Measuring Public Leadership: Developing Scales for Four Key Public Leadership Roles

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Abstract

This article on public leadership contributes to the literature by (1) focusing on the 'public' aspect of leadership and (2) developing quantitative scales for measuring four public leadership roles. These roles all refer to the extent to which public leaders actively support their employees in dealing with public sector issues: (1) accountability leadership, (2) rule-following leadership, (3) political loyalty leadership, and (4) network governance leadership. We tested the factor structure using exploratory and confirmatory analyses, with satisfactory results. Also, as expected, the scales for public leadership relate to transformational leadership and leadership effectiveness. The scales also correlate with organizational commitment, work engagement and turnover intention. These results indicate that our four scales of public leadership work adequately. We conclude with a future research agenda on how the scales can be used in survey and experimental research.

Keywords

1 Introduction

In the public administration discipline, there have been a number of important studies on leadership within public sector organizations (for instance Fernandez 2005; Jacobsen & Andersen 2015; Wright, Moynihan & Pandey 2010). However, compared to related disciplines such as psychology and business management, the public administration literature is lagging behind. Hansen and Villadsen (2010, p. 247) concluded that, compared to other disciplines, 'leadership theory has generally received little attention in public management research'. In a recent literature review on administrative leadership, Van Wart (2013) is more nuanced, stating that there has been a substantial development. However, he also noted that 'fragmentation and conflicting nomenclature continue to be a problem, but at a more sophisticated level' (p. 538). More specifically, Vogel and Masal (2014, p. 15) argue in their overview study that 'in current research on public leadership, the emphasis is still on the aspect of "leadership" rather than on the "public" element' and that 'research on public leadership needs to pay more attention to publicness itself'.

Related to this, we notice that up until now, there are almost no studies focused on the construction and validation of measurement scales for specific public leadership dimensions (a notable exception is the study by Fernandez, Cho and Perry 2010). On the one hand, various leadership studies are conducted in the public sector using general leadership concepts. Examples are studies on transformational and transactional leadership (Vigoda-Gadot 2007; Kroll & Vogel 2014), Leader-Member Exchange (Ritz *et al.* 2012; Tummers & Knies 2013), ethical leadership (Hassan *et al.* 2014) and servant leadership (Miao *et al.* 2014). These concepts are highly valuable and of paramount importance for public leaders. However, they do not capture the specific public aspects of leadership in public organizations. Related to this, Rainey (2014, p. 364) stated that 'although virtually anyone accepts the premise that all executives and managers face very similar tasks and challenges, a strong and growing body of evidence suggests that public managers operate within contexts that require rather distinctive skills and knowledge'. They

work in contexts where they have to execute governmental rules and regulations (Hill & Hupe 2009), account for actions to external stakeholders, including politicians and the media (Bovens 2007), show political loyalty, even if this incurs personal costs (Gailmard & Patty 2012), and operate in networks (Klijn & Koppenjan 2012).

There have been some studies which do take such specific public sector leadership roles into account, such as the studies on networks and leadership (Currie *et al.* 2011) and accountability leadership (Kearns 1996). These studies are valuable as they capture the particular features of leadership in the public sector. However, a drawback is that these studies are conceptual, use existing surveys with measures which are not validated or use qualitative data to measure public leadership. To date, psychometrically proven techniques have not often been applied before to develop valid and reliable measures of public leadership (see Fernandez *et al.* 2010 for an exception). We agree with Pandey and Scott (2002) that sound quantitative measurement, through the careful development of concepts and measurement scales, is highly beneficial for the advancement of public administration research and practice.

Therefore, the aim of this article is to develop reliable and valid measurement instruments for four public leadership roles. These roles have in common that they focus on the extent to which public leaders support employees in dealing with public sector issues. When developing the measures, we follow the recommendations for scale development by DeVellis (2003).

Four roles for public leaders are identified: enabling employees to deal with issues arising from (1) accountability, (2) following governmental rules and policies, (3) political loyalty, and (4) network governance. We fully acknowledge that there are other important public leadership roles (see for instance Boin & 't Hart 2003). We selected these four roles as they are all important for public administration. The first three roles (accountability, rule-following and political loyalty) relate to the traditional rational-legal authority of a bureaucratic system. Also, Van der Wal *et al.* (2008) found that accountability and following governmental rules are the most important values for the public sector. They did not include

political loyalty, but they note that when it would be included it would potentially be rated highly (p.478). It is generally assumed that civil servants' loyalty is highly important (see for instance Gailmard & Patty 2012). The fourth role (network governance leadership) is included given the prominence of networks and network management for contemporary public organizations (see for instance Klijn & Koppenjan 2012). In general, we argue that the four public leadership roles are essential in the public sector. We will also test this, by analyzing the relationship between these roles and leadership effectiveness.

