadership in multiparty systems. We build on the literature on collaborative leadership within organizations (Hsieh and Liou, 2018; McGuire, 2006) as well as between organizations (Vangen and Huxham, 2003a, 2003b; Connelly, 2007; Wegner and Verschoore, 2022) to integrate and define the key dimensions (functions) of collaborative leadership (see Table

1 for the integrative approach). We argue that these functions are necessary in multiparty settings (Vangen and Huxham, 2003b) and set out to develop items to assess these dimensions for the particular multiparty setting. The four key dimensions of collaborative leadership in multiparty systems are in line with those of Hsieh and Liou (2018) and we integrate the insights from other functional approaches to collaborative leadership. The items developed to assess these functions in a multiparty interorganizational context are presented in Table 1.

The first dimension refers to activating resource assistance and, in the context of a multiparty system, describes behaviors related to empowering parties to use their competencies, skills and resources to define and address the collective task(s). Framing the collaborative task refers to developing ground rules for collaboration, stimulating stakeholders to bring forth their perspectives on the task and to create time and space for collaboration to emerge. Mobilizing stakeholder support refers to the inclusion of all relevant stakeholders in the collaboration process and valuing parties for their unique contributions to the task. Finally, synthesizing the collaborative process refers to behaviors that foster the emergence of trust and the creation of a safe environment in which parties can reflect on the collaboration process as it unfolds. The items developed for each of these dimensions are presented in the last column of Table 1.

Sample and procedure

We have used the MCLS to assess leadership behaviors of the public authorities (PA), one of the parties involved in a multiparty simulation (Vansina *et al.*, 1998; Schruijer, 2008; Curşeu and Schruijer, 2017, 2020, 2023) that is an experiential learning tool to enhance participants' understanding of the relational dynamics of interorganizational relationships. We have collected data in five successive workshops, each lasting for two days. The simulation itself took place on the first day and the morning of the second day; the remainder of the second day was devoted to jointly reviewing the simulation dynamics. One hundred and ten participants (managers and professionals working in various organizational settings) took part in these five simulations. In each simulation, seven parties were asked to address a complex regional development in the St. Petersburg area (Vansina *et al.*, 1998; Schruijer, 2008), which entails: various complex problems such as: social (unemployment), economic (risk of bankruptcy of an important employer, tourism investments) and ecologic (pollution) issues. After the simulation has ended, the rest of the workshop was devoted to joint sensemaking of the inter- and intraorganizational dynamics that unfolded previously. Participants were assigned to groups, as much as possible, in function of their expressed preferences. Each of the seven parties involved in the simulation had three to four members. The simulation enfolded, guided by a minimal structure that provided a timetable specifying when intergroup interactions can take place freely (up to three parties being present in the same room), or when plenary town hall meetings can occur in which each stakeholder group could send a representative to a table. Although none of the seven participating parties was assigned a formal leading role, the PA is the party that normally hosts the plenary meetings and assumes a collaborative leadership role (for more details on the dynamics of the multiparty simulation, see Vansina *et al.*, 1998; Schruijer, 2008).

Participants rated using the MCLS items the collaborative leadership behaviors of the PA at the conclusion of each simulation. In addition, the two authors also rated the collaborative leadership of the PA at the end of each simulation, using the same instrument. These independent evaluations will be used to estimate the criterion group validity of the MCLS.

In order to explore the validity of the scale, we have assessed various dimensions related to multiparty dynamics as well as related to the PA. We have used a round robin procedure to assess *collaborativeness*, *conflictuality* and *goal achievement* of each party including the

