

# VALUE-ADDING DEVELOPMENT OF ORGANIZATIONAL COLLABORATION

# **Technical report**

Surveys of leaders and employees, pre-treatment, post-treatment and 1 year after treatment

# 2019 – 2023

Preliminary version: August 2021

Daniel Skov Gregersen Cecilie Lindgaard Petersen (CLP) Magnus Ugilt Rasmussen Lotte Bøgh Andersen (LBA) Anders Valentin Bager (AVB) Annie Bjørnsig Anne Bøllingtoft Rasmus Thy Grøn (RTG) Christian Bøtcher Jacobsen (CBJ) Thomas Faurholt Jønsson (TFJ) Anne Mette Kjeldsen (AMK) Clara Siboni Lund Margit Malmmose Lars Dahl Pedersen (LDP) Jan Tønnesvang (JT)

# Table of contents

1.	Description of the project	4
	1.1 Introduction	4
	1.2 Research questions and hypotheses	4
	1.3 Recruiting organizational units	5
	1.4 Randomization	6
	1.5 Content of development course	6
2.	Survey Setup, Collection Methods, Response Rates	9
	2.1 Guidelines for alterations	11
3.	Overview of the measured concepts and items	12
4.	Theoretical definitions, factor loadings and distributions	14
	Visionary/transformational leadership	14
	Vision employee specific questions	18
	Verbal transactional leadership	19
	Employee acceptance of management authority	22
	Leadership Identity	25
	Distributed leadership	28
	Perspectives from the Leadership Commission	35
	Professional development leadership	38
	Data-informed Leadership	44
	Public service motivation	47
	User orientation	53
	Perceived impact (on society and users)	55
	Value congruence/person-organization fit	56
	Intrinsic motivation	58
	Psychological needs – SDT and need for Meaning	59
	Intention to quit	69
	Task performance	70
	Openness	71
	Job satisfaction	73
	Stress	75
	Sick absence	76
	Presenteeism	78
	Mindset for individual level	80
	Mindset for organisational level	82
	Psychological safety	85

	Peer coaching	87
	Background information	90
	Type of shift	95
	Participation	95
	Evaluation	96
	Treatment check	97
	Continued work	99
5	5. Qualitative data collection	
	Purpose and Background	
	Data collection	
F	References	
ļ	Appendix	

### 1. Description of the project

#### 1.1 Introduction

Seen from an international perspective, Denmark has a well-functioning public sector with strong interaction between managers and employees when solving the tasks of the public organizations. Still, it is important to find new ways to increase goal attainment in public organizations. The overall goal for the public sector is to generate tangible value for the citizens and the society. The research project known as Value-Adding Development of Organizational Collaboration (the "VUOS" project) is to achieve just that.

The "VUOS" project aims to investigate which kind of organizational development best supports the generation of organizational results. More specifically, the project is implemented by offering organizational units (understood as the direct personnel manager and his/her employees) one of three different variants of the same type of development course. The objective of all three variants is to improve the ability of organizational units to attain their goals. Thus, the development courses must first and foremost benefit the participating organizational units and the citizen for whom the units are intended to generate value.

The participating organizational units are either supported in their development toward a stronger focus on organizational vision, a higher degree of balanced division of managerial tasks and increased motivation. All three variants have proven positive effects on the generation of organizational results. We randomize the organizational units to determine which development course the units will receive. More information on the randomization is found in section 2.

The participating units will be sections within the police force and the prosecution service, teams at socially sheltered housing projects and hospital sections.

#### 1.2 Research questions and hypotheses

The project is a panel study of the following questions:

Can organizational units develop toward increased employee motivation, a more balanced division of leadership tasks, a stronger focus on organizational vision and ultimately higher performance? Will possible effects of the development course vary across different professional and organizational contexts?

The ultimate goal is to generate knowledge of how public organizations can jointly work toward a higher level of goal attainment for the citizens. Hopefully the project will contribute to achieving precisely this in the organizations studied. Scientifically, the project contributes to an experimental study of three different intervention variants theoretically linked to the motivational literature, the literature on distributed leadership and the literature on goal-oriented leadership (transformational leadership (hereafter referred to as "visionary leadership") and transactional leadership (in the form of conditional use of verbal rewards – hereafter referred to as "verbal recognition").

Terminologically, we distinguish between managers (with leadership responsibility) and employees (without formal leadership responsibility).

#### The project has six hypotheses:

1. All three intervention variants increase the performance of the participating units

- 2. The intervention variant on motivation increases the employees' public service motivation and intrinsic task motivation
- 3. The distributed leadership intervention variant increases the extent of aligned division of leadership tasks with the employees, seen from both the supervisor's and the employees' perspective
- 4. The intervention variant on goal-oriented leadership increases the employees' support of the vision and clarifies the supervisor's performance expectations
- 5. All three intervention variants decrease the gap between employee- and leader reported leadership
- 6. All three intervention variants increase leader's level of leadership identity

Additionally, Rasmus Thy Grøn will use the data for his PhD project. In his project, Rasmus has four hypotheses regarding organizational learning. These hypotheses will be available in his dissertation.

The three intervention variants have different focus areas. Thus, the intervention variant on motivation is focused on all employees, the intervention variant on distributed leadership is focused on the interaction between managers and employees without formal leadership responsibility, while the intervention variant on goal-oriented leadership is focused on exercising and accepting leadership (by the formal manager and his/her employees, respectively).

#### 1.3 Recruiting organizational units

As mentioned, the development courses are offered to three types of organizational units: Units from the police force and the prosecution service, teams in socially sheltered housing projects within the disability and psychiatry area and hospital sections with nurses. It is the goal that a total of 216 organizational units (72 units from each of the three areas) shall participate in the "VUOS" project during the period September 2019 to April 2023, when the project will end, cf. Table 1. The table illustrates that we plan to collaborate with 24 organizational units for each combination of unit type and intervention variant. Assuming that an average of one manager and 20 employees attend each development course, it means that a total of 216 managers and approximately 4,300 employees will attend a development course.

	Sections within police force and	Teams in socially sheltered housing	Hospital sections with nurses
	prosecution service	projects	
Intervention variant on	24	24	24
motivation			
Intervention variant on	24	24	24
distributed leadership			
Intervention variant on goal-	24	24	24
oriented leadership			

Table 1. Target figures for the number of organizational units for each combination of unit type and intervention variant

There are three reasons for offering the development courses to these three types of units. First, a sufficient number of relatively similar organizational units exit so that we recruit 216 units. Second, it is large state, regional and municipal work areas, thus ensuring a broad coverage across the public sector. Third, the differences between the three types of organizational units enable us to study

whether the effects of the different intervention variants vary across different professional and organizational contexts.

The recruitment of the organizational units have taken place in different ways according to the organizational structure in the three types of organizational units. The first round of recruitment took place in the spring 2019 among the police force and the socially sheltered housing projects. At that time it was decided to postpone the recruitment of hospital units until later in the project.

The recruitment strategies in the three type of organizational units:

<u>In the police force</u>: The recruitment was initiated through the national police organization, called Rigspolitiet. The national police decided which of the 14 police districts should take part in the VOUS-project. 6 out of 14 districts, including the national police itself, were selected. Each district then had to choose which units who would participate. These units were then enrolled through a contact person from each district with the project leader at Crown Prince Frederik's center of Public Leadership.

<u>In the socially sheltered housing projects</u>: The recruitment was initiated through the nongovernmental organization *Socialt Lederforum*; a member organization where most leaders in that processional area are organized. *Socialt Lederforum* send out invitations to all their members to participate in the VUOS-project. The leaders then signed up individually and directly with the project leader at the Crown Prince Frederik's center of Public Leadership. The units were enrolled after a firstcome, first served policy and all seats were filled. A similar recruitment will take place in fall 2021 due to dropouts (the guidelines for dropouts are described in section 2.1)

<u>In the hospital sector</u>: The recruitment of hospital units was planned to happen relatively late in the project and further postponed due to the Covid-19 crisis.

#### 1.4 Randomization

For each type of organizational unit, the three development courses are distributed evenly, that is 24 units are assigned to each type of intervention for each type of organizational unit.

After the recruitment process, each recruited organizational unit was randomized to an intervention type and a facilitator. Within each sector, the type of intervention was randomly assigned for all the recruited units. Subsequently, the organizational units were assigned a facilitator from the Crown Prince Frederik Center for Public leadership. Sector wise, the facilitators were randomly assigned to the organizational units so that each facilitator had the same number of courses in each sector.

Under specific circumstances, the organizational units were randomized to another facilitator. This happened when the facilitator could not carry out the development course themselves due to sick leave, change in jobs etc. If the first assigned facilitator already had been in contact with the organization unit and had mentioned the intervention type, the organization units was randomly assigned a new facilitator with the same intervention type. However, if the first assigned facilitator for an organizational unit had not been in contact with the unit, then both the intervention type and facilitator were once again assigned at random.

#### 1.5 Content of development course

Table 2 gives an overview of the activities that are included as part of each of the three variants of the development course. The 'time' indication in the left column does not illustrate weeks during a

calendar year, but merely illustrates the expected timing in-between the various activities. The next page provides a brief explanation of the most important activities. The facilitators are the contact persons from the Crown Prince Frederik Center for Public Leadership. The same person is responsible for pre-meetings, development days and post-meetings for a given unit.

Time	Activity
XXX	The Crown Prince Frederik Center for Public Leadership sends project description to
	potentially participating personnel managers with information on the "VUOS" project.
XXX	The personnel manager decides that his/her unit wishes to participate in the "VUOS"
	project and notifies the COL hereof by filling out a registration template and submitting it
	to COL.
XXX	COL draws lots and decides which development course will be offered to the individual
	unit. This is communicated to the personnel manager and the timing for the development
	course is coordinated between the manager and the COL facilitator who will be in charge of
	the development course.
Week 1	The manager receives preparatory material from COL and works actively with this prior to
	the meeting between the manager and the facilitator who will be in charge of the
	development course.
Week 2-4	The personnel manager works with the preparatory material up to the pre-meeting.
Week 5	Pre-meeting between manager and facilitator. The meeting takes place in Aarhus or
	Copenhagen.
Week 5-7	COL submits a questionnaire (pre-survey) to manager and employees who must answer the
	questionnaire within three weeks. In addition, COL submits a brief description of the
	individual development course to the employees who will attend the development days.
Week 8	Development day 1
Week 9-11	Manager and employees work on two homework assignments between the development
	days.
Week 12	Development day 2
Week 15-17	COL submits a questionnaire (post-survey) to managers and employees who answer the
	questionnaire within 3 weeks.
Week 21	Post-meeting between the personnel manager and the facilitator who has been in charge
	of the development course. The meeting takes place in Aarhus or Copenhagen or by
	telephone and is based on a development report which will be submitted to the manager in
	advance. The report is based on the employees' answers to the two questionnaire surveys
	as well as data generated as part of the two development days.
1 year after	COL sends a questionnaire (post-survey) to personnel manager and employees who must
development	answer the questionnaire within 3 weeks.
day 2	

Table 2. Time schedule for participation in a development course

The design of the development courses is based on insights from both learning theory and research literature on the embedding of leadership and organizational development.

The participants' learning and subsequent behavior are subject the inclusion of cognitive, behavioral and motivational components in the development course. We therefore strive to include a combination of cognitive ("knowing what"), behavioral ("knowing how") and motivational elements ("being committed to change") in the learning model.

On this background, a learning model has been devised that applies across all three development courses. This learning model includes three overall learning levels (knowledge, reflection and action) as well as three learning processes (input process, translation process and feedback process). The overall learning model is illustrated in Figure 1.



Figure 1. The learning model

## 2. Survey Setup, Collection Methods, Response Rates

Before the employee and leader surveys where sent out to participating units, we ran three pilot studies in three different units, one from each sector.

The table below shows the response rates for the organizational units. The response rates categorized according to which semester the organizational units participated in the project. For organizational units where the development days extend over two semesters, the date of the first development day determines which semester that organizational unit belongs.

Time	# units	# lead ers	# employees	Avg. number of employees	Employee number variation	Response rate leaders	Avg. response rate employees	Response rate variation
Fall 2019	14	15	406	14	11-58	100 %	77 %	52%-100%
Spring 2020	4*	4	112	28	15-39	100 %	81 %	76%-100%
Fall 2020	20	20	336	16.8	8-24	100 %	91%	70%-100%
Spring 2021	8	8	127	15.9	11-21	100 %	83%	35%-91%
Fall 2021								
Spring 2022								
Fall 2022								

Table 3.1 Units, respondents and response rates pre surveys

\*Due to the covid-19 situation several of the planned courses were postponed. Read more below.

Table 3.2 Units, respondents and response rates for post survey

Time	# units	# leaders	# employees	Avg. number of employees	Employee number variation	Response rate leaders	Avg. response rate employees	Response rate variation
Fall 2019	14	15	402	28.7	11-58	100 %	59.3 %	32%-100%
Spring 2020	3(4)**	3	77	19.3	15-37	100 %	59,3%	41%-73%
Fall 2020	19(20)**	19	319	16.8	10-24	100%	76,2%	44%-95%
Spring 2021	8	8	124	15.5	11-22	100%	66.4%	50%-92%
Fall 2021								
Spring 2022								
Fall 2022								

\*\*At this stage of the project, some of the organizational units has not yet had the second development day. The first number represent the finished units with both development days completed, while the number in the parenthesis represents the full number of units for that semester.

Time	#	#	#	Avg.	Employee	Response	Avg.	Response
	units	leaders	employees	number of	number	rate	response rate	rate
				employees	variation	leaders	employees	variation
Fall	14	15	344	25.6	11-46	93,3 %	47.3 %	21%-89%
2019								
Spring	TBA							
2020								
Fall								
2020								
Spring								
2021								
Fall								
2021								
Spring								
2022								
Fall								
2022								

#### Table 4.2 Units, respondents and response rates for post-post survey

Table x.x Units, respondents and response rates for corona pre survey

Time	# units	# leaders	# employees	Avg. number of employees	Employee number variation	Response rate leaders	Avg. response rate	Response rate variation
Corona units	12	12	196	16.3	8-21	100 %	68%	20%-100%
Spring 2020	TBA							
Fall 2020								
Spring 2021								
Fall 2021								
Spring 2022								
Fall 2022								

#### 2.1 Guidelines for alterations

Any **project with a duration** over several years will have to deal with changes; that being changes in the **surrounding environment of the project** (Force Major), among staff or in the units of analysis. In the VUOS-project changes in all three areas have occurred and been dealt with systematically. In this section, the different strategies are presented (Please note that this is work in progress).

#### Force Major: The Covid-19 crisis

[Short presentation of the Covid-19 crisis in Denmark will follow here]. Different strategies were necessary depending on how far each unit were in the development course and how much the Covid-19 crisis and following lock down affected them.

#### Strategy 1: If day 1 of the development course had taken place

Under normal circumstances, there should be 4-6 weeks between day 1 and 2 of the development course. Due to the Covid-19 this was not possible for all units. For a longer period most workplaces where in lockdown and development courses could not be executed. To make sure that the participating units would get the most out of their treatment is was decided to prolong day 2 of the development course with 1,5 hour for all units affected by the lock down in particular. This extra time was spend on a recap of the most important theoretical and practical points from day 1. This strategy was applied to all units for whom day 1 and day 2 where separated by more than 12 weeks [an overview will follow].

#### Strategy 2: Data collection in an advanced stage before day 1 of the development course

The collection of data was influenced by the Covid-19 crisis as well. If a minimum of five employees and the leader had completed the pre-survey at the time of the lockdown, this data was included in data report to the organization units (in addition to the actual pre- and post-intervention data). This extra information was presented as "Covid-19 data" in addition to the up-to-date pre-survey, which the leader and employees had answered just before the actual training day.

#### Strategy 3: If the data collection had not yet started but the pre-meeting had been executed

These units proceed in the development course 'as normal', but the leader and the consultant discussed changes among the employees and refreshed the details of the development course in a "catch up meeting" 3 weeks prior to the new day 1.

#### Among the employees: New consultants

[text in progress]

#### Among the units: Changes of all sorts

[text in progress]

# 3. Overview of the measured concepts and items

[An introduction to this section will be a part of the next version of the report]

-		_
1 ai	ble	5.

Dimension	#	Leader	Leader	Leader	Employee	Employee	Employee
	items	pre	post	1Y after	pre	post	1Y after
Leadership							
Visionary	4	x	X	X	x	x	x
Visionary employee	2	-			x	x	x
specific							
Transactional	3	Х	Х	Х	X	X	Х
Accept	4				x	x	x
Identity	1	Х	Х	Х	x	x	x
Distributed*	5 (7)	Х	Х	Х	x	x	x
Alignment	5	Х	Х	Х	x	x	x
Commission	8 [7]**	Х			x		
Professional	12			Х			х
Development							
Leadership							
Data inform	4			Х			X
Leadership							
Motivation							
PSM	6	Х	Х	Х	x	X	Х
User orientation	4	Х	Х	Х	x	x	Х
PSI	2	Х	Х	Х	X	X	X
PJF	3	Х	Х	Х	x	X	Х
Intrinsic	4	Х	Х	Х	X	X	X
Autonomy	3	Х	Х	Х	x	X	Х
Competence	3	Х	Х	Х	X	X	X
Relatedness (users)	3				X	X	X
Relatedness	3	Х	Х	Х	X	X	X
(colleagues)							
Meaning	3	Х	Х	Х	x	х	Х
Other concepts							
Intention to quit	1	Х	Х	Х	x	x	х
Task performance	4			-	x	x	x
Openness	4	Х	_	-	x		
Job satisfaction	1	Х	Х	Х	x	X	Х
Stress	2	Х	Х	Х	x	X	Х
Sick absence*	1 (2)	Х	Х	Х	x	X	X
Presenteeism	1	Х	Х	Х	X	X	Х
Individual mindset	5	Х	Х	Х	x	X	Х
Psychological	5	Х	Х	Х	x	x	х
safety							
Organizational	5	Х	Х	Х	X	X	Х
mindset							

Team work and	5	Х	Х	Х	х	Х	х
collaboration							
Factual measures							
Background	6 [5]**	Х			х		
information							
Type of shifts	1				х		
Participation	1					х	
Evaluation	2		Х			х	
Treatment check	3		Х	Х		х	х
Continued work	1			Х			Х

\*Measurement tool changed from fall 2020

\* In the first round of post-post survey (E19), participant were asked about Covid19-specific sick absence

\*\* different control questions for leaders and employees

## 4. Theoretical definitions, factor loadings and distributions

This section introduces the theoretical definition of each measured concept, how each item in a given concept loads in a factor analysis, and the distribution of respondents for each concept. For non-validated concepts, we use explorative factor analysis, while we for validated concepts use confirmative factor analysis. The distribution for all concepts are presented as additive indexes to ensure easy interpretation. For some single item questions, histograms are also shown, while it is not meaningful to show the distributions for a select few of the questions.

In the part below, specific criteria for evaluation and imputations are used. For addictive indexes and explorative factor analyses, factor loadings > 0.4 are seen as satisfactory, while loadings > 0.6 are seen as good. For confirmatory factor analyses, standardized factor loadings should be at least 0.5 but ideally 0.7. Cronbach's alpha of 0.6 is seen as acceptable, while a value of 0.7 or above is seen as good. In explorative factor analysis, Bartlett test should be significant and the Kaiser MSA test (KMO) should be > 0.6, while we in confirmative factor analysis would prefer TLI and CFI to be >0.95 and TMSEA to be < 0.05.

If a respondent has missing values on one or more item in a concept, the missing data is replaced in order to ensure that we do not lose too many respondents when constructing the indexes. In the addictive indexes, the indexes are calculated based on each respondent's mean of his/her answered questions, when data is missing. However, in order to be a part of the indexes, a respondent must have answered more than 50% of the items for a given concept. In the confirmative factor analysis, the method of Full-information Maximum Likelihood (FIML) is used to deal with missing data. For explorative factor analysis, missing data is not replaced.

#### Visionary/transformational leadership

Visionary leadership in the VUOS project is the visionary part of transformational leadership (Jensen et al. 2019). It comprises behaviors that seek to 1) develop a clear vision of the core organizational goals, 2) share the vision with employees, and 3) sustain employees' attention to the vision in the short and the long run. The argument is that the leader intents to activate the higher-order needs of employees and motivate employees to go beyond self-interest for the sake of the organization. Consequently, we define visionary leadership (similar to the visionary aspect of transformational leadership) as "behaviors that seek to develop, share, and sustain a vision" (Jensen et al. 2019: 10).