Why are these measurement instruments for public leadership roles useful? First, scholars can use these psychometrically sound scales instead of developing ad hoc scales, thereby substantially improving the quality of their research. The public administration community has not developed many psychometrically sound measurement instruments, although there are exceptions, such as work on Public Service Motivation (Perry 1996), trust (Yang, 2005; Grimmelikhuijsen & Knies, forthcoming) and policy alienation (Tummers 2012). Using validated scales allows scholars interested in comparative public management to examine differences between countries or sectors. For instance, do leaders in some countries with a strong legalistic tradition (such as France and Germany) score higher on rule-following leadership than countries with a more corporatist tradition (such as the Netherlands) (Pollitt & Bouckaert 2004)? Furthermore, it can be analyzed what the antecedents (such individual and organizational characteristics) and effects (such as job performance, job satisfaction) are of the use of various leadership roles.

Second, the measurement instruments can be valuable for practitioners. For instance, they can be used for leadership programs. For public managers, these programs should not only include traditional leadership behaviors such as maintaining good relationships with your employees (LMX) or developing an inspiring vision (transformational leadership), but also supporting employees to develop networks of their own (network governance leadership) and how to encourage subordinates to carry out difficult political decisions (political loyalty leadership). By using before and after training tests with the

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developed scales and by including control groups, it can be established whether the trained managers are indeed improving their public leadership.

In sum, this article contributes to the literature by (1) focusing on the 'public' aspect of public leadership and (2) developing measurement instruments for four public leadership roles using advanced scale development techniques. This brings us to the outline. In Section 2, we will discuss elaborate on the four public leadership roles. We will then describe the method (Section 3) and outline the results (Section 4). We will conclude by highlighting the contributions of this study to public administration research and practice and by showing some important suggestions for future research.

2   Leadership roles in the public sector

2.1   Background on leadership

In broad terms, there are two contrasting views on leadership in organizations. One view is leader-focused and attempts to explain performance by analyzing specific actions leaders take themselves, and linking these to outcomes. For instance, when studying accountability and leadership, a 'leader-focused' strategy is to study how a leader accounts for his/her actions and those of the organization. For example, does a leader interact openly with other stakeholders about problems in his/her organization?

The second view on leadership is relationship-based, analyzing the behavior of leaders in terms of the support they provide to their employees. For instance, regarding accountability leadership, it is then not about the leader himself/herself interacting with stakeholders, it is about to what extent he/she supports employees to interact with stakeholders. We follow this relationship-based view, as we want to study how leaders support their employees in dealing with public sector issues.

We acknowledge that a relevant question is whether such 'leaders' should not be better considered as 'supervisors' or 'managers'. Although the debate about the distinction between leaders and managers continues, many contemporary scholars argue *against*

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strictly distinguishing between managers and leaders (see for instance Fernandez *et al.*
2010; Yukl, 2010). They state that many managers perform leadership tasks, and many
leaders perform managerial tasks. Mintzberg even argues that that one of the roles of
managers is to be a 'leader' (1990, p. 53). Hence, he views leadership as part of
management. Concluding, we acknowledge that there is a debate regarding the distinction
between managers and leaders. We will use the term leadership when analyzing how
supervisors perform these leadership roles. In this way, we build upon related work in public
administration and leadership studies (Fernandez 2005; Yukl 2010).

2.2   Four roles of public leaders

We focus on four ways public leaders can support their employees: accountability
leadership, rule-following leadership, political loyalty leadership, and network governance
leadership. These are shown in Table 1.

TABLE 1 *Four roles of public leaders, including definitions of these roles*

Role of public leader	Definition: Leaders who …	Example of a high score
Accountability leadership	… stimulate employees to justify and explain their actions to stakeholders	A welfare director who encourages her employees to tell a citizen why they did not provide a welfare benefit to him/her
Rule-following leadership	… leaders who encourage their employees to act in accordance with governmental rules and regulations	A school leader who emphasizes to his/her teachers that they should follow the exact regulations accompanying the upcoming SAT (a standardized test for students)
Political loyal leadership	… stimulate their employees to align their actions with the interest of politicians, even if this is costly for them	A director-general encouraging the civil servants of his directorate that they should implement the political decisions of the Minister, even when he and his employees see shortcomings.
Network governance leadership	… encourage their employees to actively connect with relevant stakeholders	A manager in a municipality stimulating her employees to go to various conferences and meetings for small and medium-sized businesses within the city, in order to make new contacts

First, we will discuss accountability leadership. Van der Wal *et al.* (2008) found – based on a survey of public and private sector managers – that accountability was deemed *the* most important value for the public sector. Indeed, this role is particularly relevant for public leaders as being accountable to *several* stakeholders is typical for public sector organizations. In private organizations, one will primarily be held accountable by the organization's shareholders and some major stakeholders, whereas in public organizations there are many relevant stakeholders, such as local, regional and national politicians, the media, citizens, non-governmental organizations and small enterprises (Karsten, 2015). Various important scholarly studies have been devoted to accountability, including leadership and accountability (such as Kearns 1996; Chapman & Lowndes 2014). However, Bovens (2007, pp. 449-450) warns us that accountability is an elusive concept. It is therefore necessary to define the concept properly. He notes that the most concise description of accountability would be 'the obligation to explain and justify conduct'. In the context of (relationship-based) public leadership, we thus define accountability leadership as *leaders who stimulate employees to justify and explain their actions to stakeholders.* For instance, do supervisors stimulate their employees to openly discuss their own actions and those of the organization with citizens? Do they emphasize that it is important that employees answer questions from citizens? When employees perceive that supervisors indeed do this, these supervisors are said to score high on accountability leadership.