Table 1. Functions of collaborative leadership in multiparty systems

Dimension MCLS	Hsieh and Liou (2018)	McGuire (2006)	Vangen and Huxham (2003a, 2003b)	Connelly (2007)	Wegner and Verschoore (2022)	Item
Activating resource assistance	Activating resource assistance	Activation of people and resource	Embracing the right kind of members	Flexibility and entrepreneurship	Integrating partners and their resources	[. . .] helping us to contribute with our party resources to the joint goal [. . .] valuing the different parties, each for their unique contribution [. . .] creating time and space to reflect on the available resources
Framing collaborative task	Framing work environment	Framing the task, leadership and administrative roles	Involving and supporting all members	Common vision and collaboration culture	Aligning partners and organizing collaboration	[. . .] stimulating us to work on a joint goal [. . .] facilitating the formulation of joint ground rules for working together [. . .] helping us look at task challenges in innovative and constructive ways [. . .] stimulating dialogues about content and not about parties [. . .] creating time and space to reflect on how well we are realizing our aims [. . .] facilitated that all stakeholders worked with facts and figures [. . .] facilitated addressing the interdependencies between all the stakeholders [. . .] facilitate the exploration of the history and the context of the challenges the parties are faced with
Mobilizing stakeholder support	Mobilizing stakeholder support	Mobilizing and building support	Mobilizing members to make things happen	Build alliance networks	Mobilizing partner support	[. . .] convening the different stakeholders and legitimizing their presence [. . .] being open to and valuing differences (in ideas, in interests, in identities) [. . .] facilitating (actively) the participation of all parties included in the simulation [. . .] acts as a neutral party
Synthesizing collaborative processes	Synthesizing collaborative process	Synthesizing purposeful interaction	Empowering members to enable participation	Build trust among all parties	Arbitrating and synthesizing collaboration	[. . .] helping to build trust between parties [. . .] drawing attention to the process of collaboration [. . .] creating time and space to reflect on how we work together [. . .] reflecting on the collaboration process and stimulating the other parties to do so as well

Source: Authors' own work

PA. Participants were asked: "Please evaluate how collaborative you think each party was" (0 – not collaborative at all to 5 – very collaborative), "Please evaluate how conflictual you think each party was" (0 – not conflictual at all to 5 – very conflictual) and for goal achievement the participants were asked: "Do you think the interest parties (including yours) achieved their goals so far?" (0 – not at all to 5 – completely). The collaborativeness, conflictuality and goal achievement of the PA as rated by each participant were further used as criterion variables in the criterion and discriminant validity analyses.

Four items adapted from De Jong and Elfring (2010) were used to assess trust in the multiparty system: "Think of the discussions and interactions between the parties involved in the simulation. Use the following rating scale 1 = never, 2 = rarely, 3 = sometimes, 4 = often and 5 = very often to evaluate to what extent did you experience [. . .] that you were able to rely on people to keep their word". Cronbach's alpha for this scale was 0.85 reflecting a good reliability of the scale. The participants were also asked to evaluate the *entitativity* of the system as a whole using two items "There was a great 'togetherness' in my own interest party/the group around the town hall table". Cronbach's alpha was 0.82 reflecting a good reliability of the scale. We have used the trust and entitativity scores for the whole system as rated by each participant to test the predictive validity of the MCLS.

Results

Reliability indices

To estimate the reliability of the scale, we have used two indices: the traditional Cronbach's alpha as well as the omega score (Hayes and Coutts, 2020). The omega reliability index is derived from a factor analytic procedure and yields more reliable estimates of the extent to which the items included in a scale capture the same construct. Cronbach's alpha and the omega scores for the collaborative leadership scale dimensions were as follows: for mobilizing stakeholder support (MSS), Cronbach's alpha was 0.75 and omega was 0.75, for framing a collaborative work environment (FWE), Cronbach's alpha was 0.76 and omega was 0.77, for activating resource assistance (ARA), Cronbach's alpha was 0.61 and omega was 0.62 and for synthesizing the collaborative process (SCP), Cronbach's alpha was 0.74 and omega was 0.74. For the overall MCLS questionnaire, Cronbach's alpha was 0.92 and omega was also 0.92. Overall, the reliability indices for subscales as well as the general collaborative leadership score are acceptable with the exception of the subscale activating resource assistance – the subscale that had the lowest number of items.

Confirmatory factor analyses

Although our sample is relatively small, we have investigated the factorial structure of the scale and performed several confirmatory factor analyses (CFAs) comparing different models. First, we have used the hypothesized four-factor model with and without the covariates among the four factors. Second, we have tested a model in which the four scales were associated with a single latent factor. Third, we have used a two-factor model (the FWE and ARA items were grouped in one latent factor and the SCP and MSS items were grouped in the second factor) with and without the covariation among the two factors included. Finally, we have tested a single-factor model, with all items loading on this dominant factor (the standardized factor loadings for this model are presented in Table 2). The results of these CFA models are presented in Table 3.