The survey items are based on previous studies as indicated in Table # (Podsakoff et al. 1996; MacKenzie et al. 2001; Moynihan et al. 2012; Jensen et al. 2019). Both leaders and employees answer questions (with parallel wordings).

The following texts were used to introduce the questions:

"Leaders: The first questions are about your focus on clarifying the unit's direction and future for the employees. By vision, we mean a clear picture of what the employees as a whole should work towards. Danish: De første spørgsmål handler om dit fokus på at klargøre enhedens retning og fremtid for medarbejderne. Med vision mener vi et konkret billede af, hvad medarbejderne samlet skal arbejde hen imod.

Employees: The first questions are about your leaders' focus on clarifying the unit's goals and future for the employees. By vision, we mean a clear picture of what the employees as a whole should work

towards. Danish: De første spørgsmål handler om dine lederes fokus på at klargøre enhedens mål og fremtid for medarbejderne. Med vision mener vi et konkret billede af, hvad medarbejderne samlet skal arbejde hen imod."

	Leaders: As a leader I / Som leder	Source
vision_1	concretize a clear vision for the organizational unit's	Modified and tested by
	future.	Jensen et al. 2019 based on
		Moynihan et al. 2012,
	konkretiserer jeg en klar vision for enhedens fremtid.	
vision_2	make a continuous effort to generate enthusiasm for	Modified and tested by
	the [ORGANIZATION TYPES] vision.	Jensen et al. 2019 based on
		Podsakoff et al. 1996
	forsøger jeg at få medarbejderne til at acceptere fælles	
	mål for enheden.	
vision_3	strive to get the [ORGANIZATION TYPE] to work	Modified and tested by
	together in the direction of the vision.	Jensen et al. 2019 based on
		Podsakoff et al. 1996
	gør jeg en løbende indsats for at få enhedens	
	medarbejdere til at arbejde sammen i retning af visionen	
vision_4	strive to clarify for the employees how they can	Jensen et al. 2019
	contribute to achieving the [ORGANIZATION TYPE'S]	
	goals.	
	bestræber jeg mig på at gøre det klart for	
	medarbejderne, hvordan de kan bidrage til at opnå	
	medarbejderne, hvordan de kan bidrage til at opnå enhedens mål.	Source
Vision 1	medarbejderne, hvordan de kan bidrage til at opnå enhedens mål. Employees: My leader / Min leder	Source
Vision_1	medarbejderne, hvordan de kan bidrage til at opnå enhedens mål. Employees: My leader / Min leder concretizes a clear vision for the [ORGANIZATION	Source Modified and tested by
Vision_1	<ul> <li>medarbejderne, hvordan de kan bidrage til at opnå enhedens mål.</li> <li>Employees: My leader / Min leder</li> <li> concretizes a clear vision for the [ORGANIZATION TYPE] future.</li> </ul>	Source Modified and tested by Jensen et al. 2019 based on
Vision_1	medarbejderne, hvordan de kan bidrage til at opnå enhedens mål. Employees: My leader / Min leder concretizes a clear vision for the [ORGANIZATION TYPE] future.	Source Modified and tested by Jensen et al. 2019 based on Moynihan et al. 2012
Vision_1	medarbejderne, hvordan de kan bidrage til at opnå enhedens mål. Employees: My leader / Min leder concretizes a clear vision for the [ORGANIZATION TYPE] future. konkretiserer en klar vision for enhedens fremtid	Source Modified and tested by Jensen et al. 2019 based on Moynihan et al. 2012
Vision_1 Vision_2	medarbejderne, hvordan de kan bidrage til at opnå enhedens mål.         Employees: My leader / Min leder         concretizes a clear vision for the [ORGANIZATION TYPE] future.         konkretiserer en klar vision for enhedens fremtid         seeks to make employees accept common goals for the [ORGANIZATION TYPE]	Source Modified and tested by Jensen et al. 2019 based on Moynihan et al. 2012 Modified and tested by
Vision_1 Vision_2	<ul> <li>medarbejderne, hvordan de kan bidrage til at opnå enhedens mål.</li> <li>Employees: My leader / Min leder</li> <li> concretizes a clear vision for the [ORGANIZATION TYPE] future.</li> <li> konkretiserer en klar vision for enhedens fremtid</li> <li> seeks to make employees accept common goals for the [ORGANIZATION TYPE].</li> </ul>	Source Modified and tested by Jensen et al. 2019 based on Moynihan et al. 2012 Modified and tested by Jensen et al. 2019 based on MacKenzie et al. 2001
Vision_1 Vision_2	medarbejderne, hvordan de kan bidrage til at opnå enhedens mål. Employees: My leader / Min leder concretizes a clear vision for the [ORGANIZATION TYPE] future. konkretiserer en klar vision for enhedens fremtid seeks to make employees accept common goals for the [ORGANIZATION TYPE].	Source Modified and tested by Jensen et al. 2019 based on Moynihan et al. 2012 Modified and tested by Jensen et al. 2019 based on MacKenzie et al. 2001
Vision_1 Vision_2	<ul> <li>medarbejderne, hvordan de kan bidrage til at opnå enhedens mål.</li> <li>Employees: My leader / Min leder</li> <li> concretizes a clear vision for the [ORGANIZATION TYPE] future.</li> <li> konkretiserer en klar vision for enhedens fremtid</li> <li> seeks to make employees accept common goals for the [ORGANIZATION TYPE].</li> <li> forsøger at få medarbejderne til at acceptere fælles mål for enheden</li> </ul>	Source Modified and tested by Jensen et al. 2019 based on Moynihan et al. 2012 Modified and tested by Jensen et al. 2019 based on MacKenzie et al. 2001
Vision_1 Vision_2	medarbejderne, hvordan de kan bidrage til at opnå enhedens mål. Employees: My leader / Min leder concretizes a clear vision for the [ORGANIZATION TYPE] future. konkretiserer en klar vision for enhedens fremtid seeks to make employees accept common goals for the [ORGANIZATION TYPE]. forsøger at få medarbejderne til at acceptere fælles mål for enheden. strives to get the [ORGANIZATION TYPE] employees to	Source Modified and tested by Jensen et al. 2019 based on Moynihan et al. 2012 Modified and tested by Jensen et al. 2019 based on MacKenzie et al. 2001
Vision_1 Vision_2 Vision_3	<ul> <li>medarbejderne, hvordan de kan bidrage til at opnå enhedens mål.</li> <li>Employees: My leader / Min leder</li> <li> concretizes a clear vision for the [ORGANIZATION TYPE] future.</li> <li> konkretiserer en klar vision for enhedens fremtid</li> <li> seeks to make employees accept common goals for the [ORGANIZATION TYPE].</li> <li> forsøger at få medarbejderne til at acceptere fælles mål for enheden.</li> <li> strives to get the [ORGANIZATION TYPE] employees to work together in the direction of the vision</li> </ul>	Source Modified and tested by Jensen et al. 2019 based on Moynihan et al. 2012 Modified and tested by Jensen et al. 2019 based on MacKenzie et al. 2001 Modified and tested by Jensen et al. 2019 based on
Vision_1 Vision_2 Vision_3	<ul> <li>medarbejderne, hvordan de kan bidrage til at opnå enhedens mål.</li> <li>Employees: My leader / Min leder</li> <li> concretizes a clear vision for the [ORGANIZATION TYPE] future.</li> <li> konkretiserer en klar vision for enhedens fremtid</li> <li> seeks to make employees accept common goals for the [ORGANIZATION TYPE].</li> <li> forsøger at få medarbejderne til at acceptere fælles mål for enheden.</li> <li> strives to get the [ORGANIZATION TYPE] employees to work together in the direction of the vision.</li> </ul>	Source Modified and tested by Jensen et al. 2019 based on Moynihan et al. 2012 Modified and tested by Jensen et al. 2019 based on MacKenzie et al. 2001 Modified and tested by Jensen et al. 2019 based on Podsakoff et al. 1996
Vision_1 Vision_2 Vision_3	<ul> <li>medarbejderne, hvordan de kan bidrage til at opnå enhedens mål.</li> <li>Employees: My leader / Min leder</li> <li> concretizes a clear vision for the [ORGANIZATION TYPE] future.</li> <li> konkretiserer en klar vision for enhedens fremtid</li> <li> seeks to make employees accept common goals for the [ORGANIZATION TYPE].</li> <li> forsøger at få medarbejderne til at acceptere fælles mål for enheden.</li> <li> strives to get the [ORGANIZATION TYPE] employees to work together in the direction of the vision.</li> <li> aør en løbende indsats for at få enhedens</li> </ul>	Source Modified and tested by Jensen et al. 2019 based on Moynihan et al. 2012 Modified and tested by Jensen et al. 2019 based on MacKenzie et al. 2001 Modified and tested by Jensen et al. 2019 based on Podsakoff et al. 1996
Vision_1 Vision_2 Vision_3	<ul> <li>medarbejderne, hvordan de kan bidrage til at opnå enhedens mål.</li> <li>Employees: My leader / Min leder</li> <li> concretizes a clear vision for the [ORGANIZATION TYPE] future.</li> <li> konkretiserer en klar vision for enhedens fremtid</li> <li> seeks to make employees accept common goals for the [ORGANIZATION TYPE].</li> <li> forsøger at få medarbejderne til at acceptere fælles mål for enheden.</li> <li> strives to get the [ORGANIZATION TYPE] employees to work together in the direction of the vision.</li> <li> gør en løbende indsats for at få enhedens medarbejdere til at arbejde sammen i retning af visionen.</li> </ul>	Source Modified and tested by Jensen et al. 2019 based on Moynihan et al. 2012 Modified and tested by Jensen et al. 2019 based on MacKenzie et al. 2001 Modified and tested by Jensen et al. 2019 based on Podsakoff et al. 1996
Vision_1 Vision_2 Vision_3 Vision_4	<ul> <li>medarbejderne, hvordan de kan bidrage til at opnå enhedens mål.</li> <li>Employees: My leader / Min leder</li> <li> concretizes a clear vision for the [ORGANIZATION TYPE] future.</li> <li> konkretiserer en klar vision for enhedens fremtid</li> <li> seeks to make employees accept common goals for the [ORGANIZATION TYPE].</li> <li> forsøger at få medarbejderne til at acceptere fælles mål for enheden.</li> <li> strives to get the [ORGANIZATION TYPE] employees to work together in the direction of the vision.</li> <li> gør en løbende indsats for at få enhedens medarbejdere til at arbejde sammen i retning af visionen.</li> <li> strives to clarify for the employees how they can</li> </ul>	Source Modified and tested by Jensen et al. 2019 based on Moynihan et al. 2012 Modified and tested by Jensen et al. 2019 based on MacKenzie et al. 2001 Modified and tested by Jensen et al. 2019 based on Podsakoff et al. 1996
Vision_1 Vision_2 Vision_3 Vision_4	<ul> <li>medarbejderne, hvordan de kan bidrage til at opnå enhedens mål.</li> <li>Employees: My leader / Min leder</li> <li> concretizes a clear vision for the [ORGANIZATION TYPE] future.</li> <li> konkretiserer en klar vision for enhedens fremtid</li> <li> seeks to make employees accept common goals for the [ORGANIZATION TYPE].</li> <li> forsøger at få medarbejderne til at acceptere fælles mål for enheden.</li> <li> strives to get the [ORGANIZATION TYPE] employees to work together in the direction of the vision.</li> <li> gør en løbende indsats for at få enhedens medarbejdere til at arbejde sammen i retning af visionen.</li> <li> strives to clarify for the employees how they can contribute to achieving the [ORGANIZATION TYPE'S]</li> </ul>	Source Modified and tested by Jensen et al. 2019 based on Moynihan et al. 2012 Modified and tested by Jensen et al. 2019 based on MacKenzie et al. 2001 Modified and tested by Jensen et al. 2019 based on Podsakoff et al. 1996

Table X. Items measuring visionary (transformational) leadership

bestræber sig på at gøre det klart for medarbejderne,
hvordan de kan bidrage til at opnå enhedens mål.

#### Table x. Confirmatory factor analysis: Transformational leadership reported by leaders

Pretext: As a leader I	Loadings	R <sup>2</sup>
concretize a clear vision for the [ORGANIZATION TYPES] future	.661***	.437
	(.094)	
seek to make employees accept common goals for the	.695***	.483
[ORGANIZATION TYPE]	(.093)	
strive to get the [ORGANIZATION TYPE] employees to work	.742***	.551
together in the direction of the vision	(.091)	
strive to clarify for the employees how they can contribute to	.700***	.488
achieving the [ORGANIZATION TYPES] goals	(.093)	

Note: Standardized coefficients from the SEM-regression of each item on the predicted factor. N = 116. \*p<.05, \*\*p<.01, \*\*\*p<.001. CFI = .847 TLI = .541 RMSEA = .314. Cronbach's alpha = .790.

Table X. Committatory factor analysis. Transformational leadership reported by employe	Table x.	Confirmatory fact	or analysis: Tra	ansformational	leadership repo	orted by employe
--	----------	-------------------	------------------	----------------	-----------------	------------------

Pretext: My leader	Loadings	R <sup>2</sup>
concretizes a clear vision for the [ORGANIZATION TYPE] future	.806***	.650
	(.010)	
seeks to make employees accept common goals for the	.857***	.734
[ORGANIZATION TYPE]	(.008)	
strives to get the [ORGANIZATION TYPE] employees to work	.898***	.807
together in the direction of the vision	(.007)	
strives to clarify for the employees how they can contribute to	.883***	.780
achieving the [ORGANIZATION TYPE'S] goals	(.007)	

Note: Standardized coefficients from the SEM-regression of each item on the predicted factor. N = 1661. \*p<.05, \*\*p<.01, \*\*\*p<.001. CFI = .990 TLI = .971 RMSEA = .120. Cronbach's alpha = .920.

Across leaders and employees, all loadings reach a minimum of 0.6, and the alpha values show good internal reliability, especially for the employees (.92). The higher loadings for employee responses compared to leader responses may be partly due to the small leader sample size.



Figure x. Distribution of transformational leadership as reported by leaders

Note: N = 116. Mean = 4.27, std. dev = 0.54, min = 2, max = 5, skewness = -.922, kurtosis = 4.97. If the respondents had missing values on only one item, the missing values were replaced with mean values of the items they answered. Respondents with more than one missing value (i.e. less than three answers) were excluded from the analysis.

The distribution is left-skewed with a large peak near the mean, indicating that leaders in general perceive themselves to enact visionary/transformational leadership behavior to a large degree.



Figure x. Distribution of transformational leadership as reported by employees

Note: N = 1659. Mean = 3.91, std. dev = 0.82, min = 4, max =5, skewness = -.939, kurtosis = 4.21. If the respondents had missing values on only one item, the missing values were replaced with mean values of the items they answered. Respondents with more than one missing value (i.e. less than three answers) were excluded from the analysis.

The distribution for employees is also left-skewed. However, the mean value (3.91) is lower than the mean for leaders' self-reports (4.27). There are two notable peaks, one near the mean and one at the upper limit of the scale. The distribution indicates that employees in general perceive their leaders to enact visionary/transformational leadership behaviors to a large degree.

#### Vision employee specific questions

Given the organizational vision is an important part of visionary leadership, we used the validated questions from Høstrup & Andersen (2020) to see whether employees actually perceived that their organization had a vision and what the contents of this vision was. 73 percent of the employees stated that their organization had a vision (but not all these employees knew this vision).

	Employees:	Source
vision_lukket	Does your organization have a vision?	Høstrup & Andersen 2020
	Har din enhed en vision?	
vision_tekst	If the above question [vision_lukket] is answered	Høstrup & Andersen 2020
	positive, the following question was asked:	

In short, describe your understanding of the vision	
Hvis det ovenstående spørgsmål [Vision lukket]	
besvares positivt, er følgende spørgsmål stillet: Beskriv kort din forståelse af visionen	

-	-				
	Yes, and I	Yes, and I	No, my unit		
	know the	don't know	does not	l don't know	Total N
	vision	the vision	have a vision		
Does your	62 61%	10.20%	2 6 9 9/	24 419/	
organization	(1002)	10.50%	2.06%	24.41%	1602
have a vision?	(1003)	(202)	(43)	(391)	

#### Table X. Knowledge of the organizational unit's vision, employees

Note: percentages of observations in each category. Number of observations in parentheses.

#### Verbal transactional leadership

Transactional leadership is based on the exchange of contingent rewards and sanctions for predefined efforts (Podsakoff et al. 2006). It is defined "as the use of contingent rewards and sanctions" (Jensen et al. 2019: 12). Using rewards and sanctions to alter the costs and benefits of particular actions, the intention of transactional leadership is to make employees pursue their self-interest in a way that is beneficial to the organization. In the project, we focus on verbal rewards, because it are most relevant for public employees (e.g. Nielsen et. al. 2019; Andersen, Boye & Laursen 2018).

Survey measures capturing leaders' use of these instruments build mainly on existing studies (e.g. House 1998 and Jensen et al. 2019). One item is generated to capture the intention/perceived intention of the leader. The survey measures are distributed to leaders and employees.

The following texts were used to introduce the questions:

"Leaders: The following questions are about your focus on the use of recognition in the unit. *Danish: De følgende spørgsmål handler om dit fokus på brugen af anerkendelse i enheden.* 

Employees: The following questions are about your leader's focus on the use of recognition in the unit. Danish: De følgende spørgsmål handler om din leders fokus på brugen af anerkendelse i enheden."

#	Contingent non-pecuniary rewards: As a leader I/	Source
	Som leder	
transaktion_1	Give individual employees positive feedback when	Modified and tested by
	they perform well.	Jensen et al. 2019 based
		on House 1998
	Giver jeg individuelle medarbejdere positiv feedback,	
	hvis de præsterer godt.	
transaktion_2	Actively show my appreciation of employees who do	Modified and tested by
	their jobs better than expected.	Jensen et al. 2019 based
		on House 1998

Table #. Items measuring verbal transactional leadership

	Viser jeg aktivt min påskønnelse af medarbejdere, der	
	gør deres arbejde bedre end forventet.	
transaktion_3	Personally compliment employees when they do	Modified and tested by
	outstanding work.	Jensen et al. 2019 based
		on House 1998
	Roser jeg personligt medarbejdere, når de gør deres	
	arbejde særlig godt.	
	Contingent non-pecuniary rewards: My leader /	Source
	Min leder	
transaktion_1	Gives individual employees positive feedback when	Modified and tested by
	they perform well.	Jensen et al. 2019 based
		on House 1998
	Giver individuelle medarbejdere positiv feedback, hvis	
	de præsterer godt.	
transaktion_2	Actively shows his/her appreciation of employees	Modified and tested by
	who do their jobs better than expected.	Jensen et al. 2019 based
		on House 1998
	Viser aktivt sin påskønnelse af medarbejdere, der gør	
	deres arbejde bedre end forventet.	
transaktion_3	Personally compliments employees when they do	Modified and tested by
	outstanding work.	Jensen et al. 2019 based
		on House 1998
	Roser personligt medarbejdere, når de gør deres	
	arbejde særlig godt.	

Table x. Confirmatory factor analysis: Verbal transactional leadership reported by leaders

Contingent non-pecuniary rewards: As a leader I	Loadings	R <sup>2</sup>
Give individual employees positive feedback when they perform	.867***	.752
well	(.032)	
Actively show my appreciation of employees who do their jobs	.837***	.701
better than expected	(.035)	
Personally compliment employees when they do outstanding	.906***	.822
work	(.028)	

Note: Standardized coefficients from the SEM-regression of each item on the predicted factor. N = 117. \*p<.05, \*\*p<.01, \*\*\*p<.001. Model fit test for the CFA is not available, since the three-item structure implies zero degrees of freedom. Cronbach's alpha = .903.

Table x. Confirmatory factor analysis: Verbal transactional leadership reported by employees

Pretext: My leader	Loadings	R <sup>2</sup>
Gives individual employees positive feedback when they perform	.927***	.859
well	(.005)	
Actively shows his/her appreciation of employees who do their	.924***	.854
jobs better than expected	(.005)	
Personally compliments employees when they do outstanding	.944***	.890
work	(.004)	

Note: Standardized coefficients from the SEM-regression of each item on the predicted factor. N = 1654. \*p<.05, \*\*p<.01, \*\*\*p<.001. Model fit test for the CFA is not available, since the three-item structure implies zero degrees of freedom. Cronbach's alpha = .952.