The second role is rule-following leadership. Following governmental rules and regulations is a key public administration value (DeHart-Davis 2009). Lane (1994, p. 144) notes that public administration is in its core about implementing the rule of law. Related to this, Van der Wal *et al.* (2008) found that rule-following was the second most important public sector value. In the context of relationship-based leadership, we define rule-following leadership as *leaders who encourage their employees to act in accordance with governmental rules and regulations.* Hence, in high publicness organizations (Bozeman & Bretschneider 1994) an important role of leaders is to stimulate their followers to follow governmental rules and regulations, and prevent them from breaking them.

The third leadership role we identified is political loyalty leadership. As noted, in the study of Van der Wal *et al.* (2008) political loyalty was not included. However, the authors acknowledge that 'Loyalty (to the political superiors) as a value might have been ranked substantively higher' (p. 472). The relationship between politicians and civil servants can be characterized as a principal-agent relationship. Public employees (the agents) are performing actions for politicians (the principals), who cannot fully control these civil servants. How can politicians make sure that public employees develop and implement policies that have desirable policy outcomes? This among else depends on the degree to which these employees are loyal towards their political principals (Gailmard & Patty 2012). Kleinig (2007) argues that loyalty is shown when people continue to show commitment to others, even if such commitment is costly. Related to this, Hajdin (2005, p. 261) notes that when loyalty is *aligned* with other criteria, loyalty is redundant: 'If loyalty were always in harmony with other considerations, we would not have the concept [of] loyalty'. In the case of public employees and politicians, loyalty then exists when public employees continue to show commitment towards politicians, even when this means that they have to make sacrifices. For instance, they might follow the directions of politicians even when it conflicts with their own ideals or interest, when it will result in personal risks, or when it will negatively affect their own department. We thus define political loyalty leadership as *leaders who stimulate their employees to align their actions with the interest of politicians, even if this is costly for them*. For instance, a supervisor might encourage employees to implement political decisions properly, even when other stakeholders confront these employees with that decision.

The final role we identify is network governance leadership. As opposed to the first three roles, network governance leadership is less aligned with the historical roots of public administration. However, developments such as budget austerity, the economic and fiscal crisis and reduced legitimacy of governments have stimulated civil servants to work together with other stakeholders to tackle the problems of contemporary society (Sørensen & Torfing 2011). This also aligns with the shift from 'government' to 'governance'. Public

organizations often are a partner in collaborative networks, instead of the main developer and executer of policies. This requires different behavior from public employees. We will examine to what extent leaders stimulate their employees to develop networks and actively engage in existing networks. We then define network governance leadership as *leaders who encourage their employees to actively connect with stakeholders*. A leader would score high on network governance leadership when he/she encourages employees to spend time connecting to other stakeholders, to spend time maintaining contacts and to introduce their colleagues to their own contacts.

We assume that these four roles are underlying dimensions of a higher-order concept focused on the extent to which leaders support their employees in dealing with public sector issues, specifically: to act accountable, to follow rules, to be loyal to politicians and to connect with stakeholders.

We acknowledge that this is by definition a partial view. Public leaders must do much perform more than these for roles, such as communicating the goals of the organization, managing change and promoting diversity. This is reflected in the measure of 'integrated public leadership' by Fernandez *et al.* (2010), one of the few well-developed quantitative measurement instruments for leadership in the public sector. Within integrated public leadership, six roles are identified: task-oriented leadership, relations-oriented leadership, change-oriented leadership, diversity-oriented leadership and integrity-oriented leadership. The first three roles are based on the general leadership literature. Diversity-oriented and integrity-oriented leadership are more public sector specific. The four roles identified in this study could be seen as additional 'public sector specific' roles, supplementing those identified by Fernandez et al. (2010).

The literature review shows that these four roles are of high importance for public leaders. This will also be tested, by analyzing how these public leadership roles relate to leadership effectiveness and employee outcomes such as organizational citizenship behavior and intended turnover. This will be discussed in the next section.

2.3   Public leadership roles and related concepts

After having described the four public sector specific roles of public leaders, we will elaborate on the expected relationships with other concepts. If the empirical relationships between the concepts are in line with those suggested by the theory, we can be more confident that we have truly measured these four roles, a process known as determining construct validity (DeVellis 2003).