Overall, the four-factor model with a latent component and the single-factor model showed the best fit with the data. The incremental fit indices showed that the models could be improved. For the models including all items, however, the absolute and incremental fit indices were not fully aligned with the thresholds generally accepted in the literature

Table 2. Results of the factor analyses, the original item distribution among the four dimensions of the MCLS and their respective factor loadings

Think of the way in which the public authorities interacted with the parties during the simulation and answer the following questions. Use the following rating scale 1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = very often to evaluate to what extent did the public authorities take the lead in [. . .]	Original dimension	Forced single-factor maximum likelihood factor analysis	CFA DFS (standardized)
[. . .] convening the different stakeholders and legitimizing their presence	MSS	0.57	0.66
[. . .] stimulating us to work on a joint goal	FWE	0.67	0.71
[. . .] being open to and valuing differences (in ideas, in interests, in identities)	MSS	0.67	0.71
[. . .] helping us to contribute with our party resources to the joint goal	ARA	0.60	0.65
[. . .] facilitating the formulation of joint ground rules for working together	FWE	0.75	0.78
[. . .] helping to build trust between parties	SCP	0.64	0.71
[. . .] drawing attention to the process of collaboration	SCP	0.62	0.73
[. . .] helping us look at the island's challenges in innovative and constructive ways	FWE	0.50	0.52
[. . .] valuing the different parties, each for their unique contribution	ARA	0.61	0.69
[. . .] stimulating dialogues about content and not about parties	FWE	0.59	0.63
[. . .] creating time and space to reflect on how we work together	SCP	0.51	0.45
[. . .] facilitating (actively) the participation of all parties included in the simulation	MSS	0.65	0.69
[. . .] creating time and space to reflect on how well we are realizing our aims	FWE	0.54	0.62
[. . .] creating time and space to reflect on the available resources	ARA	0.49	0.57
[. . .] reflecting on the collaboration process and stimulating the other parties to do so as well	SCP	0.56	0.66
The PA was a neutral party	MSS	0.69	0.63

Notes: CFA = confirmatory factor analysis; DFS = dominant factor score; ARA = activating resource assistance; FWE = framing work environment; MSS = mobilizing stakeholder support; SCP = synthesizing collaborative process
Source: Authors' own work

Table 3.
Results of the confirmatory factor analysis for the MCLS

Model	χ^2 (p)	Df	CMIN/Df	RMSEA	CFI	TLI	NFI	AIC	BCC
Four-factor model (no covariates)	588.09 (<0.0001)	104	5.66	0.12	0.42	0.25	0.40	684.09	689.21
Four-factor model (with covariates)	246.75 (<0.0001)	98	2.52	0.067	0.82	0.75	0.75	354.75	360.50
Four factors with latent variable	251.59 (<0.0001)	100	2.51	0.067	0.82	0.76	0.74	355.59	361.13
Two factors (no covariates)	422.05 (<0.0001)	104	4.06	0.095	0.62	0.51	0.57	518.05	523.16
Two factors (with covariates)	255.84 (<0.0001)	103	2.48	0.066	0.82	0.76	0.74	353.84	359.06
Single-factor solution	258.46 (<0.0001)	104	2.49	0.066	0.82	0.76	0.74	354.46	359.57
Short form – four factors with latent component	26.92 (<0.04)	16	1.68	0.045	0.97	0.93	0.93	82.93	84.49
Short form – single-factor solution	33.61 (<0.03)	20	1.68	0.045	0.96	0.93	0.90	81.61	82.95

Notes: χ^2 paired comparison for Models 1–3 reveals significant differences between the models: for Models 1 and 2; $\Delta\chi^2(10) = 53.05$ ($p < 0.001$); for Models 1 and 3; $\Delta\chi^2(90) = 235.31$ ($p < 0.001$), for Models 2 and 3; $\Delta\chi^2(80) = 182.26$ ($p < 0.001$)
Source: Authors' own work

(Hu and Bentler, 1998, 1999; Schreiber *et al.*, 2006). Building on the analytic approach relying on dynamic fit indices presented in McNeish and Wolf (2021), for the single-factor model, the cutoff for RMSEA should be lower than 0.068, whereas the CFI should be higher than 0.935. In line with the same analytic approach using dynamic fit indices for the four-factor model with covariates among the factors, the RMSEA should be lower than 0.054 and the CFI higher than 0.954. As shown in Table 3, the CFI value for the overall one-factor model was below the dynamic cutoff point recommended, whereas for the four-factor model, both RMSEA and CFI were lower than the recommended values. In line with these results, we have decided to reduce the number of items and test a shortened, more parsimonious version of the questionnaire. To this end, we have selected the items with the highest factor loadings on their respective factor as well as on the general collaborative leadership factor. Eight items (two for each of the four dimensions of collaborative leadership) were selected (Table 4).