Across leaders and employees, all loadings are high and reach a minimum value above 0.8. The alpha values show good internal reliability and is above 0.9 for both leaders and employees even though the leader sample is smaller in size.



Figure x. Distribution of verbal transactional leadership as reported by leaders

Note: N = 117. Mean = 4.30, std. dev = 0.66, min = 2, max =5, skewness = -.647, kurtosis = 2.96. If the respondents had a missing value on only one of the item, the missing value was replaced with the mean value of the items they answered. Respondents with more than one missing valu (i.e. less than two answers) were excluded.

The distribution is left-skewed. Two peaks are noticeable, of which the largest is at the upper limit of the scale. This indicates that leaders in general perceive themselves to enact verbal transactional leadership behavior to a large extent (mean = 4.30).



#### Figure x. Distribution of verbal transactional leadership as reported by employees

Note: N = 1653. Mean = 3.85, std. dev = 1.01 min = 1, max =5, skewness = -.734, kurtosis = 3.03. If the respondents had a missing value on only one of the item, the missing value was replaced with the mean value of the items they answered. Respondents with more than one missing value (i.e. less than two answers) were excluded.

The distribution is left-skewed. Just like in the analysis of the leaders, there is a peak at the upper limit of the scale. The mean of 3.85 indicates that employees generally percieve their leaders to enact verbal transactional leadership to a high degree, though the mean is slightly lower than the one reported by leaders. The larger standard deviation (1.01) also indicates a greater degree of variability in the answers given by the employees than in answers given by the leaders.

#### Employee acceptance of management authority

Employee acceptance of the formal leaders' management authority, i.e., the managers' right to decide on important organizational matters, is potentially important in explaining the possibility and success of introducing management interventions and organizational changes. Nielsen and Jacobsen (2018) developed four items to measure the concept for school principal leadership. Their measure focuses on acceptance of management in relation to broad matters of management and organization (personnel policies, organization of work, teaching methods, and organization of teacher cooperation). Each aspect was measured using a five-point Likert scale ranging from completely disagree to completely agree. Since the aspects are separate domains of influence, the scale can be regarded as formative, but factor loadings of the four items can still be relevant information if the specific answers to the items are seen as reflections of a latent willingness to accept managerial authority. We adapted their items to the investigated units in this project (they were also developed as general items). Similar to Nielsen and Jacobsen (2018), we reversed negatively worded items, and the scale is constructed as an additive index.

The following text was used to introduce the questions to the employees:

"The following questions are about acceptance of leadership. Please indicate how much you disagree/agree with the following statements. Danish: De følgende spørgsmål handler om accept af ledelse. Angiv venligst hvor uenig/enig, du er i følgende udsagn."

	Employees only	Source
accept_ledelse_1	Nielsen & Jacobsen 2018: The school principal should not be able to decide the teachers' teaching methods.	Adapted from Nielsen & Jacobsen 2018
	skolelederen bør ikke kunne bestemme lærernes valg af undervisningsmetoder.	
	Our measure: My leader should not be able to	
	decide the employees' working method.	
	Min leder bør ikke kunne bestemme	
	medarbejdernes valg af arbejdsmetoder.	
accept_ledelse_2	The school principal should not be able to decide	Adapted from Nielsen &
	on the organization of how teachers cooperate.	Jacobsen 2018
	Skolelederen bør ikke kunne bestemme over	
	organiseringen af lærernes samarbejde.	
	Our measure: My leader should not be able to	
	decide on the organization of how employees	
	cooperate.	
	Min leder bør ikke kunne bestemme over	
	organiseringen af medarbejdernes samarbejde.	
accept_ledelse_3	As a teacher you should accept that the school principal has the final say regarding the	Adapted from Nielsen & Jacobsen 2018
	organization of your work	500000000000000000000000000000000000000
	Som lærer bør man acceptere, at skolelederen har	
	det sidste ord i forhold til organiseringen af ens	
	arbejde.	
	Our measure: As an employee you should accept	
	that the leader has the final say regarding the	
	organization of your work.	
	Som medarbejder bør man acceptere, at lederen	
	har det sidste ord i forhold til organiseringen af ens arbejde.	
accept_ledelse_4	As a teacher you should accept that the school	Adapted from Nielsen &
	principal decides the school's personnel policy.	Jacobsen 2018

			-f		بالتلابير والتربار	:+
Table #. Em	ployee	acceptance	of manag	gement	authority,	items

Som lærer bør man acceptere, at skolelederen bestemmer skolens personalepolitik.	
Our measure: As an employee you should accept that the leader decides the unit's personnel policy. Som medarbejder bør man acceptere, at lederen bestemmer enhedens personalepolitik.	

Table x. Confirmatory factor analysis: Employee acceptance of management authority

	Loadings	R <sup>2</sup>
My leader should not be able to decide the employees' working	.629***	.396
method (reversed)	(.060)	
My leader should not be able to decide on the organization of	.917***	.843
how employees cooperate (reversed)	(.087)	
As an employee you should accept that the leader has the final	.121***	.015
say regarding the organization of your work	(.029)	
As an employee you should accept that the leader decides the	.077**	.006
unit's personnel policy	(.029)	

Note: Standardized coefficients from the SEM-regression of each item on the predicted factor. N = 1652. \*p<.05, \*\*p<.01, \*\*\*p<.001. CFI = .633 TLI = -.103 RMSEA = .349. Cronbach's alpha = .523.

The confirmatory factor analysis shows that the four items do not clearly reflect a single dimension. Though the factor loadings for the first two items are acceptable, the absolute loading values for the last two items are very low. The alpha reliability of .52 is low as well. This could indicate that the items are better used to construct a formative than a reflexive index when combined. Hence, one could consider dropping item 3 and item 4, when treating this concept as reflexive.



#### Figure X. Distribution of employee acceptance of management authority

Note: N = 1651, mean = 2.48, std. dev = 0.65, min = 1 max = 5, skewness = -.22, kurtosis = 3.48. For the index construction, items *accept\_ledelse\_1* and *accept\_ledelse\_2* were reversed by recording, so a high value indicated a high degree of accepted leadership for all items. If the respondents had a missing value on only one of the item, the missing value was replaced with the mean value of the three items they answered. Respondents with more than one missing value (i.e. less than three answers) were excluded from the analysis.

The index approaches a normal distribution with the mean around 2.48. There is considerable variability regarding the employees' acceptance of management authority. However, only a small part of the employees gave a rating above 4.

#### Leadership Identity

In the generic management literature, the concept of leadership identity is high on the research agenda. See (Epitropaki, Kark, Mainemelis, & Lord, 2017) for a review. Studies in this literature have shown that leadership identity increases leadership effectiveness (Day & Sin, 2011). Occupations are particularly important in the public sector, increasing the relevance of discussing leadership identity in the context of an existing substantive occupational identity of the public managers (Grøn, Bro, & Andersen, 2019). Given strong public sector occupations, taking on a leadership identity may demand a big change in public managers own view of who they are, balancing between leadership identity and occupational identity.

Leader-follower identity processes 'play a significant role in determining "who will lead" and "who will follow" as well as "how leaders and followers will influence" and "be influenced" (Epitropaki et al., 2017, p. 104). Leadership identity is often conceptualized and measured in terms of more or less leadership identity (Hiller, 2006; Kwok, Hanig, Brown, & Shen, 2018). We are interested in the public managers' leadership identity, as compared to their identity as members of a substantive occupational group (nurse, pedagogue or police officer). Due to social desirability bias, public managers may be

inclined to perceive themselves as leaders to a maximum degree. Hence, we measure leadership identity by letting the respondents prioritize between their occupational identity and their leadership identity as proposed by (Grøn et al., 2019).

Leaders were asked to assess on a Likert-scale from 0-10 which of the opposing identities mattered most, while employees were asked to rank their perception of their leader on the scale.

#### Leaders:

Danish version	English version
På en skala fra 0 til 10 hvordan vil du da vurdere	On a scale from 0-10, how would you assess
din faglige identitet i forhold til din identitet som	your occupational identity in relation to your
leder? Du skal se 0 som udtryk for, at din faglige	identity as leader? (0 = "My occupational
identitet er klart vigtigst. 5 udtrykker, at din	identity is clearly most important", 5 = "My
faglige identitet og din identitet som leder er lige	occupational identity and my leader identity
vigtige. 10 er udtryk for, at din identitet som	are equally important", 10 = "My leader
leder er klart vigtigst.	identity is clearly most important").

#### Employees:

Danish version	English version
På en skala fra 0 til 10 hvordan vil du da vurdere	On a scale from 0-10, how would you assess
din leders faglige identitet i forhold til	your leader's occupational identity in relation
hans/hendes identitet som leder?	to his/her identity as leader? (0 = "His/hers
Du skal se 0 som udtryk for,	occupational identity is clearly most
at hans/hendes faglige identitet er klart	important", 5 = "His/hers occupational
vigtigst for din leder. 5 udtrykker,	identity and his/hers leader identity are
at hans/hendes faglige identitet	equally important", 10 = "His/hers leader
og hans/hendes identitet som leder er lige	identity is clearly most important").
vigtige for din leder. 10 er udtryk for,	
at hans/hendes identitet som leder er klart	
vigtigst for din leder.	

		Source
leder_id	The employees'/leaders' assessment of their	(Grøn et al., 2019)
	leaders/their own leadership identity.	
	Medarbejdernes/ledernes vurdering af deres leders/deres	
	egen ledelsesidentitet.	





Note: N = 118, mean = 6.88, std. dev = 1.54, min = 0, max = 10, skewness = -.839, kurtosis = 5.54. OI = "Occupational identity clearly most important," EI = "Equally important," LI = "Leader identity clearly most important.".

The distribution is left-skewed, and a mean of 6.80 indicates that leaders generally consider their leader identity more important than their occupational identity. Only a small fraction of the leaders rated their occupational identity as being more important.





Note: N = 1622, mean = 5.77, std. dev = 1.97, min = 0, max = 10, skewness = -.020, kurtosis = 3.46. OI = "Occupational identity clearly most important," EI = "Equally important," LI = "Leader identity clearly most important.".

The distribution is slightly left-skewed, with a large peak in the middle of the scale (5). A mean of 5.76 indicate that employees generally consider their leaders' leader identity to be slightly more important for their leaders than their occupational identity. However, the distribution of the employees' responses shows greater variability than the leaders' responses, with relatively more employees perceiving their leaders' occupational identity to be more important for their leader.

#### **Distributed leadership**

Distributed leadership is a leadership approach that focuses on the role of employees in leading organizations. In contrast to leadership styles such as transformational and transactional leadership, which conceptualize behaviors enacted by the formal leader in relation to the followers, distributed leadership is an organizational entity where the practice of leadership is shared amongst organizational members (Harris 2008). Accordingly, distributed leadership can be defined as "when organizational members (leaders and employees) share the leadership task by acting together in exerting leadership". This requires that employees are able and willing to take on leadership as well as the formal leaders should be willing to distribute it.

Due to complex tasks with high levels of interdependency among actors, distributed leadership is especially relevant for performance in public service delivering organizations (Currie, Lockett and Suhomlinova 2009; Jakobsen, Kjeldsen and Pallesen 2016). Important is, however, to which extent the specific distributed leadership configuration in an organization is aligned (Harris 2008). Distributed

leadership is more likely to contribute positively to organizational goal attainment if there is agreement about the direction and principles for the leadership actions (Leithwood et al. 2007).

We focus on how organizational members engage in distributed leadership agency as a measure of the extent to which employees experience being actively involved in leadership activities related with organizational change, managing tasks and strengthening social relations at work (Jønsson et al. 2018: 911; Yukl 2013). In the early stage of the project this was measured with a seven-item short scale of the distributed leadership agency measure proposed and validated in a Danish hospital context by Jønsson et al. (2018). From the fall 2020 we use a newly developed five item scale validated in various organizations across different parts of the public sector in both qualitative and quantitative pilot studies. This scale more directly asks about the extent to which leadership behavior is a shared endeavor and how broadly leadership tasks are distributed (which tasks and to how many), (Kjeldsen et al. 2020). The scales can be seen below, while the old scale can be seen in the appendix.

All items are measured using Likert format questions ranging from "not at all" to "to a very high extent", and the final scale is constructed as an additive reflective index. Likewise, the formal leaders are asked to which extent they actively distribute leadership to their employees.

Alignment in distributed leadership is measured with a newly developed five-item scale asking about the extent to which organizational members agree on organizational goals, have shared understandings of organizational priorities, and are able to align their decisions among co-workers. All items are measured using Likert format questions ranging from "totally disagree" to "totally agree", and the final scale is constructed as an additive reflective index.

	Leaders/Employees: To what extent	Source
	Leder/Medarbejdere: I hvor høj grad	
distribueretledelse_1	Do leader and employees work together to solve	Own
	leadership tasks in your unit?	
	Samarbejder leder og medarbejdere om at løse	
	ledelsesopgaver i din enhed?	
distribueretledelse_2	Do employees influence the leadership tasks	Own
	they help solve in your unit?	
	Har medarbejdere indflydelse på de	
	ledelsesopgaver, de hjælper med at løse i din	
	enhed?	
distribueretledelse_3	E: Does your leader collaborate with many	Own
	different employees to solve leadership tasks?	
	M: Samarbejder din leder med <b>mange forskellige</b>	
	medarbejdere om at løse ledelsesopgaver?	
	L: Do you collaborate with many different	
	employees to solve leadership tasks?	
	L: Samarbejder du med <b>mange forskellige</b>	
	medarbejdere om at løse ledelsesopgaver?	

Table #. DL and alignment, items

distribueretledelse_4	E: Does your leader collaborate with employees	Own
	to solve leadership tasks that are important to	
	the unit?	
	M: Samarbejder din leder med medarbejdere om	
	at løse ledelsesopgaver, <b>der er vigtige</b> for	
	enheden?	
	L: Do you collaborate with employees to solve	
	leadership tasks <b>that are important</b> to the unit?	
	L: Samarbejder du med medarbejdere om at løse	
	ledelsesopgaver, <b>der er vigtige</b> for enheden?	
distribueretledelse_5	E: Does your leader collaborate with employees	Own
	to solve many different leadership tasks?	
	M: Samarbejder din leder med medarbejdere om	
	at løse mange forskellige ledelsesopgaver?	
	L: Do you collaborate with employees to solve	
	many different leadership tasks?	
	L: Samarbejder du med medarbejdere om at løse	
	mange forskellige ledelsesopgaver?	
	Leaders/Employees: In solving the unit's tasks,	Source
	my employees/my leader and I have a common	
	perception of	
	Leder/Medarbejdere: I løsningen af enhedens	
	opgaver har mine medarbejdere/min leder og jeg	
	en fælles opfattelse af	
afstemthed_1	The direction in which the tasks must be solved	Own
	in accordance with.	
	Retningen, som opgaverne skal løses i	
	Retningen, som opgaverne skal løses i overensstemmelse med.	
afstemthed_2	Retningen, som opgaverne skal løses i overensstemmelse med. The results to be accomplished when solving the	Own
afstemthed_2	Retningen, som opgaverne skal løses i overensstemmelse med. The results to be accomplished when solving the tasks.	Own
afstemthed_2	Retningen, som opgaverne skal løses i overensstemmelse med. The results to be accomplished when solving the tasks. Resultaterne, der skal opnås ved løsning af	Own
afstemthed_2	Retningen, som opgaverne skal løses i overensstemmelse med. The results to be accomplished when solving the tasks. Resultaterne, der skal opnås ved løsning af opgaverne.	Own
afstemthed_2 afstemthed_3	Retningen, som opgaverne skal løses i overensstemmelse med. The results to be accomplished when solving the tasks. Resultaterne, der skal opnås ved løsning af opgaverne. The settings that support a satisfactory solution	Own
afstemthed_2 afstemthed_3	Retningen, som opgaverne skal løses i overensstemmelse med. The results to be accomplished when solving the tasks. Resultaterne, der skal opnås ved løsning af opgaverne. The settings that support a satisfactory solution of the tasks.	Own Own
afstemthed_2 afstemthed_3	Retningen, som opgaverne skal løses i overensstemmelse med. The results to be accomplished when solving the tasks. Resultaterne, der skal opnås ved løsning af opgaverne. The settings that support a satisfactory solution of the tasks. Rammerne, der understøtter en tilfredsstillende	Own Own
afstemthed_2 afstemthed_3	Retningen, som opgaverne skal løses i overensstemmelse med. The results to be accomplished when solving the tasks. Resultaterne, der skal opnås ved løsning af opgaverne. The settings that support a satisfactory solution of the tasks. Rammerne, der understøtter en tilfredsstillende løsning af opgaverne.	Own Own
afstemthed_2 afstemthed_3 afstemthed_4	Retningen, som opgaverne skal løses i overensstemmelse med. The results to be accomplished when solving the tasks. Resultaterne, der skal opnås ved løsning af opgaverne. The settings that support a satisfactory solution of the tasks. Rammerne, der understøtter en tilfredsstillende løsning af opgaverne. The resources that support a satisfactory	Own Own Own
afstemthed_2 afstemthed_3 afstemthed_4	Retningen, som opgaverne skal løses i overensstemmelse med. The results to be accomplished when solving the tasks. Resultaterne, der skal opnås ved løsning af opgaverne. The settings that support a satisfactory solution of the tasks. Rammerne, der understøtter en tilfredsstillende løsning af opgaverne. The resources that support a satisfactory solution of the tasks.	Own Own Own
afstemthed_2 afstemthed_3 afstemthed_4	Retningen, som opgaverne skal løses i overensstemmelse med. The results to be accomplished when solving the tasks. Resultaterne, der skal opnås ved løsning af opgaverne. The settings that support a satisfactory solution of the tasks. Rammerne, der understøtter en tilfredsstillende løsning af opgaverne. The resources that support a satisfactory solution of the tasks. Ressourcerne, der understøtter en	Own Own Own
afstemthed_2 afstemthed_3 afstemthed_4	Retningen, som opgaverne skal løses i overensstemmelse med. The results to be accomplished when solving the tasks. Resultaterne, der skal opnås ved løsning af opgaverne. The settings that support a satisfactory solution of the tasks. Rammerne, der understøtter en tilfredsstillende løsning af opgaverne. The resources that support a satisfactory solution of the tasks. Ressourcerne, der understøtter en tilfredsstillende løsning af opgaverne.	Own Own Own
afstemthed_2 afstemthed_3 afstemthed_4 afstemthed_5	Retningen, som opgaverne skal løses i overensstemmelse med. The results to be accomplished when solving the tasks. Resultaterne, der skal opnås ved løsning af opgaverne. The settings that support a satisfactory solution of the tasks. Rammerne, der understøtter en tilfredsstillende løsning af opgaverne. The resources that support a satisfactory solution of the tasks. Ressourcerne, der understøtter en tilfredsstillende løsning af opgaverne. How the interaction between my leader and I	Own Own Own Own
afstemthed_2 afstemthed_3 afstemthed_4 afstemthed_5	Retningen, som opgaverne skal løses i overensstemmelse med. The results to be accomplished when solving the tasks. Resultaterne, der skal opnås ved løsning af opgaverne. The settings that support a satisfactory solution of the tasks. Rammerne, der understøtter en tilfredsstillende løsning af opgaverne. The resources that support a satisfactory solution of the tasks. Ressourcerne, der understøtter en tilfredsstillende løsning af opgaverne. How the interaction between my leader and I should be in solving the tasks.	Own Own Own Own
afstemthed_2 afstemthed_3 afstemthed_4 afstemthed_5	Retningen, som opgaverne skal løses i overensstemmelse med. The results to be accomplished when solving the tasks. Resultaterne, der skal opnås ved løsning af opgaverne. The settings that support a satisfactory solution of the tasks. Rammerne, der understøtter en tilfredsstillende løsning af opgaverne. The resources that support a satisfactory solution of the tasks. Ressourcerne, der understøtter en tilfredsstillende løsning af opgaverne. How the interaction between my leader and I should be in solving the tasks. Hvordan samspillet mellem min leder og jeg skal	Own Own Own Own Own

	Loadings	R <sup>2</sup>
Do leader and employees work together to solve leadership tasks	.711***	.506
in your unit?	(.066)	
Do employees influence the leadership tasks they help solve in	.796***	.633
your unit?	(.051)	
Do you collaborate with many different employees to solve	.857***	.735
leadership tasks?	(.038)	
Do you collaborate with employees to solve leadership tasks that	.798***	.636
are important to the unit?	(.050)	
Do you collaborate with employees to solve many different	.933***	.871
leadership tasks?	(.026)	

Table x. Confirmatory factor analysis: Distributed leadership reported by leaders

Note: Standardized coefficients from the SEM-regression of each item on the predicted factor. N = 68. \*p<.05, \*\*p<.01, \*\*\*p<.001. CFI = .985 TLI = .970 RMSEA = .101. Cronbach's alpha = .912.