First, we will analyze the 'convergent validity'. Our public leadership roles will show 'convergent validity' when they are related to similar constructs in the expected directions. Given that the roles are leadership constructs, we would expect them to be positively related to one of the most established leadership constructs out there: transformational leadership. Next, we will analyze whether they are related to perceived leadership effectiveness.

We expect that when leaders score higher on public leadership roles (for instance, stimulating employees to be accountable and to follow the rules), they also score higher on transformational leadership. For instance, Bass and Steidlmeier (1999) argue that true transformational leadership has a strong moral backing. Next to this, one of the dimensions of transformational leadership is 'individualized consideration'. This means that a transformational leader attends to the needs of employees, supports their development and acts as a mentor or coach. This is highly related to the four proposed public leadership roles.

Related to this, it is also expected that leaders who score higher on public leadership roles are perceived as more effective. Van Knippenberg and Hogg (2003) argue that leadership processes are enacted in shared group memberships, where leaders, as group members, ask their employees to exert themselves on behalf of the collective. They note that the leader's ability to speak to employees as group members plays a key role in leadership effectiveness. When looking at the (relationship-based style) of the four roles, we therefore also expect that leaders who are able to motivate their employees to be

accountable, follow governmental rules, show political loyalty, and connect with other stakeholders in the network, are perceived as more effective.

Based on the above, we formulate the following hypothesis:

Hypothesis 1: The four public leadership roles are positively related to transformational leadership and to perceived leadership effectiveness.

Next to construct validity, we will also examine 'criterion-related validity': to what extent are our four public leadership roles related to potential outcomes? We examine relationships with various employee outcomes: *employee attitudes* (organizational commitment, job satisfaction and work engagement), *employee behavior* (organizational citizenship behavior/OCB) and *intended employee behavior* (turnover intentions). We expect a positive relationship between the public leadership roles and organizational commitment, job satisfaction, work engagement and OCB. For instance, Mullen and Jones (2008) note that when leaders (in their case school principals) stimulate employees (teachers) to be accountable and follow rules, many positive effects will occur, such as improved trust, satisfaction and commitment. We expect a negative relationship between our four roles and turnover intentions. Hence, we formulate the following hypothesis:

Hypothesis 2: The four public leadership roles are positively related to organizational commitment, job satisfaction, work engagement and organizational citizenship behavior and negatively related to turnover intentions.

3   Methods

3.1   Steps in scale development and validation

The empirical scale validation consists of three main phases. The goal of the first phase is to operationalize the public leadership roles. Items were generated based on our literature

review. For item generation, we took into account recommendations for scale development by DeVellis (2003), such as using simple words, avoiding double-barreled items and avoiding double negatives. Based on various discussions between the authors about face validity, we chose the best fitting items for each role.

The outcome of this first phase was a set of 25 items to measure the four public leadership roles. Accountability leadership was measured using seven items. A sample item was 'My supervisor encourages me and my colleagues to explain our actions to various stakeholders.' For rule-following leadership five items were developed. An example is 'My supervisor emphasizes to me and my colleagues that it is important to follow the law.' We developed six items for political loyalty leadership, one being 'My supervisor encourages me and my colleagues to defend political choices, even if we see shortcomings.' Lastly, seven items were developed for network governance leadership, one being 'My supervisor encourages me and my colleagues to maintain many contacts with other organizations'.

These numbers of items are in line with the recommendations by Hinkin (1998) who notes that at least four items per scale are needed to test the homogeneity of items with each latent construct. In line with Hinkin (1998, p. 110), we also used 5-point Likert scales, as he notes that 'it is suggested that the new items be scaled using 5-point Likert scales'. The final included items are shown in Table 2.

In the second phase, the psychometric properties of these scales are tested using a sample of 503 respondents, based on independent surveys from various public sector organizations in the Netherlands in education (n=58), healthcare (n=307) and provincial and municipal government (n=138). The mean age of respondents is 42.8 years (SD=11.9). 43.2% of our respondents is male. The factor structure is tested in two ways. An exploratory factor analysis, using SPSS, is conducted on 200 randomly selected employees. Hereafter, a confirmatory factor analysis, using *Mplus*, is performed on the other 303 employees. We chose these selections given that for confirmatory factor analysis more respondents are needed: Hinkin recommends a minimum of 150 observations for exploratory factor analysis

and 200 for confirmatory factor analysis. Lastly, we assessed reliability by examining the Cronbach's alphas.

In the third phase, the convergent, criterion-related and discriminant validity of the measurement instrument is tested by correlating the public leadership roles with other variables. In order to study convergent validity, we included transformational leadership and perceived leadership effectiveness in our analyses. To establish criterion-related validity we studied the correlations with organizational commitment, work engagement, turnover intentions, organizational citizenship behavior (OCB), and job satisfaction. To establish discriminant validity we included the number of working hours, the flexibility employees experience in their jobs and whether employees have their own desk in the office.

Transformational leadership was measured using the seven-item measurement instrument developed by Carless *et al.* (2000). A sample item was 'My supervisor gives encouragement and recognition to staff'. Cronbach's alpha was .945.