Item	Original dimension	Forced single-factor maximum likelihood factor analysis	CFA dominant factor loadings (standardized)
[. . .] stimulating us to work on a joint goal	FWE	0.73	0.69
[. . .] being open to and valuing differences (in ideas, in interests, in identities)	MSS	0.69	0.58
[. . .] helping us to contribute with our party resources to the joint goal	ARA	0.67	0.73
[. . .] facilitating the formulation of joint ground rules for working together	FWE	0.78	0.78
[. . .] helping to build trust between parties	SCP	0.76	0.57
[. . .] drawing attention to the process of collaboration	SCP	0.72	0.60
[. . .] valuing the different parties, each for their unique contribution	ARA	0.60	0.76
[. . .] facilitating (actively) the participation of all parties included in the simulation	MSS	0.58	0.72

Table 4.
Items and their respective factor loadings for the MCLS short form

Notes: CFA = confirmatory factor analysis; ARA = activating resource assistance; FWE - framing work environment; MSS = mobilizing stakeholder support; SCP = synthesizing collaborative process; DFS = dominant factor score
Source: Authors' own work

The short version of MCLS has good internal consistency. Cronbach's alpha was 0.88 and omega was 0.88 and all items loaded significantly on a general collaborative leadership factor. The CFA for this short version of the questionnaire, the absolute and incremental fit indices were aligned with the thresholds for good fit reported in the literature (Hu and Bentler, 1998, 1999; Schreiber *et al.*, 2006). In particular, the model with four factors loading onto a latent variable had the best fit and it could not be substantially improved. The fit indices for the single-factor model were also aligned with the dynamic cutoffs recommended based on the approach presented in McNeish and Wolf (2021), namely, RMSEA was lower than 0.092 and CFI was higher than 0.955. For the sake of completeness, we will report the results for the validity of the collaborative leadership questionnaire, using both the integral and the shortened version of the questionnaire.

Agreement indices

The referent for the MCLS was the PA in each of the simulations. We therefore expected a substantial level of agreement regarding the way in which the participants in each party evaluated collaborative leadership of PA, as well as in each simulation. Given the fact that the interactions during the simulation unfolded within as well as between groups and we have used in each simulation the PA as a referent, we have computed the within-group agreement index based on the RWG formula presented in James *et al.* (1993) for each party as well as for each simulation. The RWG within parties ranged from 0.97 to 1.00 ($M = 0.98$ and standard deviation [SD] = 0.009) and the within simulations, the RWG ranged from 0.96 to 0.98 ($M = 0.97$ and SD = 0.008). These values showed a substantial within-party as well as within-simulation agreement on the collaborative leadership exerted by the PA. Similarly, the results also showed substantial within-group agreement for the short MCLS form as well as for all the subscales. The RWG scores are presented in Table 5. In addition, to further explore within-group dependency of the MCLS scores, we have computed the ICC1 and ICC2 (Biemann *et al.*, 2012) for each of the MCLS dimensions, for the general score of the MCLS original as well as the short form. The results (Table 5) show a substantial level of within-group agreement, especially for the overall MCLS score and the MCLS short form. The overall MCLS score and the MCLS short form score also have a higher group-level reliability as indicated by the highest ICC2 values.