Table x. Confirmatory factor analysis: Distributed leadership reported by employees

	Loadings	R <sup>2</sup>
Do leader and employees work together to solve leadership tasks	.810****	.656
in your unit?	(.014)	
Do employees influence the leadership tasks they help solve in	.775***	.601
your unit?	(.016)	
Does your leader collaborate with many different employees to	.825***	.680
solve leadership tasks?	(.133)	
Does your leader collaborate with employees to solve leadership	.832***	.692
tasks that are important to the unit?	(.013)	
Does your leader collaborate with employees to solve many	.855***	.731
different leadership tasks?	(.012)	

Note: Standardized coefficients from the SEM-regression of each item on the predicted factor. N = 845. \*p<.05, \*\*p<.01, \*\*\*p<.001. CFI = .974 TLI = .949 RMSEA = .128. Cronbach's alpha = .909.

The factor loadings for both leaders and employees are satisfactory and all above 0.7. The alpha values for both leaders and employees show good internal reliability. The items are therefore appropriate to use for index construction.



Figure x. Distribution of distributed leadership as reported by leaders

Note: N = 68, mean = 3.66, std. dev = .80, min = 1.6, max = .5, skewness = -.442, kurtosis = 2.86. If the respondents had a missing value on two of the items, the missing value was replaced with the mean value of the items they answered. Respondents with more than two missing value (i.e. less than three answers) were excluded.

The distribution approaches a normal distribution, but it is slightly left-skewed indicating that leaders generally perceive themselves as enacting distributional leadership behavior to a fairly large degree (mean = 3.66).



#### Figure x. Distribution of distributed leadership as reported by employees

Note: N = 840, mean = 3.35, std. dev = 0.80, min = 1, max = 5, skewness = -.194, kurtosis = 3.11. If the respondents had a missing value on two of the items, the missing value was replaced with the mean value of the items they answered. Respondents with more than two missing value (i.e. less than three answers) were excluded.

The distribution approaches a normal distribution with a peak at each side of the mean. The mean value (3.35) is slightly lower than the mean for leaders' self-reports (3.66). However, the mean for employees lies above the middle of the scale as well, indicating that employees generally perceive their leaders to enact distributed leadership behavior to a fairly large extent.

Pretext: In solving the unit's tasks, my employees and I have a	Loadings	R <sup>2</sup>
common perception of		
The direction in with the tasks must be solved in accordance with	.742***	.551
	(.056)	
The results to be accomplished when solving the tasks	.701***	.501
	(.059)	
The settings that support a satisfactory solution of the tasks	.682***	.465
	(.064)	
The resources that support a satisfactory solution of the tasks	.689***	.485
	(.063)	
How the interaction between my employees and I should be in	.714***	.501
solving the tasks	(.057)	

Table x. Confirmatory factor analysis: Alignment reported by leaders

Note: Standardized coefficients from the SEM-regression of each item on the predicted factor. N = 118. \*p<.05, \*\*p<.01, \*\*\*p<.001. CFI = .931 TLI = .863 RMSEA = .156. Cronbach's alpha = .830.

Table x.	Confirmatory	factor a	nalysis:	Alignment	reported	by employees
----------	--------------	----------	----------	-----------	----------	--------------

Pretext: In solving the unit's tasks, my leader and I have a	Loadings	R <sup>2</sup>
common perception of		
The direction in with the tasks must be solved in accordance with	.856***	.732
	(.008)	
The results to be accomplished when solving the tasks	.858***	.736
	(.008)	
The settings that support a satisfactory solution of the tasks	.860***	.740
	(.008)	
The resources that support a satisfactory solution of the tasks	.794***	.631
	(.011)	
How the interaction between my leader and I should be in solving	.799***	.638
the tasks	(.010)	

Note: Standardized coefficients from the SEM-regression of each item on the predicted factor. N = 1604. \*p<.05, \*\*p<.01, \*\*\*p<.001. CFI = .953 TLI = .907 RMSEA = .183. Cronbach's alpha = .919.

The factor loadings for both leaders and employees are satisfactory, though the latent structure appears most clearly in the factor analysis of the employees' responses. The alpha scores in both analyses show good internal reliability, but is higher for the employees. The items are therefore used to construct indices in the following section.

Figure x. Distribution of alignment as reported by leaders



Note: N = 118, mean = 3.81, std. dev = 0.54, min = 2.4, max = 5, skewness = -.291, kurtosis = 2.87. If the respondents had a missing value on two of the items, the missing value was replaced with the mean value of the items they answered. Respondents with more than two missing value (i.e. less than three answers) were excluded.

The distribution approaches a normal distribution, but the mean is still relatively high (3.81), as none of the leaders' self-reports correspond to a score lower than 2.4 on the scale. This indicates that leaders generally perceive themselves to be highly aligned with employees.



Figure x. Distribution of alignment as reported by employees

Note: N = 1599, mean = 3.74, std. dev = 0.77, min = 1, max = 5, skewness = -.530, kurtosis = 3.41. If the respondents had a missing value on two of the items, the missing value was replaced with the mean value of the items they answered. Respondents with more than two missing value (i.e. less than three answers) were excluded.

The distribution is slightly left-skewed with a spike just above the mean. The mean (3.74) is very near the mean for the leaders' self-reports, but there is generally greater variation in the answers given by the employees.

#### Perspectives from the Leadership Commission

The Danish Leadership and Management Commission published its report in 2018 (Ledelseskommissionen 2018). In this section, we discuss the items we used to identify differences in leaders' and followers' perception of some of the most important recommendations from the commission and to follow the development over time.

The following text was used to introduce the questions to the employees and leaders:

"The following questions are based on recommendations from the Leadership Commission. Please indicate how much you agree/disagree with the following statements. Danish: De følgende spørgsmål tager udgangspunkt i anbefalinger fra ledelseskommissionen. Angiv venligst hvor uenig/enig, du er i følgende udsagn."

Table #. Leadership commission, items

	Leaders: I/Employees: My leader	Source
	Leder: Jeg/Medarbejdere: Min leder	
kommision1	L: have developed to be a more active leader in	Ledelseskommissionen
	the past year.	2018
	L: har udviklet mig til at blive en mere aktiv leder	
	i det seneste år.	
	E: has developed to be a more active leader in	
	the past year.	
	M: har udviklet sig til at blive en mere aktiv leder	
	i det seneste år.	
kommision2	L: make it clear what values my exercise of	Ledelseskommissionen
	leadership is rooted in.	2018
	L: gør det tydeligt, hvilke værdier min udøvelse af	
	ledelse er forankret i.	
	E: makes it clear what values his/her exercise of	
	leadership is rooted in.	
	M: gør det tydeligt, hvilke værdier hans/hendes	
	udøvelse af ledelse er forankret i.	
kommision3	L: have an ongoing dialogue with my own leader	Ledelseskommissionen
	about the operational results my unit creates.	2018
	L: har en løbende dialog med min egen leder om	
	de driftsmæssige resultater, min enhed skaber.	
	Please indicate how much you disagree/agree	
	with the following statements.	
	Angiv venligst hvor uenig/enig, du er i følgende	
1	uasagn.	
KOMMISION4	Everything we do is based on creating value for the	Ledelseskommissionen
	Alt hvad vi agr. tagar udgangspunkt i at skaba	2018
	All, Indu vi gør, lager uugungspunkt i út skabe	
kommisionE	With us, it does not have any consequences if you	Ladalsaskammissionan
KOITIITIISIOITS	do not perform at work	2018
	Hos os har det ikke nogen konsekvenser hvis man	2010
	ikke præsterer på arbeidet	
Kommision6	Our ongoing efforts for improvement are based on	l edelseskommissionen
	knowledge about which efforts vield the best	2018
	results.	
	Vores løbende bestræbelser på forbedrina er	
	baseret på viden om, hvilke indsatser der aiver	
	bedst resultater.	
kommision7a	On my area, the national politicians set a direction	Ledelseskommissionen
	that benefits the citizens.	2018
	De nationale politikere sætter på mit område en	
------------------	--	----------------------
	retning, der er til gavn for borgerne.	
kommision7b	On my area, the regional politicians set a direction	Ledelseskommissionen
	that benefits the patients.	2018
	Regionspolitikerne sætter på mit område en	
	retning, der er til gavn for patienterne.	
kommision7c	On my area, the local politicians set a direction that	Ledelseskommissionen
	benefits the residents in the social services.	2018
	Kommunalpolitikerne sætter på mit område en	
	retning, der er til gavn for beboerne i de sociale	
	tilbud.	
kommision7samlet	On my area, the politicians set a direction that	Sum at 7a, 7b & 7c
	benefits the end-user on my area.	
	Politikerne på mit område sætter en retning der er	
	til gavn for slutbrugeren på mit område.	
kommision8a	The work of our cooperation committee is	Ledelseskommissionen
	primarily about creating value for the citizens.	2018
	Arbejdet i vores samarbejdsudvalg handler primært	
	om at skabe værdi for borgerne.	
kommision8b	The work of our MED-committee is primarily about	Ledelseskommissionen
	creating value for the citizens.	2018
	Arbejdet i vores MED-udvalg handler primært om	
	at skabe værdi for borgerne.	
kommision8c	The work of our MED-committee is primarily about	Ledelseskommissionen
	creating value for the patients.	2018
	Arbejdet i vores MED-udvalg handler primært om	
	at skabe værdi for patienterne.	
kommision8samlet	The work of the committees is primarily about	Sum at 8a, 8b & 8c
	creating value for the end-user.	
	Arbejdet i udvalgene handler primært om at skabe	
	værdi for slutbrugeren.	

\* 7a+7b= police, 7b+8c = hospitals, 7c+8b = socially sheltered housing.

The table below shows to what degree the leaders agree or disagree with the specific items form the Leadership Commission.

	Strongly disagree	Disagree	Neither disagree nor disagree	Agree	Strongly agree	Mean	Total N
kommision_1	0%	5.08%	18.64%	44.07%	32.20%	4.02	50
	(0)	(3)	(11)	(26)	(19)	4.05	- 59
kommision_2	0%	0%	10.34%	58.62%	31.03%	1 21	EQ
	(0)	(0)	(6)	(34)	(18)	4.21	50
kommision_3	0%	1.69%	13.56%	45.76%	38.98%	1 22	50
	(0)	(1)	(8)	(27)	(23)	4.22	- 29

Table x. Leadership Commission items, leaders

kommision_4	0%	5.08%	13.56%	49.15%	32.20%	1 09	59
	(0)	(3)	(8)	(29)	(19)	4.00	29
kommision_5	30.51%	47.46%	16.95%	3.39%	1.69%	1.09	FO
	(18)	(28)	(10)	(2)	(1)	1.98	29
kommision_6	0%	8.47%	20.34%	59.32%	11.86%	2 75	FO
	(0)	(5)	(12)	(35)	(7)	3.75	59
kommision_7	0%	11.86%	32.20%	55.93%	0%	2 1 1	F0
samlet	(0)	(7)	(19)	(33)	(0)	5.44	59
kommision_8	0%	14.04%	42.11%	35.09%	8.77%	2.20	F 7
samlet	(0)	(8)	(24)	(20)	(5)	5.39	57

Note: percentages of observations in each category. Number of observations in parentheses. The answers were assigned the following values to calculate the mean: strongly disagree = 1, disagree = 2, neither disagree nor disagree = 3, agree = 4, strongly agree = 5.

The table below shows to what degree the employees agree or disagree with the specific items form the Leadership Commission.

	Strongly disagree	Disagree	Neither disagree nor disagree	Agree	Strongly agree	Mean	Total N
kommision_1	2.39%	6.18%	46.85%	28.96%	15.62%	2.40	922
	(22)	(57)	(432)	(267)	(144)	3.49	
kommision_2	2.16%	6.92%	31.89%	36.86%	22.16%	2 70	0.25
	(20)	(64)	(295)	(341)	(205)	5.70	925
kommision_4	1.97%	7.76%	19.78%	42.19%	28.31%	2 0 7	015
	(18)	(71)	(181)	(386)	(259)	5.67	515
kommision_5	25.82%	33.59%	27.79%	10.07%	2.74%	2 20	014
	(236)	(307)	(254)	(92)	(25)	2.50	514
kommision_6	2.74%	7.79%	33.66%	41.56%	14.25%	2 5 7	012
	(25)	(71)	(307)	(379)	(130)	5.57	912
kommision_7	8.94%	20.31%	47.35%	20.20%	3.20%	2 00	006
samlet	(81)	(184)	(429)	(183)	(29)	2.00	900
kommision_8	2.36%	6.31%	58.78%	26.24%	6.31%	2 70	000
samlet	(21)	(56)	(522)	(233)	(56)	5.28	000

Table x. Leadership Commission items, employees

Note: percentages of observations in each category. Number of observations in parentheses. Question 3 only answered by leaders. The answers were assigned the following values to calculate the mean: strongly disagree = 1, disagree = 2, neither disagree nor disagree = 3, agree = 4, strongly agree = 5.

# Professional development leadership

Professional development leadership is a leadership approach that focuses on the professional resources of the employees, that is, their specialized, theoretical knowledge and professional norms (Andersen and Pedersen 2012). The core ambition of professional development leadership is to facilitate a shared understanding of professional quality in an organizational unit and realize it in practice. The core behaviors of professional development leadership comprise the leader's *attempts* to create alignment between organizational goals and professional norms, develop professional knowledge, and activate professional norms and knowledge in practice (Lund 2021).

The measure of professional development leadership is a new measure consisting of 12 items (Lund 2021). Some of them are inspired by the measures of professional development leadership applied by the Danish Leadership and Management Commission (Ledelseskommissionen 2018) and the National Leadership Evaluation (Ledelsesevalueringen, 2021). All items are measured using a 5-point Likert scale ranging from "strongly disagree" to "strongly agree".

		Source
	Leader: As leader	
	Medarbeidere: Min leder	
	Leder: Som leder	
faglig1_1	<ul> <li>E: Makes an effort to ensure a common understanding of professional quality in my unit.</li> <li>M: Gør en aktiv indsats for at sikre en fælles forståelse af faglig kvalitet i min enhed.</li> </ul>	Lund 2021
	L: I make an active effort to ensure a common understanding of professional quality in my unit. L: Gør jeg en aktiv indsats for at sikre en fælles forståelse af faglig kvalitet i min enhed.	
faglig1_2	<ul> <li>E: Works actively to ensure that there is coherence between professional norms and the unit's objectives.</li> <li>M: Arbejder aktivt for, at der er sammenhæng mellem faglige normer og enhedens målsætninger.</li> </ul>	Lund 2021
	<ul><li>L: I work actively to ensure that there is coherence between professional norms and the unit's objectives.</li><li>L: Arbejder jeg aktivt for, at der er sammenhæng mellem faglige normer og enhedens målsætninger.</li></ul>	
faglig1_3	<ul> <li>E: Tries to develop the employees' professional norms towards the unit's objectives.</li> <li>M: Forsøger at udvikle medarbejdernes faglige normer i retningen af organisationens målsætninger.</li> <li>L: I try to develop the employees' professional</li> </ul>	Lund 2021

Table X. Professional development leadership, Items

	L: Forsøger jeg at udvikle medarbejdernes	
	faglige normer i retningen af organisationens	
	målsætninger.	
faglig1_4	E: Works on translating the organization's	Lund 2021
	objectives to ensure that they are professionally	
	meaningful.	
	M: Arbeider med at oversætte organisationens	
	målsætninger, så de er fagligt meningsfulde.	
	L: I work on translating the organization's	
	objectives to ensure that they are professional	
	meaningful.	
	L: Arbeider ieg med at oversætte	
	organisationens målsætninger, så de er fagligt	
	meningsfulde	
faglig2 1	F: Actively contributes to ensure that the	Lund 2021
108.82_2	employees are professionally updated	
	M: Bidrager aktivt til at medarheiderne er	
	faaliat ondaterede	
	1. Lactively contribute to ensure that the	
	employees are professionally undated	
	1: Bidrager jeg aktivt til at medarheiderne er	
	faaliat ondaterede	
faglig2 2	F. Makes an active effort to ensure the	Lund 2021
108.8	employees' professional development	
	M' Gør en aktiv indsats for at sikre	
	medarbeidernes faaliae udvikling.	
	L: I make an active effort to ensure the	
	employees' professional development.	
	L: Gør ieg en aktiv indsats for at sikre	
	medarbeidernes faaliae udviklina.	
faglig2 3	E: Prioritizes resources so that employees can	Lund 2021
002	acquire new professional knowledge.	
	M: Prioriterer ressourcer til. at medarbeiderne	
	kan tileane sia ny faalia viden.	
	L: I prioritize resources so that employees can	
	acquire new professional knowledge.	
	L: Prioriterer jeg ressourcer til, at	
	medarbejderne kan tilegne sig ny faglig viden.	
faglig2_4	E: Supports knowledge sharing in order to make	Lund 2021
	our solution of the task even better.	
	M: Understøtter videndelina med henblik på at	
	gøre vores løsning af opgaven endnu bedre.	

	L: I support our knowledge sharing in order to	
	make our solution of the task even better.	
	L: Understøtter jeg videndeling med henblik på	
	at gøre vores løsning af opgaven endnu bedre.	
faglig3_1	E: Contributes to ensure the professional	Lund 2021
	quality of our work.	
	<i>M: Er med til at sikre den faglige kvalitet af vores</i>	
	arbejde.	
	L: I contribute to ensure the professional quality	
	of our work.	
	L: Er jeg med til at sikre den faglige kvalitet af	
	vores arbejde.	
faglig3_2	E: Actively supports the employees' application	Lund 2021
	of professional knowledge in the task solution.	
	M: Understøtter aktivt, at medarbejderne	
	anvender faglig viden i opgaveløsningen.	
	L: I actively support the employees' application	
	of professional knowledge in the task solution.	
	L: Understøtter jeg aktivt, at medarbejderne	
	anvender faglig viden i opgaveløsningen.	
faglig3_3	E: Creates opportunities to discuss professional	Lund 2021
	norms.	
	M: Skaber anledninger til at drøfte faglige	
	normer.	
	L: I create opportunities to discuss professional	
	norms.	
	L: Skaber jeg anleaninger til at arøfte faglige	
faglig2 4	normer.	Lund 2021
10g11g5_4	notessional reflection in the work	
	M: Gør en aktiv indsats for at sikre den faalige	
	refleksion i arheidet	
	L: I make an active effort to ensure the	
	professional reflection in the work	
	L: Gør ieg en aktiv indsats for at sikre den faglige	
	refleksion i arbejdet.	

Due to lack of observations (n=13) no explorative factor analysis were made for the leaders in this version of the report.

	faglig1_1	faglig1_2	faglig1_3	faglig1_4	faglig2_1	faglig2_2	faglig2_3
faglig1_1	1						
faglig1_2	0.84	1					
faglig1_3	0.83	0.81	1				
faglig1_4	0.79	0.78	0.83	1			
faglig2_1	0.64	0.59	0.60	0.59	1		
faglig2_2	0.64	0.60	0.60	0.59	0.83	1	
faglig2_3	0.52	0.52	0.49	0.47	0.70	0.76	1
faglig2_4	0.69	0.70	0.66	0.66	0.75	0.78	0.72
faglig3_1	0.74	0.68	0.70	0.69	0.73	0.72	0.59
faglig3_2	0.69	0.66	0.66	0.69	0.71	0.71	0.57
faglig3_3	0.72	0.71	0.69	0.72	0.66	0.64	0.57
faglig3_4	0.77	0.71	0.70	0.71	0.65	0.68	0.59

Table x: Correlation matrix. Professional development leadership items as reported by employees

## Table x (continued)

	faglig2_4	faglig3_1	faglig3_2	faglig3_3	faglig3_4
faglig2_4	1				
faglig3_1	0.77	1			
faglig3_2	0.69	0.78	1		
faglig3_3	0.71	0.72	0.76	1	
faglig3_4	0.74	0.80	0.78	0.84	1

Note: Table entries are Pearson's correlation coefficients. N=136.