Perceived leadership effectiveness was measured using the four-item scale developed by Van Knippenberg & Van Knippenberg (2005). A sample item was 'My supervisor is an excellent supervisor.' The reliability was .948.

Organizational commitment was measured using the affective commitment dimension (Allen & Meyer 1990). A sample item is 'I feel a strong sense of belonging to my organization'. The 7-item scale had a reliability of .776.

Job satisfaction was measured with a single item: 'Generally speaking, I am very satisfied with my job'. Wanous *et al.* (1997) have demonstrated that satisfaction can be reliably measured with a single item.

Work engagement was measured using the 9-item scale developed by Schaufeli *et al.* (2006). A sample item is 'At my work, I feel bursting with energy'. The reliability of the scale was very good: .928.

Turnover intentions were measured using the work of Bozeman & Perrewé (2001). A sample item is, 'I will probably look for a new job in the near future.' The 5-item scale was reliable at .869.

Organizational citizenship behavior (OCB) was measured using the scale of MacKenzie *et al.* (1991). A sample item is 'I help orient new people even though it is not required. The reliability of this 12-item measure was .711.

4   Results

4.1   Psychometric properties

Exploratory factor analysis

To examine the dimensionality of the public leadership roles we carried out an exploratory factor analysis. We included all 25 generated items in the analysis. We used principal component factoring and oblimin rotation, as this allows the factors to be correlated. We allowed the factors to be freely estimated and did not specify the number of factors a priori. We extracted four factors with eigenvalues greater than one. These factors explained 74% of the total variance. This exceeds the minimum of 60% for scale development (Hinkin 1998). The factor structure was as we had anticipated, although three items (item 7 for accountability leadership, item 1 for rule-following leadership, item 1 for political loyalty leadership) loaded on two dimensions (factor loadings >.30). Therefore, these items will not be used in further analyses. The factor loadings are reported in Table 2. We also decided to delete item 5 for network governance leadership, as this item is about network actions of supervisors themselves and not about supporting their employees regarding networking.

TABLE 2 *Exploratory Factor Analysis of the four public leadership roles*

Item	Factor loadings			
Every item starts with: My supervisor …	F1	F2	F3	F4
Accountability leadership (ACC)				
1. … Encourages me and my colleagues to explain our actions to various stakeholders				-.86
2. … Stimulates us to inform stakeholders of our way of working.				-.90
3. … Provides us with the possibility to explain our behavior to stakeholders.				-.77
4. … Emphasizes that it is important that we answer questions from clients.				-.86
5. … Strives to ensure that we are openly and honestly share the actions of our organizational unit with others				-.81
6. … Stimulates us to explain to stakeholders why certain decisions were taken				-.83
7. … Makes sure that we sure that we keep stakeholders regularly informed of the actions of our organization unit*	.36			-.59
Rule-following leadership (LAW)				
1. … Makes sure that our department can properly execute governmental policies*			.37	-.56
2. … Emphasizes to me and my colleagues that it is important to follow the law			.77	
3. … Gives me and my colleagues the means to properly follow governmental rules and regulations			.52	
4. … Emphasizes that my colleagues and I should carry out government policies properly			.80	
5. … Ensures that we accurately follow the rules and procedures.			.80	
Political loyalty leadership (LOY)				
1. … Encourages me and my colleagues to accommodate the wishes of the politicians, even when these don't align with our own values*	.30	.70		
2. … Encourages me and my colleagues to support political decisions, even when other stakeholders confront us with it		.73		
3. ... Encourages me and my colleagues not to jeopardize the relationship with political heads at risk, even if that entails risks		.84		
4. … Stimulates me and my colleagues to implement political decisions, even if that means additional responsibilities should be taken up		.82		
5. … Encourages me and my colleagues to defend political choices, even if we see shortcomings		.75		
6. … Encourages me and my colleagues to support political decisions, even when we see downsides		.89		
Network governance leadership (NETW)				
1. … Encourages me and my colleagues to maintain many contacts with other organizations	.91			
2. … Encourages me and my colleagues to invest substantial energy in the development of new contacts	.92			
3. … Stimulates me and my colleagues to regularly work together with people from our networks	.81			
4. … Stimulates me and my colleagues to develop many contacts with people outside our own department	.73			
5. … Spends a lot of time maintaining his / her contacts**	.65			
6. … Stimulates me and my colleagues to introduce others to contacts of our own networks	.88			
7. … Encourages me and my colleagues to be a 'linking pin' between different organizations	.84			

Only coefficients of >.30 are presented. * Deleted later on as factor loading >.30 with two factors.

** Item deleted as is about network actions of supervisors themselves and not about supporting their employees regarding networking

Confirmatory factor analysis

Using the results of the exploratory factor analysis, we performed confirmatory factor analyses (CFA) in M*plus*. CFA has several advantages over EFA, such as more stringent psychometric criteria for accepting models, thereby improving validity and reliability.