Multiparty collaborative leadership scale validity

To evaluate the validity of the MCLS, we have used several indicators related to the PA and to the multiparty system as a whole. Because collaborative leadership evaluations of PA were nested in parties and simulations, we have used multilevel analyses to predict the perceived collaborativeness, conflictuality and perceived goal achievement of PA (assessed

	ICC(1)	ICC(2)	RWGP mean (SD)	Range RWGP	RWGS mean (SD)	Range RWGS
MSS subscale	0.04	0.13	0.89 (0.06)	[0.75,1.00]	0.87(0.03)	[0.84,0.91]
FWE subscale	0.12	0.31	0.94 (0.03)	[0.87,0.99]	0.91(0.02)	[0.87,0.93]
ARA subscale	0.12	0.30	0.90 (0.06)	[0.74,1.00]	0.84(0.04)	[0.78,0.90]
SCP subscale	0.16	0.38	0.93 (0.04)	[0.83,1.00]	0.89(0.02)	[0.84,0.90]
MCLS overall	0.19	0.43	0.98 (0.01)	[0.97,1.00]	0.97(0.01)	[0.96,0.98]
MCLS short	0.20	0.44	0.96 (0.02)	[0.91, 1.00]	0.94(0.01)	[0.92,0.95]

Notes: RWGP = RWG at the party level of analysis; RWGS = RWG at the simulation level of analysis; ICC = intraclass correlation coefficient; RWG = within group agreement index; SD = standard deviation; ARA = activating resource assistance; FWE = framing work environment; MSS = mobilizing stakeholder support; SCP = synthesizing collaborative process; MCLS = multiparty collaborative leadership scale
Source: Authors' own work

Table 5. Aggregation statistics for the MCLS and its dimensions

through a round robin procedure) using the four MCLS subscales and, separately, using the global MCLS score as well as the score of the MCLS short form. The expectation was that PA collaborativeness and goal achievement are positively related to the collaborative leadership, whereas the conflictuality of the PA is negatively related to collaborative leadership. PA goal achievement as well as PA collaborativeness served as indicators of construct validity (Vangen and Huxham, 2012), whereas PA conflictuality served as an indicator of discriminant validity of the MCLS, as in line with the tenets of Social Interdependence Theory, conflictuality reflects negative interdependence, whereas collaboration is a form of positive interdependence (Deutsch, 1949). Moreover, to test the predictive validity of the MCLS, we used multilevel analyses to predict the overall trust in the system as well as the entitativity of the multiparty system based on the MCLS scores. The expectation was that both trust and entitativity are positively predicted by collaborative leadership. Given that the dominant factor scores are standardized values, we have used these MCLS scores in the multilevel analyses. The results of the multilevel analyses are presented in Table 6 and the means, SDs and correlations are presented in Table 7.

The results of the multilevel analyses revealed patterns that are consistent with the results of the factor analyses, namely, that the best indicator of MCLS is the overall score and not the separate score for the four dimensions. The MCLS positively predicted the perceived collaborativeness of the PA, indicating strong construct validity of the MCLS. Second, MCLS negatively predicted the perceived conflictuality of the PA, indicating a strong discriminant validity of the scale as conflictuality and collaboration are conceived as two opposing processes (Deutsch, 1949; Johnson, 2003). In the simulation, the PA has a double interest, namely, facilitating a collaborative process, while also having the island's

Table 6.
Multilevel analyses results for collaborative leadership and its dimensions predicting collaborativeness, conflictuality and goal achievement of the PA as well as trust in the multiparty system and its entitativity

Variable	Collaborativeness PA	Conflictuality PA	Goals PA	Trust in the system	Entitativity
Constant	3.07*** (0.22)	1.98 (0.20)	2.41*** (0.15)	2.90*** (0.07)	2.40*** (0.10)
MSS	0.57** (0.17)	−0.10 (0.17)	0.08 (0.16)	−0.05 (0.10)	0.05 (0.12)
FWE	−0.18 (0.21)	0.04 (0.22)	0.14 (0.21)	0.10 (0.12)	−0.14 (0.15)
ARA	0.03 (0.18)	0.08 (0.18)	−0.04 (0.18)	0.07 (0.10)	0.16 (0.13)
SCP	0.32† (0.18)	−0.23 (0.19)	0.37* (0.18)	0.06 (0.10)	0.20 (0.13)
2 RLL	325.67	344.21	327.83	206.09	258.78
AIC	329.67	348.21	331.83	201.09	262.78
PseudoR^2	0.28	0.03	0.17	0.08	0.09
Constant	3.07*** (0.21)	1.98*** (0.20)	2.41*** (0.15)	2.90*** (0.07)	2.40***(0.11)
MCLS DFS	0.64*** (0.12)	−0.18 (0.13)	0.50*** (0.12)	0.17* (0.06)	0.24** (0.09)
2RLL	327.68	340.45	324.98	198.56	254.13
AIC	331.68	344.45	328.98	202.56	258.13
PseudoR^2	0.24	0.02	0.15	0.07	0.07
Constant	3.07*** (0.13)	1.98*** (0.20)	2.41*** (0.15)	2.90*** (0.07)	2.40*** (0.11)
MCLS short form DFS	0.70*** (0.12)	−0.24* (0.13)	0.47*** (0.12)	0.16* (0.06)	0.22* (0.09)
2RLL	321.40	338.62	326.56	199.32	255.01
AIC	325.40	342.62	330.56	203.32	259.01
PseudoR^2	0.28	0.04	0.14	0.06	0.07