Table x.	Test of	assum	otions	for	factor	analy	/sis
		0.000					

Kaiser-Meyer-Olkin Measure of	0.949	
Bartlett's Test of Sphericity Chi-square		1714.06
	Degrees of freedom	66
	p-value	0.000

Note: H0: variables are not intercorrelated.

All inter-item correlations are above r = 0.45, and the Bartlett's test indicate that the correlation matrix is significantly different from a matrix in which all variables are uncorrelated. The value of the KMO-test (.95) indicates that a large proportion of variation might be caused by underlying variables.

Table x. Exploratory factor analysis: Professional development leadership as reported by employees

Pretext: My leader	Loadings
Makes an effort to ensure a common understanding of professional	.868
quality in my unit.	
Works actively to ensure that there is coherence between professional	.839
norms and the unit's objectives.	
Tries to develop the employees' professional norms towards the unit's	.836
objectives.	
Works on translating the organization's objectives to ensure that they	.825
are professionally meaningful.	

Actively contributes to ensure that the employees are professionally	.816
updated.	
Makes an active effort to ensure the employees' professional	.829
development.	
Prioritizes resources so that employees can acquire new professional	.711
knowledge.	
Supports knowledge sharing in order to make our solution of the task	.860
even better.	
Contributes to ensure the professional quality of our work.	.867
Actively supports the employees' application of professional	.843
knowledge in the task solution.	
Creates opportunities to discuss professional norms.	.851
Makes an active effort to ensure the professional reflection in the	.877
work.	

Note: Extraction method: Principal factor analysis. One factor with an Eigenvalue higher than 1 was extracted. N = 136. Cronbach's alpha = .964.

All items load highly on the same latent dimension. The alpha value (.96) indicates a very strong internal reliability. Below an additive index for the concept is presented.



Figure x. Distribution of professional development leadership as reported by employees

Note: N =138. Mean = 3.96, std. dev = .84, min = 1, max = 5, skewness = -1.25, kurtosis = 4.80. If the respondents had a missing value on five of the items, the missing value was replaced with the mean value of the of the items they answered. Respondents with more than five missing value (i.e. less than seven answers) were excluded.

The distribution is strongly left-skewed. A high mean of 3.96 suggests that employees in general perceive their leaders to enact professional development leadership behavior to a large degree.

# Data-informed Leadership

Data-informed leadership concerns decision making, learning, follow-up and improvement based on the information data provides. The systematically generated data and gives knowledge about how the organization performs on certain measures. In turn, this information can help the manager evaluate if the organization reach its goal and highlight areas of improvement. Thus, data informed leadership can be utilized for strategic decision making. However, Data-informed leadership in itself is not necessarily enough to motivate the employees to achieve the goals of the organization. Other leadership behavior may enhance the effect of data-informed leadership (Gregersen et al. 2021).

For both leaders and employees we measure the perception of data-informed leadership by focusing on the specific phases of a performance management process, i.e. situations where a leader could reach out to the employees and thus make the use of data apparent. These phases are problem identification, causal understanding, initiative creation and initiative evaluation. The measure has previously applied to measure the employees' perception about the leaders use of data (Gregersen et al. 2021), however in this survey, we also use the same scale to measure the perception of the leaders.

The following texts were used to introduce the questions:

"These questions are about your leader's use of data as a basis for his leadership. We use the word 'data' in a broad sense so in addition to numbers, it also covers systematic observations and feedback from the employees. Danish: Disse spørgsmål handler om din leders brug af data som grundlag for sin ledelse. Vi bruger ordet 'data' i bred forstand således, at det udover tal også dækker over systematiske observationer og feedback fra medarbejderne.

These questions are about your use of data as a basis for your leadership. We use the word 'data' in a broad sense so in addition to numbers, it also covers systematic observations and feedback from the employees. Danish: Disse spørgsmål handler om din brug af data som grundlag for din ledelse. Vi bruger ordet 'data' i bred forstand således, at det udover tal også dækker over systematiske observationer og feedback fra medarbejderne. "

	Employees: To what extent do you find that	Source
	your leader uses data to	
	Medarbejdere: I hvilken grad oplever du at din	
	leder bruger data til at	
	Leader: To what extent do you as a leader use	
	data to	
	Leder: I hvilken grad bruger du som leder data	
	til at	
data_ledelse_1	identify problems that need to be handled.	Gregersen et al. 2021
	identificere problemer, der skal håndteres.	
data_ledelse_2	understand the causes of good results or	Gregersen et al. 2021
	problems.	
	forstå årsager til gode resultater eller	
	problemer.	
data_ledelse_3	prioritize new efforts.	Gregersen et al. 2021

#### Table X. Items measuring data informed leadership

	prioritere nye indsatser.	
data_ledelse_4	follow whether efforts work as desired.	Gregersen et al. 2021
	følge om indsatser fungerer som ønsket.	

Note: These questions were only asked in the post-post survey.

#### Table x. Confirmatory factor analysis: Data informed leadership reported by leaders

Pretext: To what extent do you as a leader use data to	Loadings	R <sup>2</sup>
identify problems that need to be handled.	.453	.205
	(.231)	
understand the causes of good results or problems.	.968***	.936
	(.750)	
prioritize new efforts.	.898***	.807
	(.085)	
follow whether efforts work as desired.	.692***	.479
	(.164)	

Note: Standardized coefficients from the SEM-regression of each item on the predicted factor. N = 13. \*p<.05, \*\*p<.01, \*\*\*p<.001. CFI = 1, TLI = 1, RMSEA not shown due to small sample size. Cronbach's alpha = .841.

Pretext: To what extent do you find that your leader uses data	Loadings	R <sup>2</sup>
to		
identificere problemer, der skal håndteres	.856***	.733
	(.026)	
forstå årsager til gode resultater eller problemer	.940***	.884
	(.015)	
prioritere nye indsatser	.901***	.811
	(020)	
følge om indsatser fungerer som ønsket	.895***	.801
	(.021)	

Table x	Confirmator	factor ana	lysis <sup>,</sup> Data	informed	leadershin r	enorted h	v employ	
i able x.	Commatory	y lactor alla	iysis. Dala	monneu	reauership r	eponeu p	y employ	yees

Note: Standardized coefficients from the SEM-regression of each item on the predicted factor. N = 136. \*\*\*p<.001. CFI = 1, TLI = 1, RMSEA not shown due to small sample size. Cronbach's alpha = .944.

Across leaders and employees, the loadings are generally very high, indicating that the latent variable is a good predictor of values on each item. The exception is the first item in the analysis of leader replies, however the sample size for the leaders is very small. The coefficient is much higher in the analysis for employees, in which the sample size is also larger. The alpha values show good internal reliability, especially for the employees (.94).



### Figure x. Data informed leadership as reported by leaders

Note: N =14. Mean = 3.83, std. dev = 0.64, min =10, max = 5, skewness = -.666, kurtosis = 4.48. If the respondents had missing values on only one item, the missing values were replaced with mean values of the items they answered. Respondents with more than one missing value (i.e. less than three answers) were excluded from the analysis.

The mean for the leaders are 3.83, but due to the lack of observations, it is not meaningful to say anything meaningful about the distribution of the histogram.



#### Figure x. Data informed leadership as reported by employees

Note: N =136. Mean = 3.49, std. dev = 0.85, min = 1, max =5, skewness = -.396, kurtosis = 3.42. If the respondents had missing values on only one item, the missing values were replaced with mean values of the items they answered. Respondents with more than one missing value (i.e. less than three answers) were excluded from the analysis.

Observations are too few and scattered for the two distributions to take any recognizable shape. Looking at the means, the employees perceive their leader to enact data informed leadership to approximately the same extent as leaders report themselves.

## Public service motivation

Improving performance in the public sector is central for the Public Administration discipline (Perry og Hondeghem 2008). The question of how to motivate purposeful action and performance in public organizations is thus highly salient (Wright, Moynihan, og Pandey 2012). In public administration, much attention has been given to the concept of public service motivation (PSM) as an especially important antecedent of performance (Brewer 2008; Perry, Hondeghem, og Wise 2010). Public service motivation is defined as "the desire to help others and society through delivering public service" (Perry og Hondeghem 2008). Hence, it is mainly grounded in the task of public service provision (Kjeldsen og Jacobsen 2013; Perry, Hondeghem, og Wise 2010)

Conceptually, PSM consists of four dimensions: attraction to public policy, self-sacrifice, compassion, and commitment to the public interest which have been used as a first-order reflective, second-order formative construct for measuring PSM in multiple studies – internationally and in Denmark (Andersen, Pallesen, og Pedersen 2011; Coursey og Pandey 2007; Kim 2011; Perry 1996). A short version of this measurement instrument consisting of 5 Likert-scale items (ranging from totally

disagree to totally agree) that tap into all four dimensions and constructed as a uni-dimensional reflective measure has, however, also been much used (Alonso og Lewis 2001; Brewer og Selden 2000; Kim 2005). Recent research shows that this short scale performs equally well as a multi-dimensional measure in constituting a valid measure of PSM (Wright, Christensen, og Pandey 2013). Hence, this is the scale used in the current research project with the addition of one item (psm\_1) from (Kim et al. 2013) tapping into the policy making dimension of PSM.

	Employees/ leader	Source
psm_1	It motives me to help improve the public services.	(Kim et al. 2013)
	Det motiverer mig at hjælpe med at forbedre de offentlige	
	ydelser.	
psm_2	Meaningful public service is very important to me.	(Wright, Christensen, og
	Det er meget vigtigt for mig, at de offentlige ydelser er i	Pandey 2013)
	orden.	
psm_3	It is difficult for me to contain my feelings when I see	(Wright, Christensen, og
	people in distress.	Pandey 2013)
	Jeg bliver personligt berørt, når jeg ser mennesker i nød.	
psm_4	I consider public service my civic duty.	(Wright, Christensen, og
	Det er min borgerpligt at gøre noget, der tjener	Pandey 2013)
	samfundets bedste.	
psm_5	Making a difference in society means more to me than	(Wright, Christensen, og
	personal achievements.	Pandey 2013)
	Jeg sætter samfundsmæssige forpligtelser over hensynet	
	til mig selv.	
psm_6	I am prepared to make enormous sacrifices for the good	(Wright, Christensen, og
	of society.	Pandey 2013)
	Jeg er klar til at yde store ofre for samfundets skyld.	

Table #. PSM, items

#### Table x. Confirmatory factor analysis: Public service motivation reported by leaders

	Loadings	R <sup>2</sup>
It motivates me to help improve the public services	.311**	.097
	(.104)	
Meaningful public service is very important to me	.387***	.150
	(.100)	
It is difficult for me to contain my feelings when I see people in	.387***	.150
distress	(.097)	
I consider public service my civic duty	.615***	.378
	(.081)	
Making a difference in society means more to me than personal	.617***	.380
achievements	(.079)	
I am prepared to make enormous sacrifices for the good of society	.756***	.572
	(.075)	

Note: Standardized coefficients from the SEM-regression of each item on the predicted factor. N = 117. \*\*p<.01. \*\*\*p<.001. CFI = .813. TLI = .689. RMSEA = .142. Cronbach's alpha = .690.

	Loadings	R <sup>2</sup>
It motives me to help improve the public services	.396***	.157
	(.025)	
Meaningful public service is very important to me	.358***	.129
	(.026)	
It is difficult for me to contain my feelings when I see people in	.401***	.161
distress	(.024)	
I consider public service my civic duty	.639***	.409
	(.018)	
Making a difference in society means more to me than personal	.815***	.665
achievements	(.013)	
I am prepared to make enormous sacrifices for the good of society	.819***	.672
	(.013)	

Table x. Confirmatory factor analysis: Public service motivation reported by employees

Note: Standardized coefficients from the SEM-regression of each item on the predicted factor. N = 1611. \*\*\*\*p<.001. CFI = .707. TLI = .511. RMSEA = .252. Cronbach's alpha = .772.

Across leaders and employees, the loadings are satisfactory for the last three items, and the alpha values show acceptable internal reliability. However, the loadings for the first three items are relatively low, which could indicate that the one factor measurement of PSM lacks dimensionality. Furthermore, values of CFI, TLI and RMSEA all indicate that the predicted model fits the data poorly. Since we theoretically expect the items to measure the same construct, the distribution for a predicted factor is still shown below. However, we also conduct an explorative factor analysis to investigate, if the data shows a better fit in a two-factor model.



Figure x. Distribution of public service motivation as reported by leaders

Note: N =117. Mean = 3.73, std. dev = 0.49, min = 2.17, max = 5, skewness = -.167, kurtosis = 3.30. If the respondents had missing values on two items, the missing values were replaced with mean values of the items they answered. Respondents with more than two missing values (i.e. less than four answers) were excluded from the analysis.

The distribution of the predicted factor approaches a normal distribution. The mean is slightly above the middle of the scale (3.73), indicating that the leaders generally possess a considerable degree of public service motivation.



# Figure x. Distribution of public service motivation as reported by employees

Note: N =1604. Mean = 3.65, std. dev = 0.63, min = 1, max =5, skewness = -.307, kurtosis = 3.32. If the respondents had missing values on two items, the missing values were replaced with mean values of the items they answered. Respondents with more than two missing values (i.e. less than four answers) were excluded from the analysis.

The distribution approaches a normal distribution with a large spike just above the middle of the scale. The mean (3.65) is very close to the mean for leaders. Below the explorative factor analysis is shown.

	psm_1	psm_2	psm_3	psm_4	psm_5	psm_6
psm_1	1					
psm_2	.43	1				
psm_3	.24	.26	1			
psm_4	.21	.26	.27	1		
psm_5	.09	.12	.18	.39	1	
psm_6	.20	.31	.25	.55	.53	1

Table x. Correlation matrix, Public service motivation reported by leaders

Note: Table entries are Pearson's correlation coefficients. N=115.

Table x. Test of assumptions for factor analysis	

Kaiser-Meyer-Olkin Measure of	0.721	
Bartlett's Test of Sphericity Chi-square		121.392
	Degrees of freedom	15
p-value		0.000

Note: H0: variables are not intercorrelated.

Looking at the item-item correlations at lot of variation is seen. However, only a few correlations are above 0.4. The p-value is below 0.001 in the Bartlett's test, which indicates a low probability that these parameters are in fact uncorrelated. Likewise, the KMO-value (0.72) shows that a satisfactory proportion of the variance in the data might be common variance.

	Loadings factor 1	Loadings factor 2
It motivates me to help improve the public services		.570
Meaningful public service is very important to me		.583
It is difficult for me to contain my feelings when I see		.320
people in distress		
I consider public service my civic duty	.508	
Making a difference in society means more to me	.698	
than personal achievements		
I am prepared to make enormous sacrifices for the	.665	
good of society		

Table x. Exploratory factor analysis: Public service motivation reported by leaders

Note: Extraction method: Principal factor analysis. One factor with an Eigenvalue higher than 1 was extracted. However, since the scree-plot points towards two factors, a two-factor analysis is shown above. N = 115. Cronbach's alpha for factor 1 = .717, Cronbach's alpha for factor 2 = .542. The above table shows the rotated loadings, while blanks represents numerical values below 0.3

Only the scree plot indicates that a two-factor model is more fitting than a one-factor model. The factor loadings for item 1 and item 2 becomes better, when looking at a two-factor model, however item 3 still have a low loading. Cronbach's alpha for the two-factor model is better for factor 1, when comparing to the one-factor model. However, the alpha-value for factor 2 is worse than in the one-factor model.

	psm_1	psm_2	psm_3	psm_4	psm_5	psm_6
psm_1	1					
psm_2	.63	1				
psm_3	.19	.24	1			
psm_4	.36	.36	.41	1		
psm_5	.24	.21	.28	.49	1	
psm_6	.27	.21	.28	.49	.72	1

Table x. Correlation matrix, Public service motivation reported by employees

Note: Table entries are Pearson's correlation coefficients. N=1579.

Table x.	Test of	assum	otions	for	factor	anal	/sis
10010 /0	100001	abbann	0010110		140001	anang	

Kaiser-Meyer-Olkin Measure of	0.714	
Bartlett's Test of Sphericity Chi-square		3089.706
	Degrees of freedom	15
p-value		0.000

Note: H0: variables are not intercorrelated.

Compared to the item-item correlation for the leaders, the correlations for the employees are in general a bit higher. As with the leaders, the KMO-value and Bartlett's test looks fine for the employees.

		•
	Loadings factor 1	Loadings factor 2
It motivates me to help improve the public services		.714
Meaningful public service is very important to me		.741
It is difficult for me to contain my feelings when I see	.326	
people in distress		
I consider public service my civic duty	.509	
Making a difference in society means more to me	.805	
than personal achievements		
I am prepared to make enormous sacrifices for the	.802	
good of society		

Table x. Exploratory factor analysis: Public service motivation reported by employees

Note: Extraction method: Principal factor analysis. One factor with an Eigenvalue higher than 1 was extracted. However, since the scree-plot points towards two factors, a two-factor analysis is shown above. N = 1579. Cronbach's alpha for factor 1 = .765, Cronbach's alpha for factor 2 = .775. The above table shows the rotated loadings, while blanks represents numerical values below 0.3.

As with the leaders the Eigenvalue indicates that, a one-factor model is the best fit, while the scree plot points towards a two-factor model. In the two-factor model, loadings are decent for all the items except item 3. Interestingly, item 3 does not belong to the same factor for leaders and employees. The alpha values for the two-factor model are almost identical with the alpha value for the one-factor model, when looking at the employees.

# User orientation

User orientation is defined as "motivation to help the specific user of public services" (Andersen, Pallesen, og Pedersen 2011). Whereas PSM is traditionally viewed as directed towards collective entities (groups of others), user orientation focuses on specific individuals receiving a service, e.g. an individual student, child or patient. Distinguishing between the motivation to do good for the individual client or collective entities is relevant, as studies suggest that the two types of motivation affect behavior differently (Jensen og Andersen 2015). This raises the question of whether one may harm the collective by doing one's utmost in the best interest of an individual client.

User orientation is measured by a four-item reflexive index. Items have been previously tested in the Danish context (Andersen, Pallesen, og Pedersen 2011; Andersen og Pedersen 2012). All items were measured using Likert-format questions ranging from totally disagree to totally agree. The fourth item (userorientation\_4) is developed particularly for this project.

Table #. User orientation, items

	Employees/leader	Source
brugerorientering_1 It gives me energy to know that I helped the		(Andersen, Pallesen, og
	"recipient".	Pedersen 2011;

	Det giver mig energi at vide, at jeg har gjort det	Andersen og Pedersen
	godt for "modtageren".	2012)
brugerorientering_2	The individual is more important than formal	(Andersen, Pallesen, og
	rules.	Pedersen 2011;
	Hensynet til den enkelte er vigtigere end	Andersen og Pedersen
	hensynet til formelle regler.	2012)
brugerorientering_3	If the "recipient" is satisfied – the job is done.	(Andersen, Pallesen, og
	Hvis "modtageren" er tilfreds – så er opgaven	Pedersen 2011;
	løst.	Andersen og Pedersen
		2012)
brugerorientering_4	In the task solution, I believe it is important to	Own
	take individual considerations into account.	
	Jeg synes, det er vigtigt at tage individuelle	
	hensyn i opgaveløsningen.	

Table x. Confirmatory factor analysis: User orientation

	Loadings	R <sup>2</sup>
It gives me energy to know that I helped the "recipient"	.498***	.248
	(.023)	
The individual is more important than formal rules	.754***	.568
	(.019)	
If the "recipient" is satisfied – the job is done	.582***	.339
	(.021)	
In the task solution, I believe it is important to take individual	.694***	.481
considerations into account	(.019)	

Note: Standardized coefficients from the SEM-regression of each item on the predicted factor. N = 1735. \*\*\*\*p<.001. CFI = .992. TLI = .975. RMSEA = .057. Cronbach's alpha = .719.

The loading of the first item is relatively low, on the verge of being satisfactory. The loadings of the other items are satisfactory, but not high (only item 2 reaches the cut-off point of .7). The alpha value, however, reports a good internal reliability (.72). All measures of goodness of fit indicate, that the predicted factor fits the data adequately.

Figure x. Distribution of user orientation



Note: N =1730. Mean = 3.96, std. dev = 0.65, min = 1, max =5, skewness = -.477, kurtosis = 2.91. If the respondents had missing values on only one item, the missing values were replaced with mean values of the items they answered. Respondents with more than one missing value (i.e. less than three answers) were excluded from the analysis.