First, we tested a first-order model in which six items loaded on the dimension 'accountability leadership', four items loaded on 'rule-following leadership', five items loaded on 'political loyalty leadership', and six items loaded on 'network governance'. To assess the model fit, we examined the comparative fit index (CFI), the Tucker-Lewis index (TLI), and the root mean square error of approximation (RMSEA). Acceptable fit is evidenced by a CFI and TLI of .90 or higher, and a RMSEA of .08 or lower (Bentler 1990). The initial CFA showed acceptable fit indices (CFI=.938; TLI=.929; RMSEA=.070). However, the descriptives of the variables included showed that these were non-normally distributed. Therefore, we performed another CFA identifying all variables as categorical. The fit indices improved (CFI=.979; TLI=.975; RMSEA=.082). All items loaded significantly on the latent variables (p<.001) with standardized factor loadings ranging from .731 to .949.

Since we conceptualize that these four latent constructs are related, we also conducted a second-order CFA. All four roles (accountability, rule-following, political loyalty and network governance) loaded on the latent variable 'public leadership'. The results of this test confirm the proposed structure and all fit indices are good (CFI=.978; TLI=.975; RMSEA=.082). The factor loadings of the dimensions on the second-order construct varied between .395 and .977.

To test the discriminant validity among the four dimensions of our scale we followed Fornell & Larcker's (1981) suggestion for comparing the square root of the average variance extracted (AVE) of each of the dimensions of the second-order construct to the correlations between that dimension and the remaining ones. The results show that for all dimensions the root square of the AVE is greater than the correlations between that dimension and the remaining ones. The square roots of the AVEs vary between .814 and

.926 and the correlations vary between .306 and .693. This points to evidence of discriminant validity.

We have also calculated the AVE and the Weighted Omega to determine the validity of our second-order construct model. The average variance extracted was .47, which is slightly below the recommended threshold of .50. However, Fornell & Larcker (1981. p. 46) point out that this is a conservative cut-off value. Furthermore, they argue that based on ρ_η (which is above .50 in our case) alone the researcher can conclude that the construct is adequate (Fornell & Larcker 1981, p. 46). The value of weighted omega was .95, which is well above the recommended threshold of .70.

To test the robustness of our four-factor solution we compared it with all alternative 2-factor and 3-factor models in which we combined two or three dimensions. The fit indices for these models are worse than for our 4-factor model. These results provide evidence for the validity of our four-factor model. As the political loyalty role has the weakest loading on the second-order construct, we also compared the four-factor model with the three-factor model that excludes the political loyalty dimension. The latter (CFI=.989; TLI=.987; RMSEA=.079) fits the data slightly better. This result is almost by definition the case when the least scoring factor is excluded. Metaphorically speaking: a chain will always be stronger whenever the weakest link has been deleted, no matter how strong this weakest link is. We have decided to include political loyalty leadership. The four-factor model works well. Hence, when including political loyalty leadership the model still provides good fit indices. Furthermore, the relationship between politicians and civil servants can be characterized as a principal-agent relationship. Public employees (the agents) are performing actions for politicians (the principals), who cannot fully control these civil servants. How can politicians make sure that public employees develop and implement policies that have desirable policy outcomes? This among else depends on the degree to which these employees are loyal towards their political principals (Gailmard & Patty 2012). Furthermore, the relatively low factor loading of political loyalty leadership on the second-order construct could be expected as loyalty is an inherently ambiguous concept. Loyalty is

shown when people continue to show commitment to others, even when such commitment is costly, for instance because it goes against the employees own values and entails high risks (Kleinig 2007). Enacting this type of leadership can involve costs and therefore might be less strongly related to the overall concept of public leadership. Figure 1 shows the final factor structure of the items measuring the public leadership roles.
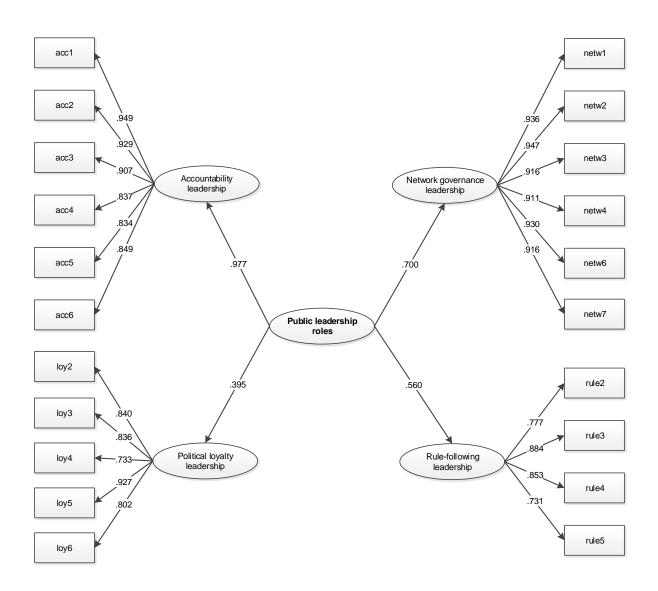
FIGURE 1 *Hierarchical confirmatory factor analysis for public leadership roles*

Correlations and Cronbach alpha

As shown in Table 3, all four roles are significantly correlated. The correlations vary between .306 and .693. According to Kalshoven *et al.* (2011) – who developed a measurement instrument for ethical leadership – such correlations are similar to the correlations between other leadership measures.