Notes: Unstandardized coefficients are shown with standard errors between parentheses; PA = public authorities; MCLS = multiparty collaborative leadership scale; DFS = dominant factor score; ARA = activating resource assistance; FWE = framing work environment; MSS = mobilizing stakeholder support; SCP = synthesizing collaborative process; 2 RLL = 2 restricted log likelihood; AIC = Akaike's information criterion; ***$p < 0.001$; **$p < 0.01$ and *$p < 0.05$. $^{\dagger}p < 0.10$

Source: Authors' own work

Table 7. Descriptive statistics and correlations

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. PA dummy	0.16	0.37	1													
2. Power	0.61	0.49	0.354**	1												
3. Autonomy	0.52	0.50	−0.485**	−0.170	1											
4. Regional proximity	0.59	0.49	0.368**	0.394**	−0.760**	1										
5. MCLS-ARA	2.52	0.68	0.529**	0.227*	−0.307**	0.122	1									
6. MCLS-FWE	2.70	0.68	0.434**	0.164	−0.267**	0.047	0.767**	1								
7. MCLS-MSS	2.80	0.76	0.470**	0.290**	−0.226*	0.052	0.730**	0.765**	1							
8. MCLS-SCP	2.55	0.68	0.490**	0.285**	−0.207*	0.041	0.710**	0.787**	0.689**	1						
9. MCLS Total	2.65	0.63	0.527**	0.265**	−0.276**	0.067	0.873**	0.935**	0.893**	0.886**	1					
10. MCLS short	2.75	0.70	0.497**	0.244*	−0.243*	0.001	0.818**	0.895**	0.859**	0.854**	0.956**	1				
11. Collaborativeness PA	2.95	1.42	0.345**	0.371**	−0.250**	0.196*	0.405**	0.420**	0.544**	0.460**	0.512**	0.546**	1			
12. Conflictuality PA	1.93	1.43	0.005	−0.146	−0.008	0.009	−0.166	−0.229*	−0.255**	−0.261**	−0.258**	−0.266**	−0.242*	1		
13. Goals PA	2.33	1.30	0.193*	0.044	−0.236*	0.125	0.277**	0.334**	0.296**	0.384**	0.361**	0.337**	0.374**	0.113	1	
14. Trust in MPS	2.90	0.63	0.131	0.012	−0.157	0.031	0.273**	0.256**	0.188	0.257**	0.267**	0.242*	0.072	0.017	0.368**	1
15. Entitativity of MPS	2.41	0.83	0.064	−0.012	−0.125	0.008	0.228*	0.111	0.136	0.206*	0.180	0.160	−0.042	0.123	0.339**	0.581**

Notes: MCLS = multiparty collaborative leadership scale; MPS = multiparty system; PA = public authorities; ARA = activating resource assistance; FWE = framing work environment; MSS = mobilizing stakeholder support; SCP = synthesizing collaborative process; for PA dummy 1 = PA and 0 = other parties; for objective power 1 = powerful parties; 0 = powerless parties; for autonomy 1 = high autonomy; 0 = low autonomy; for regional proximity 0 = non-island parties; 1 = island parties
Source: Authors' own work

interest at heart – a duality. The results of the multilevel analyses revealed that MCLS positively predicted the extent to which PA was perceived to have achieved their party goals, indicating good construct validity of the scale.

With respect to the systemic correlates the MCLS positively and significantly predicted system entitativity and trust in the multiparty system. These results support the predictive validity of the MCLS as system entitativity and trust in the MPS are expected to be dependent on effective collaborative leadership. Although the MCLS correlated positively with system goal achievement, this correlation was not statistically significant. A likely explanation for this weak positive correlation is the fact that the scores for the MCLS in the simulations were rather low, showing that PA did not exhibit particularly strong collaborative leadership behaviors.