The distribution is left-skewed. The mean of 3.96 shows that the respondents in general are highly user oriented.

# Perceived impact (on society and users)

'Perceived societal impact' and 'Perceived user impact" concern individuals' belief that they can contribute to the welfare of society at large and other people through their daily work activities. Two questions capture employees' self-assessed impact of their job activities on other people and society. The questions have been used to examine the interaction between individuals' motives for serving the public and their opportunities to pursue such ends in their job (e.g., Steijn 2008; Bro, Andersen & Bøllingtoft 2017). The items can be used separately or combined as a formative index measuring prosocial impact of the jobs.

	Employees/ leader	Source
psi_1	My job is useful to society	Steijn 2008;
	Mit arbejde gavner samfundet	
psi_2	In my job I can help other people	Taylor 2008
	Jeg kan hjælpe andre mennesker i mit arbejde	

Table #. Prosocial impact of the job, items

The table below shows to what degree the employees agrees or disagrees with the specific items form the Leadership Commission.

	Strongly disagree	Disagree	Neither disagree nor disagree	Agree	Strongly agree	Mean	Total N
My job is useful to society	0.35% (6)	0.69% (12)	11.10% (192)	36.82% (637)	51.04% (883)	4.38	1730
In my job I can help other people	0.17% (3)	0.40% (7)	5.89% (102)	30.58% (530)	62.95% (1091)	4.56	1733

Table x. Perceived prosocial impact of the job

Note: percentages of observations in each category. Number of observations in parentheses. The answers were assigned the following values to calculate the mean: strongly disagree = 1, disagree = 2, neither disagree nor disagree = 3, agree = 4, strongly agree = 5.

A mean above 4 for both items indicates that respondents in general consider their job useful to society and feel that they can help other people in their job.

# Value congruence/person-organization fit

Similar to existing studies (e.g. Jensen 2018; Jensen, Andersen & Jacobsen 2019), we measure value congruence (also sometimes conceptualized as person-organization fit, see Wright and Pandey 2008) based on employees' perception of a match between their own values and those of the organization. Our measure captures the perceived similarity between the person and the environment (the organization). Similar to Jensen, Andersen and Jacobsen (2019: 14), we argue that "Value congruence occurs when characteristics of the individual (employee values) and the environment (organizational values) match". Values are "conceptions, explicit or implicit, distinctive of an individual or characteristic of a group, of the desirable which influences the selection from available modes, means, and ends of action" (ibid).

	Employees/ leader	Source
pjf_2	My values are very similar to the values of the	Translated and tested by
	organization.	Jensen, Andersen &
	Enhedens værdier stemmer godt overens med mine egne.	Jacobsen 2019 based on
		Cable and Judge 1996
pjf_2	What this organization stands for is important to me.	Translated and tested by
	Det, enheden står for, er vigtigt for mig.	Jensen, Andersen &
		Christensen 2019 based on
		O'Reilly and Chatman 1986
pjf_2	I feel a strong sense of belonging to my organization.	Translated and tested by
	Jeg føler en stærk tilknytning til min enhed.	Jensen, Andersen &
		Christensen 2019 based on
		Bright 2007

Table #: Items measuring value congruence/person-organization fit

Tablav	Confirmaton	factor ana	lycic: Value	congruonco	Dorcon org	anization fit
I able X.	COMMENTATION	I ACLUI AIIA	ivsis, value	CONSIDENCE	Person-org	απιζατιστι πι

Employees/ leader	Loadings	R <sup>2</sup>
My values are very similar to the values of the organization.	.822***	.676
	(.012)	
What this organization stands for is important to me.	.898***	.807
	(.011)	
I feel a strong sense of belonging to my organization.	.687***	.472
	(.015)	

Note: Standardized coefficients from the SEM-regression of each item on the predicted factor. N = 1731. \*\*\*p<.001. Model fit test for the CFA is not available, since the three-item structure implies zero degrees of freedom. Cronbach's alpha = .839.

All loadings are satisfactory, implying that all items can be used to construct a reflective index. The alpha value shows good reliability (.84).





Note: N =1731. Mean = 4.13, std. dev = 0.70, min = 1, max =5, skewness = -.763, kurtosis = 4.00. If the respondents had missing values on only one item, the missing values were replaced with mean values of the items they answered. Respondents with more than one missing value (i.e. less than two answers) were excluded from the analysis.

The distribution is left-skewed, indicating that respondents in general perceive their values to match those of their organization (mean = 4.13).

# Intrinsic motivation

Intrinsic motivation refers to doing something because it is inherently interesting or enjoyable (Ryan og Deci 2000). Like PSM and user orientation, intrinsic motivation has been linked to desirable employee outcome such as greater engagement, better performance and greater psychological wellbeing (Gagné og Deci 2005; Kuvaas m.fl. 2017; Ryan og Deci 2000).

Intrinsic motivation is measured by a four-item reflexive index utilizing items previously studied in the Danish context (Jacobsen, Hvitved, og Andersen 2014). All items were measured using Likert-format questions ranging from totally disagree to totally agree.

	Employees/ leader	Source
intr_motivation_1	l very much enjoy my daily work.	(Jacobsen, Hvitved, og
	Jeg nyder i høj grad mit daglige arbejde.	Andersen 2014)
intr_motivation_2	A rather large part of my tasks at work are boring.	(Jacobsen, Hvitved, og
	En ret stor del af mine arbejdsopgaver er kedelige.	Andersen 2014)
intr_motivation_3	My work is very exciting.	(Jacobsen, Hvitved, og
	Mit arbejde er meget spændende.	Andersen 2014)
intr_motivation_4	I like performing most of my work processes.	(Jacobsen, Hvitved, og
	Jeg kan godt lide at udføre de fleste af mine	Andersen 2014)
	arbejdsopgaver.	

#### Table X. Items measuring intrinsic motivation

### Table#. Confirmatory factor analysis: Intrinsic motivation

	Loadings	R <sup>2</sup>
I very much enjoy my daily work	.758***	.575
	(.013)	
A rather large part of my tasks at work are boring (reversed)	675***	.455
	(.015)	
My work is very exciting	.839***	.703
	(.011)	
I like performing most of my work processes	.823***	.677
	(0.11)	

Note: Standardized coefficients from the SEM-regression of each item on the predicted factor. N = 1733. \*\*\*p<.001. CFI = .991. TLI = .974. RMSEA = .088. Cronbach's alpha = .848.

The loadings are all satisfactory for construction of a reflective index, though the loading of the second item is a bit lower than the rest. The internal reliability is high (alpha = .85), and the values of CFI and TLI both suggest that the predicted factor fits the data sufficiently well. The only caveat is that the RMSEA, which estimates how far the hypothesized model is from a perfect model, is slightly larger than the desired value of 0.05.

#### Figure x. Intrinsic motivation, distribution



Note: N =1730. Mean = 4.08, std. dev = 0.67, min = 1, max =5, skewness = -.791, kurtosis = 4.03. If the respondents had missing values on only one item, the missing values were replaced with mean values of the items they answered. Respondents with more than one missing value (i.e. less than three answers) were excluded from the analysis.

The distribution is left-skewed. A relatively high mean of 4.08 indicate that respondents generally possess a high degree of intrinsic motivation.

# Psychological needs – SDT and need for Meaning

The literature on the meaning of psychological needs is multifaceted. Since Henry Murray's exhaustive work on cataloguing human needs was published in 1938, it has been discussed which psychological needs are most important for human existence

In their work on self-determination theory, Edward Deci & Richard Ryan (2000) have identified three psychological needs having a particular status of being so-called basic needs. The three basic needs are the need for autonomy, the need for competence and the need for relatedness. The conceptual meaning of the three concepts of needs is as follows (Weinstein, Ryan & Deci, 2012/2017, p. 86):

- The need for autonomy refers to the evolved importance to people of experiencing their behavior as self-organized and, therefore, accompanied by a sense of volition and self-endorsement. When that is the case, people experience personal congruence and perceive the locus of causality for their actions to be internal
- The need for competence refers to the necessity of people being and feeling effective in acting in the world. This involves the perceptions that their actions will bring about desired outcomes, that they can master challenges, and that they have and will continue to acquire competencies

• The need for relatedness refers to the inherent requirement of feeling close and connected to others in the world and of caring for and being cared for by them. Relatedness is reflected in having trusting relationships with significant others and having a sense of belonging to valued groups and organizations.

## The need for meaning as a fourth basic need

Within the literature on needs, with particular reference to Viktor Frankl (1959), a need for meaning is further identified, and this need is related to the basic self-transcendent nature of human existence. According to Frankl (1966), being human always means to be directed towards something other than oneself, to reach out for meaning and purpose in life (p. 21). Similarly, the need for meaning is a key element in how the literature on existentialism conceives of humans as sense-seeking beings; here Søren Kierkegaard, Martin Heidegger and J. P. Sartre are main figures, manifested in the way the literature on existential psychology has identified basic life-conditions (Yalom, 1980).

In accordance with Frankl's meaning theory, Zhang, Sang, Chen, & Deng (2018) have identified a factor structure of a need for meaning in addition to the presence of and search for meaning uncovered in Steger's Meaning in Life Questionnaire. According to Zhang et al, the *need for meaning*, the *search for meaning*, and the *presence of meaning* are three independent empirical categories, which mutually influence and reflect each other. Besides, Martela, Ryan & Steger (2018) have presented support for the indication that a need for beneficence (which can be considered an aspect of meaning) exists alongside the three other SDT needs.

Something that calls for attention in relation to understanding meaning as a basic need is that a need for meaning is not in itself the same as creation of meaning. Creation of meaning takes place in many different ways and also as a consequence of, for instance, satisfaction of the other SDT needs, as stated by Deci and Ryan in their 2012 work (Weinstein, Ryan & Deci, 2012/2017). Search for meaning is, however, in itself also an anthropological constant in the lives of humans, lives that are manifested as a consequence of a need for meaning. Here we suggest a differentiation between Meaning with a *capital initial M* and meaning with a *small initial m*. Meaning with *capital M* thus refers to the need for meaning as an anthropological category that relates to the self-transcendent nature of the human being and its unavoidable directedness towards and question to the larger world in which it exists. Meaning *with small initial m* refers to phenomenological experienced creation of meaning and experience of meaning as expressions of the many different ways in which humans can experience search for and presence of meaning.

In vitalizing-psychology (Tønnesvang, 2019), the four needs are summarized as needs for autonomy, competence, belongingness (relatedness) and meaning in the vitalizing-model as four prototype categories of psychological basic needs. Hence, the model explicitly differentiates between the needs as anthropological basic categories (or basic needs) written with capital initial letters and as phenomenological experiences of autonomy, meaning, belongingness and competence written with small initial letters.

The VUOS project studies the significance of all four needs on the basis of selected items from existing empirical tools for measuring autonomy, competence, relatedness and meaning.

	Employees/ leader	Source
behov_aut_1	I feel like I can make a lot of inputs to deciding how my job	Boye et al. 2015
	gets done.	
	Jeg føler, at jeg har stor indflydelse på, hvordan mit	
	arbejde udføres.	

#### Table X. Psychological needs - Items measuring fulfillment of need for autonomy

behov_aut_2	I am free to express my ideas and opinions in my job. Jeg har frihed til at udtrykke mine ideer og holdninger på arbejdet.	Boye et al. 2015
behov_aut_3	There are good opportunities for me to decide for myself how to go about my work. Jeg har gode muligheder for selv at bestemme, hvordan jeg udfører mit arbejde.	Boye et al. 2015

Table#. Confirmatory factor analysis: Fulfillment of need for autonomy

	Loadings	R <sup>2</sup>
I feel like I can make a lot of inputs to deciding how my job gets	.850***	.723
done	(.013)	
I am free to express my ideas and opinions in my job	.708***	.501
	(.015)	
There are good opportunities for me to decide for myself how to	.791***	.626
go about my work	(.014)	

Note: Standardized coefficients from the SEM-regression of each item on the predicted factor. N = 1733. \*\*\*p<.001. Model fit test for the CFA is not available, since the three-item structure implies zero degrees of freedom. Cronbach's alpha = .826.

All loadings are high, indicating that the latent variable is strongly correlated with the items used to measure it. The alpha values show good internal reliability.





Note: N =1730. Mean = 4.17, std. dev = .72, min = 1, max =5, skewness = -1.03, kurtosis = 4.52. If the respondents had a missing value on only one of the item, the missing value was replaced with the

mean value of the items they answered. Respondents with more than one missing value (i.e. less than two answers) were excluded.

The distribution is left-skewed. The distribution has two peaks, one at the upper limit and one near the mean (4.17). This indicates that respondents generally report a high degree of fulfillment of the need for autonomy.

	Employees/ leader	Source
behov_komp_1	I feel very competent when I am at work.	Boye et al. 2015
	Jeg føler mig meget kompetent, når jeg er på	
	arbejde.	
behov_komp_2	People at work tell me I am good at what I do.	Boye et al. 2015
	Folk på mit arbejde fortæller mig, at jeg er god til	
	det, jeg laver.	
Behov_komp_3	Most days, I feel a sense of accomplishment from	Boye et al. 2015
	working.	
	De fleste dage har jeg en følelse af at have præsteret	
	noget på mit arbejde.	

Table X. Psychological needs - Items measuring fulfillment of need for competence

## Table#. Confirmatory factor analysis: Fulfillment of need for competence

	Loadings	R <sup>2</sup>
I feel very competent when I am at work	.748***	.560
	(.019)	
People at work tell me I am good at what I do	.671***	.451
	(.019)	
Most days, I feel a sense of accomplishment from working	.703***	.495
	(.019)	

Note: Standardized coefficients from the SEM-regression of each item on the predicted factor. N = 1729. \*\*\*p<.001. Model fit test for the CFA is not available, since the three-item structure implies zero degrees of freedom. Cronbach's alpha = .740.

All factor loadings are satisfactory, and the alpha value of 0.74 show good internal reliability of the four items.





Note: N =1727. Mean = 4.07, std. dev = .62, min = 1, max = 5, skewness = -.510, kurtosis = 3.74. If the respondents had a missing value on only one of the item, the missing value was replaced with the mean value of the items they answered. Respondents with more than one missing value (i.e. less than two answers) were excluded.

The distribution is left-skewed. A high mean of 4.07 indicates that respondents generally report a high degree of fulfillment for the need for competence.

	Employees/ leader	Source
behov_rel_borger_1	I really like the "recipients" I met in my daily job.	Boye et al. 2015
	Jeg kan rigtig godt lide de "modtagere", som jeg	
	møder i forbindelse med mit daglige arbejde.	
Behov_rel_borger_2	The "recipients" I met in my daily job seem to	Boye et al. 2015
	like me.	
	De "modtagere", som jeg møder i forbindelse	
	med mit daglige arbejde, virker til at kunne lide	
	mig.	
behov_rel_borger_3	I feel connected to the "recipients" I met in my	Boye et al. 2015
	daily job.	
	Jeg føler mig knyttet til de "modtagere", som jeg	
	møder i forbindelse med mit daglige arbejde.	

Table X. Psychological n	eds - Items measuring	relatedness to users
--------------------------	-----------------------	----------------------

### Table x. Correlation matrix, relatedness to users

	behov_rel_borger_1	behov_rel_borger_2	behov_rel_borger_3
behov_rel_borger_1	1		
behov_rel_borger_2	0.74	1	
behov_rel_borger_3	0.68	0.58	1

Note: Table entries are Pearson's correlation coefficients. N=1450.

#### Table x. Test of assumptions for factor analysis

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.705
Bartlett's Test of Sphericity	Chi-square	2091.92
	Degrees of freedom	3
	p-value	0.000

Note: H0: variables are not intercorrelated.

The item-item correlations are relatively strong, and a p-value below 0.001 in the Bartlett's test indicate a low probability that these parameters are in fact uncorrelated in the population. The KMO-value (0.71) indicates that a satisfactory proportion of variation in the data might be caused by underlying variables.

### Table x. Exploratory factor analysis: relatedness to users

	Loadings
I really like the "recipients" I met in my daily job	.860
The "recipients" I met in my daily job seem to like me	.792
I feel connected to the "recipients" I met in my daily job	.734

Note: Extraction method: Principal factor analysis. One factor with an Eigenvalue higher than 1 was extracted. N = 1450. Cronbach's alpha = .838.

The factor loadings are all satisfactory and Cronbach's alpha has a value of 0.84, which is very fine. The Eigenvalue suggest a single-factor model and below an additive index for the three items are shown.





Note: N =1456. Mean = 3.98, std. dev = 0.81, min = 1.33, max = 5, skewness = -.428, kurtosis = 2.33. Only employees answered this question. If the respondents had a missing value on only one of the item, the missing value was replaced with the mean value of the items they answered. Respondents with more than one missing value (i.e. less than two answers) were excluded.

The distribution is left-skewed with a high mean of 3.98 and a large peak at the upper limit of the scale. This indicates that employees generally feel a certain relation to the users of the public service they deliver. However, as suggested by a relatively high standard deviation, there is considerable variation in the answers with a noticeable fraction of employees located in the lower half of the scale.

	Employees/ leader	Source
behov_rel_kollega_1	E: I really like the colleagues I work with.	Boye et al. 2015
	M: Jeg kan rigtig godt lide de kolleger, jeg	
	arbejder sammen med.	
	L: I really like the people I work with.	
	L: Jeg kan rigtig godt lide de mennesker, jeg	
	arbejder sammen med.	
behov_rel_kollega_2	E: The colleagues I work with seem to like me.	Boye et al. 2015
	M: De kolleger, jeg arbejder sammen med, virker	
	til at kunne lide mig.	

	L: The people I work with seem to like me. L: De mennesker, jeg arbejder sammen med, virker til at kunne lide mig.	
behov_rel_kollega_3	E: I feel connected to the colleagues I work with. <i>M: Jeg føler mig knyttet til de kolleger, jeg</i> <i>arbejder sammen med.</i>	Boye et al. 2015
	L: I feel connected to the people I work with. L: Jeg føler mig knyttet til de mennesker, jeg arbejder sammen med.	

## Table x. Correlation matrix, relatedness to colleagues

	behov_rel_kollega_1	behov_rel_kollega_2	behov_rel_kollega_3
behov_rel_kollega_1	1		
behov_rel_kollega_2	0.73	1	
behov_rel_kollega_3	0.62	0.64	1

Note: Table entries are Pearson's correlation coefficients. N=1726.

#### Table x. Test of assumptions for factor analysis

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.722
Bartlett's Test of Sphericity	Chi-square	2370.05
	Degrees of freedom	3
	p-value	0.000

Note: H0: variables are not intercorrelated.

The item-item correlations are strong, and the p-value indicates that the correlation matrix is significantly different from an uncorrelated one. The KMO-value (0.72) is satisfactory.

#### Table x. Exploratory factor analysis: relatedness to colleagues

	Loadings
E: I really like the colleagues I work with	.813
L: I really like the people I work with	
E: The colleagues I work with seem to like me	.825
L: The people I work with seem to like me	
E: I feel connected to the colleagues I work with	.730
L: I feel connected to the people I work with	

Note: Extraction method: Principal factor analysis. One factor with an Eigenvalue higher than 1 was extracted. N = 1726. Cronbach's alpha = .845.

The factor loadings are all satisfactory, as is the alpha value. All three items are used to in an additive index, since the Eigenvalue points towards a one factor model.





Note: N =1731. Mean = 4.26, std. dev = 0.62, min = 1.33, max = 5, skewness = -.613, kurtosis = 3.37. If the respondents had a missing value on only one of the item, the missing value was replaced with the mean value of the items they answered. Respondents with more than one missing value (i.e. less than two answers) were excluded.

The distribution is left-skewed with one peak near the mean and one at the upper limit of the scale. A mean of 4.29 indicates that respondents in general report a high degree of fulfillment of the need for relatedness to colleagues.

	Employees/ leader	Source
behov_mening_1	My job is connected to what I believe is important	Own
	in life.	
	Mit arbejde er forbundet med det, jeg synes er	
	vigtigt i livet.	
Behov_mening_2	I see a connection between my job and the best	Own
	interests of society.	
	Jeg ser en forbindelse mellem mit arbejde og	
	samfundets bedste.	
behov_mening_3	My job makes personal sense.	Own
	Mit arbejde giver personlig mening.	