Finally, we assessed the scale's reliability by examining the Cronbach's alphas. All four public leadership roles show sufficient reliability (>.70), as shown in the table below.

TABLE 3 *Cronbach alpha's, means, standard deviations and correlations of the four public leadership roles*

	Cronbach's alpha	M	SD	1.	2.	3.
1. Accountability leadership	.934	3.64	.73			
2. Rule-following leadership	.821	3.47	.68	.564**		
3. Political loyalty leadership	.889	3.07	.71	.317**	.341**	
4. Network governance leadership	.958	3.26	.90	.693**	.322**	.306**

** p<.01

In summary, the results of our analyses show that the scales for measuring the four public leadership roles behave appropriately. The final items are also shown in the Appendix.

4.2 Convergent, criterion-related and discriminant validity

In order to establish convergent validity, we examined the relationship between the four public leadership roles and two scales for leadership in general (transformational leadership and leadership effectiveness). The correlation matrix displayed below shows that all public leadership roles are significantly related to both transformational leadership (*r* ranging from .158 to .696) and leadership effectiveness (*r* ranging from .131 to .652). Therefore, we can conclude that we found support for Hypothesis 1. There are also interesting differences in the strengths of the relationships. The low correlations of political loyalty leadership could be expected as loyalty is shown when people continue to show commitment to others, even

when such commitment is costly, for instance because it goes against the employees own

values and entails high risks. Enacting this type of public leadership involves costs.

Furthermore, the high correlations between accountability and network governance

leadership and the general leadership constructs might indicate the importance that is

nowadays attached to being accountable and working in networks.

TABLE 4 *Correlations between public leadership roles and related leadership constructs*

	Transformational leadership	Leadership effectiveness
1. Accountability leadership	.696**	.652**
2. Rule-following leadership	.389**	.406**
3. Political loyalty leadership	.158**	.131*
4. Network governance leadership	.578**	.514**

** p<.01; * p<.05

To test the criterion-related validity of our scales we analyzed the relationships between the

four roles and several outcome variables: organizational commitment, work engagement,

turnover intentions, OCB and job satisfaction.

All four roles are significantly related to organizational commitment. Correlations

varied between .150 (political loyalty) to .399 (accountability). Three of the four dimensions

are significantly related to work engagement. The only exception is political loyalty

leadership. Other correlations varied between .132 (network governance) and .195 (rule-

following). Three of the four dimensions are significantly related to turnover intentions.

Again, the only exception is political loyalty leadership. The other correlations varied

between -.103 (network governance) and -.209 (accountability). OCB is significantly related

to all dimensions except political loyalty leadership. The other correlations varied between

.101 (network governance) and .202 (rule-following). Finally, job satisfaction is significantly

related to all dimensions. Correlations varied between .106 (political loyalty) and .272

(accountability). Overall, these results provide moderate support for hypothesis 2. The low

correlations of political loyalty leadership and its consequences is possibly related to the

fact that we only analyzed the effects on constructs related to individual performance, and

not organizational performance. It could be the case that political loyalty leadership has

strong consequences on the organizational level, which are not reflected in the individual-

level variables.

TABLE 5 *Correlations between four leadership roles and several outcome variables*

	Organizational commitment	Work engagement	Turnover intentions	OCB	Job satisfaction
1. Accountability leadership	.399**	.150**	-.209**	.107*	.272**
2. Rule-following leadership	.333**	.195**	-.203**	.202**	.200**
3. Political loyalty leadership	.150**	.055	-.057	.049	.106*
4. Network governance leadership	.309**	.132**	-.103*	.101*	.238**

** $p < .01$; * $p < .05$

Lastly, to test the discriminant validity of the public leadership roles we correlated our

measure with presumed unrelated constructs. The discriminant validity tests show that

public leadership roles do not correlate with those measures they are not expected to

strongly correlate with, such as the number of working hours (-.01, ns), the flexibility

employees experience in their jobs (.12, ns) and whether employees have their own desk in

the office (.06, ns). This provides evidence for the discriminant validity of the scales.

5 Conclusion

The purpose of this research was to establish validated scales for four key roles of public leaders. The results indicate that our measures for the following four public sector specific roles of leaders are valid and reliable: (1) accountability leadership (6 items), (2) rule-following leadership (4 items), (3) political loyalty leadership (5 items) and (4) network governance leadership (6 items).