Stakeholders in multiparty systems may vary in their perceptions regarding collaborative leadership effectiveness. We have used some stakeholder features to predict the MCLS scores, using multilevel analyses. First, in line with self-enhancing evaluative tendencies, we expected that the self-perceptions of the PA reveal higher MCLS scores than the perceptions of other stakeholders. Second, we expected that powerful parties will share more positive evaluations of collaborative leadership as they are more likely to be involved in the system dynamics (Trif *et al.*, 2022; Trif *et al.*, 2020; Vangen and Huxham, 2003b). Third, we expected that relatively autonomous parties will have more negative evaluations of collaborative leadership as they could in principle, by and large, achieve their goals without the involvement of other stakeholders in the system (Vangen and Huxham, 2003a). Finally, we expected that stakeholders sharing regional proximity with the PA have more positive perceptions of collaborative leadership than more distant stakeholders. The results of these multilevel analyses with the four dimensions of the MCLS and the generic MCLS score and the score for the short version are presented in Table 8.

As shown in Table 8 in general, our expectations were supported, with the exception of the regional proximity effect that yielded opposite results, such that stakeholders in regional proximity with the PA had more negative assessments of collaborative leadership as compared to more distant parties.

Finally, the two facilitators (the authors) independently assessed the collaborative leadership in each of the five simulations using the MCLS. Based on these two independent evaluations, in three of the simulations, the PA's collaborative leadership was rated rather

Variable	ARA-DFS	FWE-DFS	MSS-DFS	SCP-DFS	MCLS-DFS	MCLS short-DFS
Constant	0.39 (0.32)	0.66* (0.35)	0.38 (0.29)	0.33 (0.34)	0.51 (0.29)	0.68* (0.33)
PA dummy	1.15*** (0.29)	0.89* (0.32)	0.97** (0.26)	1.05** (0.32)	1.11** (0.31)	1.04** (0.30)
Objective power	0.33 (0.22)	0.31 (0.24)	0.53* (0.20)	0.52* (0.23)	0.47* (0.23)	0.52* (0.22)
Autonomy	−0.69* (0.30)	−0.84* (0.33)	−0.66* (0.28)	−0.59* (0.32)	−0.78* (0.32)	−0.89** (0.31)
Regional proximity	−0.70* (0.30)	−0.92* (0.34)	−0.86** (0.28)	−0.86** (0.32)	−0.94** (0.32)	−1.16*** (0.31)
2 RLL	255.05	263.48	263.31	256.57	247.94	248.26
AIC	269.19	277.48	277.31	270.57	261.94	262.26
PseudoR^2	0.33	0.26	0.29	0.31	0.36	0.37

Table 8.
Multilevel analyses results predicting collaborative leadership and its dimensions

Notes: Unstandardized coefficients are shown with standard errors between parentheses; PA = public authorities; DFS = dominant factor score; ARA = activating resource assistance; FWE = framing work environment; MSS = mobilizing stakeholder support; SCP = synthesizing collaborative process; MCLS = multiparty collaborative leadership scale; for PA dummy 1 = PA and 0 = other parties; for objective power 1 = powerful parties, 0 = powerless parties; for autonomy 1 = high autonomy, 0 = low autonomy; for regional proximity 0 = non-island parties; 1 = island parties; 2 RLL = 2 restricted log likelihood; AIC = Akaike's information criterion; ***$p < 0.001$; **$p < 0.01$ and *$p < 0.05$. $^{\dagger}p < 0.10$

Source: Authors' own work

low, whereas in two of the simulations, the MCLS for the PA was higher. Based on these results, we clustered the five simulations accordingly in low versus high collaborative leadership. We then compared the means for these two clusters according to the scores reported by the participants. The scores reported by the participants were significantly different across the two simulation clusters. For the simulations rated as low on collaborative leadership by the facilitators, the scores reported by participants were significantly lower ($M = 2.57$, SD $= 0.67$) than for the simulations rated as high on collaborative leadership ($M = 2.80$, SD $= 0.53$), $t(104) = 1.84$, $p = 0.03$ and Cohen's $d = 0.62$. The scores for the short MCLS were also different across the two simulation clusters, such that the scores were lower ($M = 2.63$, SD $= 0.72$) for the simulations rated as low, than for the simulations rated as high on collaborative leadership ($M = 2.95$, SD $= 0.62$), $t(104) = 2.31$, $p = 0.01$ and Cohen's $d = 0.68$. This procedure approximates the criterion group validation as the participants scores differentiated across simulations in which collaborative leadership was evaluated by external raters. We can therefore conclude that the MCLS differentiates among groups rated as different on the focal criterion by independent raters.