#### Table x. Correlation matrix, meaning

	behov_mening_1	behov_mening_2	behov_mening_3
behov_mening_1	1		
behov_mening_2	0.60	1	
behov_mening_3	0.64	0.59	1

Note: Table entries are Pearson's correlation coefficients. N=1721.

#### Table x. Test of assumptions for factor analysis

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.719
Bartlett's Test of Sphericity	Chi-square	1887.154
	Degrees of freedom	3
	p-value	0.000

Note: H0: variables are not intercorrelated.

The item-item correlations are strong. Both the KMO-value and the result of the Bartlett's test are satisfactory.

### Table x. Exploratory factor analysis: meaning

	Loadings
My job is connected to what I believe is important in life	.768
I see a connection between my job and the best interests of society	.725
My job makes personal sense	.757

Note: Extraction method: Principal factor analysis. One factor with an Eigenvalue higher than 1 was extracted. N = 1721. Cronbach's alpha = .824.

The factor loadings are all satisfactory as is the alpha value. The Eigenvalue suggest a one-factor model, thus all three items are used in an additive index below.





Note: N =1729. Mean = 4.08, std. dev = 0.68, min = 1, max = 5, skewness = -.59, kurtosis = 3.68. If the respondents had a missing value on only one of the item, the missing value was replaced with the mean value of the items they answered. Respondents with more than one missing value (i.e. less than two answers) were excluded.

The distribution approaches a normal distribution. The mean is high (4.08), and a lot of respondents are located near the maximum of the scale. This suggests high fulfillment of the need for meaning among respondents.

# Intention to quit

The recipients were all asked about their intention to leave their organizational unit.

	Employees/ leader	Source
quit_intent	How often do you think about leaving your unit?	Boye et al. 2015
	Hvor ofte tænker du på at forlade din enhed?	

Table X. Items measuring intention to quit

	Never	Rarely	Sometimes	Often	Always	Total N
Leaders	20.51%	55.56%	22.22%	1.71%	0%	117
	(24)	(65)	(26)	(2)	(0)	11/
Employees	24.38%	39.14%	29.22%	6.82%	0.43%	1610
	(393)	(631)	(471)	(110)	(7)	1012

Table x: Intention to quit

Note: percentages of observations in each category. Number of observations in parentheses.

# Task performance

Task performance was measured using a shorter version of the original nine-item measure developed by Goodman and Svyantek (1999). Response categories ranged from 1 (strongly disagree) to 5 (strongly agree). The items in this measure target the current, specific job-related performance, contributing to the core of the organization.

Table X. Items measuring t	task performance
----------------------------	------------------

	Employees	Source
task_performance_1	ask_performance_1 I achieve the objectives of the job.	
	Jeg opnår målene med mit arbejde.	Svyantek, (1999)
task_performance_2	I meet all the requirements of the job.	Goodman and
	Jeg opfylder alle de krav, jobbet stiller.	Svyantek, (1999)
task_performance_3	Overall, I perform well in my job.	Goodman and
	Jeg præsterer samlet set godt i mit arbejde.	Svyantek, (1999)
task_performance_4	I perform the tasks as expected.	Goodman and
	Jeg udfører arbejdsopgaverne, som det forventes.	Svyantek, (1999)

#### Table#. Confirmatory factor analysis: Task performance

	Loadings	R <sup>2</sup>
I achieve the objectives of the job	.630***	.397
	(.017)	
I meet all the requirements of the job	.768***	.589
	(.013)	
Overall, I perform well in my job	.847***	.717
	(.010)	
I perform the tasks as expected	.847***	.718
	(.010)	

Note: Standardized coefficients from the SEM-regression of each item on the predicted factor. N = 1613. \*\*\*p<.001. CFI = .985. TLI = .956. RMSEA = .116. Cronbach's alpha = .853.

All factor loadings are satisfactory for index construction, though the loading of the first item does not quite reach the preferred span (>0.7). The alpha value (.85) shows good internal reliability. The RMSEA is slightly higher than preferred, suggesting that the predicted factor does not fit the data perfectly.

Figure x. Task performance, distribution



Note: N =1610. Mean = 4.18, std. dev = 0.54, min = 2, max = 5, skewness = -.369, kurtosis = 3.26. If the respondents had missing values on only one item, the missing values were replaced with mean values of the items they answered. Respondents with more than one missing value (i.e. less than three answers) were excluded from the analysis.

The distribution is left-skewed. There are a notable peak just around the mean value of 4.18.

# Openness

Openness is one of five major dimensions in the Five-Factor Model (FFM) of personality traits: Neuroticism, Extraversion, Openness (to experience), Agreeableness, and Conscientiousness (Costa & McCrea, 2011). As an overall personality trait, openness refers to an individual's general willingness to engage in new and abstract ideas, as well as having an open and inquiring mind when it comes to new experiences.

Openness has been linked to multiple desirable outcomes such as greater leadership effectiveness and entrepreneurial leadership performance, as well as better training performance at both employee and management level (Gottlieb & Oluf-Astrup, 2020). However, the outcomes linked to openness may be dependent on the manifestations of the four other major traits.

Openness is operationalized using the Danish translation of the psychometric tool IPIP-NEO-120, which measures the five personality dimensions of the FFM (Vedel, Gøtzsche-Astrup & Holm, 2019). Each dimension is divided into six four-item sub facets. In this study openness is measured by the sub facet 'adventurousness', which more specifically refers to an individual's openness to and preference for novelty, change and variation. The four items of the sub facet 'adventurousness' are measured using a five-point Likert scale ranging from 1 (very inaccurate) to 5 (very accurate).

	Employees/ leader	Source
openness_1	I prefer variety over routine.	Vedel, Gøtzsche-Astrup &
	Jeg foretrækker afveksling frem for rutine.	Holm, 2019
openness_2	I prefer to stick to what I know.	Vedel, Gøtzsche-Astrup &
	Jeg foretrækker at holde mig til det, jeg kender.	Holm, 2019
openness_3	I do not like change.	Vedel, Gøtzsche-Astrup &
	Jeg bryder mig ikke om forandringer.	Holm, 2019
openness_4	I stick to traditions.	Vedel, Gøtzsche-Astrup &
	Jeg holder mig til traditionerne.	Holm, 2019

Table X. Items measuring openness

### Table#. Confirmatory factor analysis: Openness

	Loadings	R <sup>2</sup>
I prefer variety over routine	.422***	.178
	(.031)	
I prefer to stick to what I know (reversed)	774***	.599
	(.022)	
I do not like change (reversed)	727***	.529
	(.023)	
I stick to traditions (reversed)	673***	.453
	(.024)	

Note: Standardized coefficients from the SEM-regression of each item on the predicted factor. N = 978. \*\*\*p<.001. CFI = .991. TLI = .974. RMSEA = .063. Cronbach's alpha = .742. The questions were only asked in the pre-surveys.

The absolute loading values of the three last items in the table are acceptable. However, the loading of the first item is below the satisfactory value of 0.5, indicating that the predicted factor does not predict values on this item very well. Still, the alpha value (.74) shows good internal reliability, and the included measures of goodness of fit suggest that the predicted factor fits the data sufficiently well.
#### Figure x. Openness, distribution



Note: N = 973. Mean = 3.49, std. dev = 0.68, min = 1, max = 5, skewness = -.190, kurtosis = 3.22. If the respondents had missing values on only one item, the missing values were replaced with mean values of the items they answered. Respondents with more than one missing value (i.e. less than three answers) were excluded from the analysis.

The distribution approaches a normal distribution and the most observations is centered around the mean of 3.49.

## Job satisfaction

Job satisfaction is defined as "a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences" (Locke (1976) cited in Vandenabeele, 2009: 14). In other words, Job satisfaction concerns how an individual feels about his or her job in general or in relation to specific aspects. Our focus is on the general aspects of job satisfaction. Since several studies have found high correlations between general and specific measures of job satisfaction, we apply a widely used single item measure. Job satisfaction is measured on a scale ranging from 0 (very usatisfied) to 10 (very satisfied).

	Employees/ leader	Source
jobtilfreds	Overall, on a scale from 0-10 how satisfied are you with	Boye et al. 2015
	your current job?	
	Samlet set, på en skala fra 0-10, hvor tilfreds er du med	
	dit nuværende job?	

#### Table X. Items measuring job satisfaction





Note: N =117. Mean = 8.59, std. dev = 1.12, min = 4, max =10, skewness = -1.09, kurtosis = 5.11.

The distribution is highly left-skewed, which shows that the leaders in general are highly satisfied with their current job. The minimum value reported by the leaders are 4.





Note: N =1610. Mean = 7.87, std. dev = 1.64, min = 0, max =10, skewness = -1.05, kurtosis = 4.83.

This distribution is also left-skewed, but the mean (7.87) is lower than for leaders (8.59). As opposed to the leaders, the minimum value reported by the employees are 0.

## Stress

The leaders and employees were asked to state whether they have been feeling stressed, and what the reason for that might be.

The following texts were used to introduce the questions:

"Stress is a condition where a person feels tense, restless, nervous, worried or who cannot sleep at night, because he/she worries all the time. Danish: Stress er en tilstand, hvor en person føler sig anspændt, rastløs, nervøs, urolig eller ikke kan sove om natten, fordi han/hun bekymrer sig hele tiden."

	Employees/ leader	Source
stress_1	How often have you felt stressed in the last two weeks? Hvor ofte har du følt dig stresset inden for de sidste to	Boye et al. 2015
	uger?	
stress_2	What was the primary source of your stress? Work life	Boye et al. 2015
	(1) Private life (2) Both work life and private life (3).	
	Hvad var den vigtigste kilde til din stress? Arbejdsliv (1)	
	Privatliv (2) Både arbejdsliv og privatliv (3).	

Table X. Items measuring stress

Note: stress\_2 is not displayed if the response in stress\_1 is *never* 

## Table X. Prevalence of stress

How often have						
you felt stressed in	Never	Rarely	Sometimes	Often	Always	Total N
the last two weeks?						
Leaders	35.04%	33.33%	23.93%	7.69%	0%	117
	(41)	(39)	(28)	(9)	(0)	117
Employees	30.04%	27.31%	31.28%	10.80%	0.56%	1611
	(484)	(440)	(504)	(174)	(9)	1011

Note: percentages of observations in each category. Number of observations in parentheses.

#### Table x. Source of stress

What was the primary source of your stress?	Work life	Private life	Both work life and private life	Total N
Leaders	55.13% (43)	6.41% (5)	38.46% (30)	78
Employees	51.44% (573)	7.36% (82)	41.20% (459)	1114

Note: percentages of observations in each category. Number of observations in parentheses.

Around a third of the leaders and employees reported that they have never felt stressed in the past two weeks. For the individuals who reported some degree of stress the past two weeks, only 7% indicated private life as the primary source of stress.

## Sick absence

Sickness absence is measured by the self-reported number of days a leader or an employee has been off work sick within the past month. Self-reported measures are likely to contain measurement error compared sickness absence obtained from national registers. As we want to minimize recollection bias, the participants are asked to state how many days within the last month they have been off sick.

The following texts were used to introduce the questions:

"The unit's total sickness absence is an important background information in leadership research. Danish: Enhedens samlede sygefravær er en vigtig baggrundsoplysning i ledelsesforskning."

	Employees/ leader	Source
sygefra	How many workdays have you been off sick within the	Boye et al. 2015
	past month?	
	Hvor mange arbejdsdage har du været fraværende fra	
	arbejde grundet sygdom inden for de seneste fire	
	arbejdsuger?	
corona	How many of the above sick days were caused by Covid-	Own
	19?	
	Including own infection, near contact infection, suspicion	
	of infection, repatriation without the possibility of	
	homework, closed institutions or other Covid-19 related	
	absence	

Table X. Items measuring sick absence

Hvor mange af ovenstående fraværsdage har været	
grundet Covid-19?	
Herunder egen smitte, nær kontakts smitte, mistanke om	
smitte, hjemsendelse uden mulighed for hjemmearbejde,	
lukkede institutioner eller anden Covid-19 relateret fravær	

Note: The item corona was used in the post-post surveys for E19 organisational units only.





Note: N =117. Mean = .09, std. dev = .38, min = 0, max = 2, skewness = 4.50, kurtosis = 21.95.

The distribution is extremely right-skewed, indicating that most leaders were not absent from work due to sickness in the four weeks before replying to the survey. Those who reported sick absence were only sick for 1 or 2 days.





Note: N =1589. Mean = .80, std. dev = 2.50, min = 0, max = 30, skewness = 5.87, kurtosis = 46.68.

This distribution is extremely right-skewed as well. Most employees had no sick absence days, as indicated by the leftmost bar. However, the range of replies is larger than for the leaders, and the mean is considerably higher (0.80), indicating that employees on average had almost 1 day of sick absence in the four weeks before replying to the survey.

## Presenteeism

Presenteeism refers to when people come to work even though they are sick. This data is for obvious reasons only available through self-reported measures. Presenteeism is measured by one question concerning how many days the respondents went to work sick within the past month.

Table X.	. Items measuring presentessim	

	Employees/ leader	Source
sygenaer	How many days did you go to work although you were	Boye et al. 2015
	sick within the past month?	
	Hvor mange arbejdsdage er du gået på arbejde, selvom	
	du var syg, inden for de seneste fire arbejdsuger?	

Figure x. Presenteeism as reported by leaders, distribution



Note: N =117. Mean = .43, std. dev = 1.33, min = 0, max = 10, skewness = 4.69, kurtosis = 29.14.

The distribution is extremely right-skewed. Most leaders did not work while being sick, as indicated by the leftmost bar. However, the average presenteeism (0.43 days) among leaders during the past month is higher than their average sick absence (0.09 days).





Note: N =1570. Mean = .63, std. dev = 1.81, min = 0, max = 22, skewness = 6.13, kurtosis = 56.46.

The distribution is extremely right-skewed. Most employees did not work while being sick, as indicated by the leftmost column. Of those few who reported presenteeism, the majority only worked 1 or 2 days while being sick.

## Mindset for individual level

[A description of this concept will be introduced in the next version of the report]

The following texts were used to introduce the questions:

"The following questions are about how you think of your own potential for learning and development. Please indicate how much you agree with the following statements. *Danish: De følgende spørgsmål handler om, hvordan du tænker om dit eget potentiale for læring og udvikling. Angiv venligst, hvor enig du er i følgende udsagn."* 

	Employees	Source
individuelt_mindset_1	You have a certain gift, and you cannot do much	
	to change it.	
	Du har en vis begavelse, og du kan ikke gøre	
	meget for at ændre den.	
individuelt_mindset_2	Your intelligence is something fundamental	
	about you that you cannot change very much	
	about.	

Table X. Items measuring individual mindset

	Din intelligens er noget grundlæggende ved dig,	
	som du ikke kan ændre særligt meget ved.	
individuelt_mindset_3	You can learn new skills, but fundamentally you	
	cannot change your intelligence level.	
	Du kan lære nye færdigheder, men du kan ikke	
	ændre grundlæggende ved dit intelligensniveau.	
individuelt_mindset_4	You can change your intelligence level	
	significantly at any time.	
	Du kan til enhver tid ændre dit intelligensniveau	
	betydeligt.	
individuelt_mindset_5	You cannot change your intelligence level very	
	much.	
	Du kan ikke ændre dit intelligensniveau særligt	
	meget.	

#### Table x. Correlation matrix, individual mindset items

	individuelt_	individuelt_	individuelt_	individuelt_	individuelt_
	mindset_1	mindset_2	mindset_3	mindset_4	mindset_5
individuelt_mindset_1	1				
individuelt_mindset_2	0.73	1			
individuelt_mindset_3	0.54	0.69	1		
individuelt_mindset_4	-0.30	-0.50	-0.54	1	
individuelt_mindset_5	0.44	0.60	0.62	-0.58	1

Note: Table entries are Pearson's correlation coefficients. N=1689.

#### Table x. Test of assumptions for factor analysis

Kaiser-Meyer-Olkin Measure of	0.806	
Bartlett's Test of Sphericity Chi-square		4274.390
	Degrees of freedom	10
p-value		0.000

Note: H0: variables are not intercorrelated.

A p-value below 0.001 in the Bartlett's test indicates a result significantly different from a total uncorrelated matrix. The KMO-value (0.81) indicates that a satisfactory proportion of variation in the data might be caused by underlying variables.

#### Table x. Exploratory factor analysis: Individual mindset items

	Loadings
You have a certain gift, and you cannot do much to change it	.699
Your intelligence is something fundamental about you that you cannot	.865
change very much about	
You can learn new skills, but fundamentally you cannot change your	.791
intelligence level	
You can change your intelligence level significantly at any time	626
(reversed).	

You cannot change your intelligence level very much	.736

Note: Extraction method: Principal factor analysis. One factor with an Eigenvalue higher than 1 was extracted. N = 1689. Cronbach's alpha = .862.

The factor loadings are all satisfactory, though the loading for the reversed item is lower than for the others. Looking at the alpha value too, this indicates that all five items fits well in a single-factor model.





Note: N =1702. Mean = 2.67, std. dev = 0.87, min = 1, max = 5, skewness = .110, kurtosis = 2.63. If the respondents had missing values on two items, the missing values were replaced with mean values of the items they answered. Respondents with more than two missing values (i.e. less than three answers) were excluded from the analysis.

The distribution has a few notable peaks, the highest being near the mean. As suggested by the low mean (2.67) and the slightly positive skewness measure, a majority of the respondents are situated in the low end of the scale. We can interpret this to mean that respondents generally believe that it is in fact possible to change your intelligence and acquire new competences to some degree. This is because a high value corresponds to the belief that you cannot change your intelligence in most of the questions, so prima facie, this is also how high values on the additive scale should be interpreted.

## Mindset for organisational level

[A description of this concept will be introduced in the next version of the report]

The following texts were used to introduce the questions: "The following questions are about how you think employees in your unit generally think about people's potential for learning and development. Please indicate how much you agree with the following statements. *Danish: De* 

følgende spørgsmål handler om, hvordan du mener, at ansatte i din enhed generelt tænker om menneskers potentiale for læring og udvikling. Angiv venligst, hvor enig du er i følgene udsagn. "

	Employees	Source
	The belief in my unit is that	
	Overbevisningen i min enhed er, at	
org_mindset_1	people have a certain gift, and they cannot do	
	much to change it.	
	folk har en vis begavelse, og de kan ikke gøre	
	meget for at ændre den.	
org_mindset_2	people cannot change how intelligent they are.	
	folk ikke kan ændre, hvor intelligente de er.	
org_mindset_3	people can always change fundamentally how	
	intelligent they are (reversed scale).	
	folk altid kan ændre grundlæggende ved, hvor	
	intelligente de er (reversed scale).	
org_mindset_4	intelligence is something fundamental about	
	people that they cannot change very much.	
	intelligens er noget grundlæggende ved folk, som	
	de ikke kan ændre særligt meget ved.	
org_mindset_5	no matter who you are, people can change their	
	intelligence level significantly (reversed scale).	
	uanset hvem man er, så kan folk ændre betydeligt	
	ved deres intelligensniveau (reversed scale).	

Table X. It	ems measuring	organizational	mindset

#### Table x. Correlation matrix, organizational mindset items

	org_mindset	org_mindset	org_mindset	org_mindset	org_mindset_
	_1	_2	_3	_4	5
org_mindset_1	1				
org_mindset_2	0,74	1			
org_mindset_3	-0,41	-0,54	1		
org_mindset_4	0,61	0,74	-0,48	1	
org_mindset_5	-0,40	-0,54	0,67	-0,53	1

Note: Table entries are Pearson's correlation coefficients. N=1665.

Table x.	Test of as	sumptions	for facto	r analysis
----------	------------	-----------	-----------	------------

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.800
Bartlett's Test of Sphericity Chi-square		4457.33
Degrees of freedom		10
p-value		0.000

Note: H0: variables are not intercorrelated.

A p-value below 0.001 in the Bartlett's test indicate a result significantly different from a total uncorrelated matrix. The KMO-value indicates that a satisfactory proportion of variation in the data might be caused by underlying variables.

Table x. Exploratory factor analysis: organizational mindset items

	Loadings
people have a certain gift, and they cannot do much to change it	.731
people cannot change how intelligent they are	.869
people can always change fundamentally how intelligent they are	682
(reversed scale)	
intelligence is something fundamental about people that they	.784
cannot change very much	
no matter who you are, people can change their intelligence level	698
significantly (reversed scale)	

Note: Extraction method: Principal factor analysis. One factor with an Eigenvalue higher than 1 was extracted. N = 1665. Cronbach's alpha = .867.