There are a number of potential uses for the scales to measure the four public leadership roles. As noted, most importantly, scholars could use these psychometrically sound scales instead of developing ad hoc scales, thereby potentially improving the quality of their research (DeVellis 2003). Regarding new theoretical venues, future research can further study the antecedents and effects of these public leadership roles. Potential promising directions are to relate the public leadership roles to network studies (for instance: does higher network governance leadership positively affect trust and performance in public-private partnerships?), public personnel studies (How can HR practices stimulate rule-following and accountability leadership?) and studies on rules and regulation (what are the effects of rule-following leadership on red tape, green tape and rule-following behavior?). Based upon various studies, meta-analyses can then be used to summarize the results found (Chapman et al, forthcoming).

Also for practitioners, the scales can be important. For instance, directors and HR experts can analyze whether the managers in the organization show the essential public leadership roles. The scales can be used for talent assessment and selection purposes to determine the degree to which candidates show relevant leadership potential. Furthermore, in leadership development programs the scales can be used as before and after tests, analyzing whether the training helped to improve certain public leadership roles.

Like all studies, this study has its limitations. It should be viewed as a first endeavor to developing a scale measuring four public leadership roles. Validation of measurement instruments in an ongoing process (DeVellis, 2003). Future studies can test whether the

scales work in different settings, and potentially refine the scales. An inspiring example to look at in the public administration literature is the work on Public Service Motivation, which has devoted substantial effort in refining the scales to measure this (starting with Perry, 1996, followed by Vandenabeele, 2008 and most recently by Kim et al., 2014).

A second limitation is the cross-sectional design of this research. Correlational analyses were used to analyze the relationship between our public leadership roles and potential outcomes such as job satisfaction and organizational citizenship behavior. Cross-sectional designs cannot establish causality or identify long-term effects. However, conducting a cross-sectional study is an important and practical first step in the construction and validation of measures. A next step can be to use longitudinal designs to analyze the long-term effects of public leadership roles and its temporal stability. Furthermore, researchers could use multiple sources to analyze effects of public leadership roles, such as on job performance or turnover. For some relationships the use of self-reports is justified, as the nature of the variables – such as job satisfaction – can best be analyzed using self-reports (Kalshoven *et al.* 2011). However, other constructs – such as OCB – could be measured by asking supervisors to rate employees. Another way moving forward is by using a multi-trait multi-method CFA (Campbell & Fiske 1959) to examine the construct validity of our scale.

A third limitation is that we selected four roles of public leadership. Although we argue and empirically show that these four roles are very relevant in a public sector context (also shown given the relationships with leadership effectiveness), other roles (such as managing conflicting values) might be as well. So, future research might expend this study by including additional roles of public leadership. For instance, scholars can include the roles identified in this study with the six roles as identified by Fernandez et al. (2010). Using this approach, it can for instance be analyzed whether the roles identified in this study explain additional variance above and beyond the integrated leadership roles. Furthermore, convergent and discriminant validity can be analyzed whether there are potential interesting interactions between the various roles.

According to Lambright and Quinn (2011, p. 782), 'nothing in public administration is more important, interesting, or mysterious than leadership'. Vogel & Masal acknowledge this (2014, p. 18) and furthermore argue that research on public leadership needs to pay more attention to publicness itself. Based hereon, we aimed to contribute to the literature by developing a new and valid questionnaire on four specific public leadership roles that can be used by both scholars and practitioners in survey and experimental research.

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Appendix: Scales for measuring public leadership roles

Accountability leadership

My supervisor …

- …Encourages me and my colleagues to explain our actions to various stakeholders
- …Stimulates us to inform stakeholders of our way of working.
- …Provides us with the possibility to explain our behavior to stakeholders.
- …Emphasizes that it is important that we answer questions from clients.
- …Strives to ensure that we are openly and honestly share the actions of our organizational unit with others
- …Stimulates us to explain to stakeholders why certain decisions were taken

Rule-following leadership

My supervisor …

- …Emphasizes to me and my colleagues that it is important to follow the law
- …Gives me and my colleagues the means to properly follow governmental rules and regulations
- …Emphasizes that my colleagues and I should carry out government policies properly
- …Ensures that we accurately follow the rules and procedures.

Political loyalty leadership

My supervisor …

- …Encourages me and my colleagues to support political decisions, even when other stakeholders confront us with it
- ...Encourages me and my colleagues not to jeopardize the relationship with political heads at risk, even if that entails risks
- …Stimulates me and my colleagues to implement political decisions, even if that means additional responsibilities should be taken up
- …Encourages me and my colleagues to defend political choices, even if we see shortcomings
- …Encourages me and my colleagues to support political decisions, even when we see downsides

Network governance leadership

My supervisor …

- …Encourages me and my colleagues to maintain many contacts with other organizations
- …Encourages me and my colleagues to invest substantial energy in the development of new contacts
- …Stimulates me and my colleagues to regularly work together with people from our networks
- …Stimulates me and my colleagues to develop many contacts with people outside our own department
- …Stimulates me and my colleagues to introduce others to contacts of our own networks
- …Encourages me and my colleagues to be a 'linking pin' between different organizations

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