Discussion

We present a short questionnaire to assess collaborative leadership in multiparty systems, which lack a preset hierarchy as stakeholders do not have position power. We started by developing items to assess the four functions of collaborative leadership derived from a literature analysis, namely, mobilizing stakeholder support, framing work environment, activating resource assistance and synthesizing collaborative processes. A total of 16 items were formulated to assess collaborative leadership in five successive multiparty simulations. Initial factorial analysis showed that all items loaded significantly on a dominant factor and the overall scale had good internal consistency. Due to the modest fit indices of the initial confirmatory analyses of the overall scale, we selected eight items with the highest factor loadings on their respective dimension and the dominant factor of the scale. This short version of the scale showed the best fit with the data. Incremental indices showed that the unifactorial measurement model cannot be substantially improved. Generally, the scores for MCLS showed substantial within-party as well as within-simulation convergence, supporting the consistency of the scores as indicators of collaborative leadership practices in multiparty contexts. Subsequently, we have tested various types of validity of the MCLS. First, we provided empirical support for the construct validity of the scale by predicting the collaborativeness and goal achievement of the leading party using the global MCLS scores. Second, we provided empirical evidence for the discriminant validity of the scale by showing that the MCLS negatively predicted the conflictuality of the leading party. Third, the predictive validity of the MCLS was supported by its significant positive association with trust in the multiparty system and the perceived entitativity of the system. Fourth, the criterion group validity was supported by the fact that the MCLS scores discriminated well among the simulations as assessed by independent raters as scoring high respectively low on collaborative leadership. Finally, we show that the evaluation of collaborative leadership was more positive when the rating party scored high rather than low on power and low rather than high on autonomy. Contrary to what we expected, regional proximity with the leading party generated less positive evaluations of collaborative leadership, probably anchored in the failed expectations that the leading party will (only) serve the local (island) interests. In line with self-enhancing tendencies, the collaborative leadership scores reported by the leading party were higher compared to the scores reported by the other parties involved in the simulation. Overall, the multiparty simulation in which we tested the reliability and validity of the MCLS offered a complex enough context in which system- and party-level dynamics could be observed and

evaluated. Future studies could further explore the validity and reliability of the MCLS in other contexts that differ with respect to the composition and the task of the multiparty system.

Limitations

The most important limitation of our paper concerns the fact that all analyses were performed on the same sample. It is very cumbersome to collect data on collaborative leadership in substantially large samples that would fulfil the sample size and the cross-sample validation criteria, typical for questionnaire validation studies. Our research includes five multiparty simulations organized over a period of three years and we have used these data to perform the factorial analyses and test the validity of the questionnaire. We believe that the multifaceted approach to the validation compensates for the sample limitation, yet we believe that future studies can further explore the validity of the MCLS in other multiparty contexts.

Practical and societal implications

We believe that our short collaborative leadership scale is a parsimonious assessment tool for collaborative leadership in multiparty interactions. Given the relevance of multiparty systems in addressing complex modern societal challenges, we hope that the MCLS scale will be helpful for research into the emergence and dynamics of collaborative leadership in these complex systems. In our theoretical analysis, we have integrated the insights from the intra- and interorganizational literature regarding the functions of collaborative leadership, and although the items reported in our paper were developed and used to assess collaborative leadership in interorganizational settings, we believe they can be adapted and used to assess collaborative leadership in any social system in which stakeholders lack positional power (Trif *et al.*, 2020; Hellmüller and Salaymeh, 2023). Our scale captures four functions extensively described in the literature on collaborative leadership, namely, activating resource assistance, framing the collaborative task, mobilizing stakeholder support and synthesizing collaborative processes. As such, the scale could be used for formative purposes to guide collaborative leadership development in complex multiparty situations.

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