The factor loadings are all satisfactory and along with the alpha value, it indicates that all five items should be used to predict the same factor.



Figure x. Organizational mindset, distribution

Note: N =1674. Mean = 2.77, std. dev = 0.73, min = 1, max = 5, skewness = -.047, kurtosis = 3.62. If the respondents had missing values on two items, the missing values were replaced with mean values of the items they answered. Respondents with more than two missing values (i.e. less than three answers) were excluded from the analysis.

The estimates for each respondent are distributed quite evenly across the scale. A large peak can be identified near the middle of the scale. The mean (2.77) is below this midpoint, but just as the case was for the predicted individual mindset index, it should be noted that a low value corresponds to the belief, that it *is* possible to improve your intelligence and competences, as seen by the positive loadings of the three items coded in this particular direction.

## Psychological safety

[A description of this concept will be introduced in the next version of the report]

The following texts were used to introduce the questions:

"The following questions are about your perception of safety and security in relation to other employees in your unit. Please indicate how much you agree with the following statements about your unit. Danish: De følgende spørgsmål handler om, din opfattelse af sikkerhed og tryghed i relation til andre ansatte i din enhed. Angiv venligst, hvor enig du er i følgende udsagn om din enhed."

	Employees	Source
psyk_sikkerhed_1	In this unit, it is easy to express one's opinion.	
	I denne enhed er det nemt at give udtryk for sin	
	mening.	
psyk_sikkerhed_2	If you make a mistake in this unit, you will often be	
	blamed for it (reversed scale).	
	Hvis man laver en fejl i denne enhed, bliver man	
	ofte bebrejdet for det (reversed scale).	
psyk_sikkerhed_3	People in this unit are generally comfortable	
	talking about issues and disagreements.	
	Folk i denne enhed er generelt trygge ved at tale	
	om problemer og uenigheder.	
psyk_sikkerhed_4	People in this unit are eager to share information	
	about what works and what doesn't.	
	Folk i denne enhed er ivrige efter at dele	
	information om, hvad der virker og ikke virker.	
psyk_sikkerhed_5	Keeping one's cards close to one's chest is the best	
	way to do well in this unit (reversed scale).	
	At holde sine kort tæt til kroppen er den bedste	
	måde at klare sig godt i denne enhed (reversed	
	scale).	

Table X. Items measuring psychological safety

	psyk_sikker	psyk_sikker	psyk_sikker	psyk_sikker	psyk_sikker
	hed_1	hed_2	hed_3	hed_4	hed_5
psyk_sikkerhed_1	1				
psyk_sikkerhed_2	-0,51	1			
psyk_sikkerhed_3	0,60	-0,45	1	Z	
psyk_sikkerhed_4	0,47	-0,36	0,52	1	
psyk_sikkerhed_5	-0,49	0,54	-0,48	-0,45	1

#### Table x. Correlation matrix, psychological safety items

Note: Table entries are Pearson's correlation coefficients. N=1700.

#### Table x. Test of assumptions for factor analysis

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.827
Bartlett's Test of Sphericity Chi-square		2872.06
Degrees of freedom		10
	p-value	0.000

Note: H0: variables are not intercorrelated.

A p-value below 0.001 in the Bartlett's test indicate that the correlation matrix is significantly different from a matrix in which all variables are uncorrelated. The KMO-test indicates the proportion of variation that might be caused by underlying variables. The value of 0.83 is satisfactory.

Table x. Exploratory factor analysis: psychological safety items

	Loadings
In this unit, it is easy to express one's opinion	.734
If you make a mistake in this unit, you will often be blamed for it	657
(reversed scale)	
People in this unit are generally comfortable talking about issues and	.729
disagreements	
People in this unit are eager to share information about what works	.626
and what doesn't	
Keeping one's cards close to one's chest is the best way to do well in	689
this unit (reversed scale).	

Note: Extraction method: Principal factor analysis. One factor with an Eigenvalue higher than 1 was extracted. N = 1700. Cronbach's alpha = .824.

The factor loadings are satisfactory, though not particularly high. All five items are used to predict the same factor, since the alpha value is also very high. The distribution of the additive index containing all five items are shown below.

#### Figure x. Psychological safety, distribution



Note: N =1715. Mean = 3.96, std. dev = 0.70, min = 1, max = 5, skewness = -.835, kurtosis = 3.77. If the respondents had missing values on two items, the missing values were replaced with mean values of the items they answered. Respondents with more than two missing values (i.e. less than three answers) were excluded from the analysis.

The distribution is left-skewed. Since most of the items are coded so a high value corresponds to high perceived safety. The mean of 3.96 should indicate that respondents in general feel a fairly high degree of psychological safety at work.

## Peer coaching

[A description of this concept will be introduced in the next version of the report]

The following texts were used to introduce the questions:

"The following questions are about the collaboration in your unit. Please indicate how often the unit's employees engage in the following activities. *Danish: De følgende spørgsmål handler om samarbejdet i din enhed. Angiv venligst, hvor ofte enhedens medarbejdere engagerer sig i følgende aktiviteter.*"

	Employees	Source
team_samarbejde_1	The unit's employees take the initiative to	
	promote the common motivation and	
	commitment.	

Table X. Items measuring teamwork and collaboration

	Enhedens medarbejdere tager initiativ til at	
	fremme den fælles motivation og commitment.	
team_samarbejde_2	The unit's employees take the initiative to ensure	
	that the unit develops and uses the best possible	
	approach to the work.	
	Enhedens medarbejdere tager initiativ til at sikre,	
	at enheden udvikler og anvender den bedst	
	mulige tilgang til arbejdet.	
team_samarbejde_3	The unit's employees take the initiative to help	
	the unit build and apply the employees'	
	knowledge and skills.	
	Enhedens medarbejdere tager initiativ til at	
	hjælpe enheden med at opbygge og anvende	
	medarbejdernes viden og færdigheder.	
team_samarbejde_4	The unit's employees take the initiative to	
	constructively resolve problems or conflicts that	
	arise among the unit's employees.	
	Enhedens medarbejdere tager selv initiativ til	
	konstruktivt at løse problemer eller konflikter, der	
	opstår mellem enhedens medarbejdere.	
team_samarbejde_5	The unit's employees tell colleagues what to do	
	and how to do it (reversed).	
	Enhedens medarbejdere fortæller kollegaer, hvad	
	de skal gøre, og hvordan de bør gøre det	

Note: The fifth item is reversed in the sense that colleagues dictating what others ought to do, in theory, should be negatively associated with team collaboration.

Table x.	Correlation	matrix.	teamwork	and	collaboration	items
10010 /0	conclation		cean to or it	0110	contaboration	1001110

	team_samarb	team_samarb	team_samarb	team_samarb	team_samarb
	ejde_1	ejde_2	ejde_2	ejde_2	ejde_2
team_samarb					
ejde_1	1				
team_samarb					
ejde_2	0,77	1			
team_samarb					
ejde_3	0,71	0,77	1		
team_samarb					
ejde_4	0,56	0,57	0,56	1	
team_samarb					
ejde_5	0,14	0,14	0,17	0,20	1

Note: Table entries are Pearson's correlation coefficients. N=1655.

Table x. Test of assumptions for factor analysis

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.825	
Bartlett's Test of Sphericity Chi-square		3978.15	
	Degrees of freedom	10	
p-value		0.000	

Note: H0: variables are not intercorrelated.

A p-value below 0.001 indicates an extremely low probability that all the included items are in fact uncorrelated in the population. The KMO-value indicates that an acceptable proportion of variation in the data could be caused by underlying variables.

#### Table x. Exploratory factor analysis: teamwork and collaboration items

	Loadings
The unit's employees take the initiative to promote the common	.833
motivation and commitment	
The unit's employees take the initiative to ensure that the unit	.874
develops and uses the best possible approach to the work	
The unit's employees take the initiative to help the unit build and	.839
apply the employees' knowledge and skills	
The unit's employees take the initiative to constructively resolve	.657
problems or conflicts that arise among the unit's employees	
The unit's employees tell colleagues what to do and how to do it	.201
(reversed).	

Note: Extraction method: Principal factor analysis. One factor with an Eigenvalue higher than 1 was extracted. N = 1655. Cronbach's alpha = .825.

The factor loadings for the first four items are satisfactory, but the fifth item loads weakly. Thus, it is debatable whether this item taps into the same dimension as the other items, or whether individuals does not understand the question. From the training days, the organizational consultants, who leads the training days, reports that the questions regarding peer coaching is not well received among the employees. Nevertheless, all five items are used to construct an additive scale, which can be seen





Note: N =1693. Mean = 3.45, std. dev = 0.61, min = 1, max = 5, skewness = -.116, kurtosis = 3.48. If the respondents had missing values on two items, the missing values were replaced with mean values of the items they answered. Respondents with more than two missing values (i.e. less than three answers) were excluded from the analysis.

The scale is relatively normal distributet with a peak at the mean. A mean of 3.45 indicates that respondents generally experience a considerable degree of team work and collaboration in their unit.

## Background information

In order to acquire background information about the participants, we asked both the leaders and employees to state their year of birth, their gender and their highest completed education. Moreover, we asked the leaders to state their experience as leader, both in their current unit and in total, and how many people they are direct personnel leader for. On the other hand, the employee were asked to state the number of hours they work per week and their experience in their current workplace.

	Employees / leaders:	Source
alder	In what year are you born?	Boye et al. 2015
	Hvilket år er du født?	
kon	Gender.	Boye et al. 2015
	Køn.	
udd	What is your highest completed education?	Own
	Hvad er din højest gennemførte uddannelse?	

Table X.	Items	measuring
----------	-------	-----------

Note: For the question *udd*, the participant themselves writes the name of their highest completed education.

## Figure x: Year of birth of respondents



Note: N=950.

#### Tabel x: Gender

	Female	Male	Ν
Condor	64.94%	35.06%	060
Gender	(628)	(339)	909

Note: percentages of observations in each category. Number of observations in parentheses.

#### Table X. Items measuring

Leaders:	Source
	2
How many years have you worked as a leader in	Boye et al. 2015
your current unit?	
Hvor mange år har du arbejdet som leder i din	
nuværende enhed?	
How many years have you worked as a leader in	Boye et al. 2015
total?	
Hvor mange år har du i alt arbejdet som leder?	
How many people are you the direct personnel	Boye et al. 2015
leader for?	
Hvor mange personer er du direkte	
personaleleder for?	
Having personnel leadership is understood	
here, among other things, as you being in	
charge of conducting the employee	
development interview with a given person	
	Leaders: How many years have you worked as a leader in your current unit? Hvor mange år har du arbejdet som leder i din nuværende enhed? How many years have you worked as a leader in total? Hvor mange år har du i alt arbejdet som leder? How many people are you the direct personnel leader for? Hvor mange personer er du direkte personaleleder for? Having personnel leadership is understood here, among other things, as you being in charge of conducting the employee development interview with a given person.

At have personaleledelse forstås her blandt
andet som, at du har ansvar for at afholde
medarbejderudviklingssamtalen med en given
person.





Note: N=59. Mean = 4.80, std. dev = 5.02, min = 0, max = 30.

Figure x: Experience as leader in total



Note: N=59. Mean = 11.34, std. dev = 8.23, min = 1, max = 32.



Figure x: Span of control

Note: N=59. Mean = 24.15, std. dev = 12.93, min = 2, max = 75.

	Employees	Source
arbtid	How many hours are you employed to work	Boye et al. 2015
	peer week?	
	Hvor mange timer er du ansat til at arbejde om	
	ugen?	
erfaring	How many years have you worked at your	Boye et al. 2015
	current workplace?	
	Hvor mange år har du arbejdet på din	
	nuværende arbejdsplads?	

Table X. Items measuring working hour and employees experience at current job

#### Table x: Working hours

	Full time (37 hours a week)	Part time (less than 37 hours per week)	Ν
How many hours are you employed to work peer week?	59.05% (532)	40.95% (369)	901

Note: percentages of observations in each category. Number of observations in parentheses.





Note: N=894. Mean = 10.13, std. dev = 10.56, min = 0, max = 47.

## Type of shift

The employees were asked to state how their monthly working hours is distributed on four different type of shifts.

Table X.	Items	measuring	type	of shift
----------	-------	-----------	------	----------

	Employees:	Source
	What percentage of your monthly working	
	hours (approximately) do you typically spend on	
	the following types of shifts?	
	Hvor stor en procentdel af din månedlige	
	arbejdstid (ca.) bruger du typisk på følgende	
	vagttyper?	
	Enter your answer in whole percentages	
	between 0 and 100 for each shift type.	
	The numbers should add up to 100 in the	
	bottom row 'Total'.	
	Angiv dit svar i hele procenttal mellem 0 og 100	
	for hver vagttype.	
	Tallene skal summere til 100 i den nederste	
	række 'Total'.	
vagttype_1	Day shifts Monday to Friday.	Boye et al. 2015
	Dagvagter mandag til fredag.	
vagttype_2	Evening shifts Monday to Friday.	Boye et al. 2015
	Aftenvagter mandag til fredag.	
vagttype_3	Night shifts Monday to Friday.	Boye et al. 2015
	Nattevagter mandag til fredag	
vagttype_4	Weekend shifts (Saturday and Sunday)	Boye et al. 2015
	Weekendvagter (lørdag og søndag)	

Table x: Distribution of shifts by type

	0-25 pct.	26-50 pct.	51-75 pct.	76-100 pct.
Day shifts	12.64%	17.86%	15.47%	54.03%
Monday to Friday	(116)	(164)	(142)	(496)
Evening shifts	65.25%	24.18%	9.26%	1.31%
Monday to Friday	(599)	(222)	(85)	(12)
Night shifts	95.42%	1.96%	1.42%	1.20%
Monday to Friday	(876)	(18)	(13)	(11)
Weekend shifts	79.30%	17.43%	2.94%	0.33%
vveekend Shijts	(728)	(160)	(27)	(3)

Note: N=918.

## Participation

In order to be able to identify, which employees participated in development course, we asked the employees to state the number of training days in which they have participated.

Table X. Items measuring participation

	Employees	Source
udvdage	Twice in recent months, we have held	Own
	development courses in your unit. Which of	
	these have you participated in?	
	Vi har to gange inden for de seneste måneder	
	holdt udviklingsforløb i din enhed. Hvilke af	
	disse har du deltaget i?	

## Table X. Participation

	Both traning	Only training	Only training	None of the	N
	days	day 1	day 2	training days	
Twice in recent					600
months, we have					
held development	65.67%	13.50%	9.17%	11.67%	
courses in your unit.	(394)	(81)	(55)	(70)	
Which of these have					
you participated in?					

Note: percentages of observations in each category. Number of observations in parentheses. Only respondents whose organizational unit had already participated in both training days were asked this question.

## Evaluation

Both the leaders and employees were asked to state whether the organizational development process has been rewarding for themselves and if it has been rewarding for their organizational unit.

The following texts were used to introduce the questions:

"Please indicate how much you agree/disagree with the following statements. Danish: Angiv venligt hvor enig/uenig du er i følgende udsagn."

	Employees / leaders:	Source
	Overall, the organizational development	
	process has been rewarding for	
	Alt i alt har organisationsudviklingsforløbet	
	været udbytterig for	
evaluering_1	E: me as an employee.	Own
	M: mig som medarbejder.	
	L: me as a leader	
	L: mig som leder	
evaluering_2	our unit.	Own
	vores enhed.	

Table X. Items measuring evaluation

Note: Only employees participating at the training days was asked to answer the above two questions.

Table x: Evaluation

<b>Pretext:</b> Overall, the organizational development process has been rewarding for	Strongly disagree	Disagree	Neither disagree nor disagree	Agree	Strongly agree	Mean	Total N
me as a leader	0%	0%	2.22%	48.89%	48.89%	1 17	45
	(0)	(0)	(1)	(22)	(22)	4.47	45
me as an	2.13%	9.28%	29.79%	48.55%	10.25%	2 56	517
employee	(11)	(48)	(154)	(251)	(53)	3.50	517
our unit	Strongly disagree	Disagree	Neither disagree nor disagree	Agree	Strongly agree	Mean	Total N
- Leaders	0% (0)	0% (0)	8.89% (4)	48.89% (22)	42.22% (19)	4.33	45
- Employees	2.19% (11)	8.17% (41)	27.09% (136)	51.20% (257)	11.35% (57)	3.61	502

Note: percentages of observations in each category. Number of observations in parentheses. The answers were assigned the following values to calculate the mean: strongly disagree = 1, disagree = 2, neither disagree nor disagree = 3, agree = 4, strongly agree = 5.





Note: Both leaders and employees were asked to evaluate the following statement: "Overall, the organizational development process has been rewarding for our unit." N = 429.

## Treatment check

Both the leaders and employees were asked to state if they have gained a greater understanding of the three different treatment types.

Table X. Items measuring treatment check

	Employees / leaders:	Source
	Over the last few months, I have gained a	
	greater understanding of how	
	I løbet af de sidste måneder har jeg fået større	
	forståelse for hvordan	
udbytte_1	E: we as employees motive each other in the	Own
	unit.	
	M: vi som medarbejdere motiverer hinanden	
	i enheden.	
	L: we as colleagues motive each other in the	
	unit.	
	L: vi som kolleger motiverer hinanden i	
	enheden.	
udbytte_2	we as a unit share leadership tasks among us	Own
	in an aligned way.	
	vi som enhed deler ledelsesopgaverne	
	mellem os på afstemt vis.	
udbytte_3	a vision and verbal recognition provide a	Own
	common direction.	
	en vision og verbal anerkendelse giver en	
	fælles retning.	

## Table x: Treatment check

Pretext: Over the last few months, I have gained a greater understanding of how	Strongly disagree	Disagree	Neither disagree nor disagree	Agree	Strongly agree	Mean	Total N
we as employees motive each other in the unit.	0% (0)	1.72% (1)	13.79% (8)	60.34% (35)	24.14% (14)	4.07	58
we as colleagues motive each other in the unit.	2.75% (19)	6.52% (45)	31.30% (216)	43.19% (298)	16.23% (112)	3.64	690
we as a unit share leadership tasks among us in an aligned way.	Strongly disagree	Disagree	Neither disagree nor disagree	Agree	Strongly agree	Mean	Total N
- Leaders	3.45% (2)	5.17% (3)	24.14% (14)	51.72% (30)	15.52% (9)	3.71	58
- Employees	4.95% (34)	11.06% (76)	41.05% (282)	34.21% (235)	8.73% (60)	3.31	687

a vision and verbal recognition provide a common direction.	Strongly disagree	Disagree	Neither disagree nor disagree	Agree	Strongly agree	Mean	Total N
- Leaders	0%	1.72%	15.52%	53.45%	29.31%	4.10	58
	(0)	(1)	(9)	(31)	(17)		
- Employees	2.91%	3.78%	27.18%	43.02%	23.11%	3.80	688
	(20)	(26)	(187)	(296)	(159)		

Note: percentages of observations in each category. Number of observations in parentheses. The answers were assigned the following values to calculate the mean: strongly disagree = 1, disagree = 2, neither disagree nor disagree = 3, agree = 4, strongly agree = 5.

## Continued work

Both the leaders and employees were asked to state to what extend they have worked further with the insights from the training days held in their organizational units.

#### Table X. Items measuring continued work

	Employees / leaders:	Source
viderearbejde	To what extent have you worked further with	Own
	the insights from the training days held in your	
	unit?	
	I hvilken grad har I arbejdet videre med	
	indsigterne fra udviklingsdagene afholdt i jeres	
	enhed?	

Note: the question was changed not to refer to the specific semester for the training days in the fall of 2021.

#### Table x: Continued work

To what extent have you worked further with the insights from the training days held in your unit?	Not at all	To lesser extent	To some extent	To a high extent	To a very high extent	Don't know	Mean	Total N
- Leaders	0%	7.69%	46.15%	38.46%	0%	7.69%	3.33	13
	(0)	(1)	(6)	(5)	(0)	(1)		
- Employees	5.76%	17.99%	33.81%	13.67%	4.32%	24.46%	2.90	139
	(8)	(25)	(47)	(19)	(6)	(34)		

Note: percentages of observations in each category. Number of observations in parentheses. The answers were assigned the following values to calculate the mean: not at all = 1, to lesser extent = 2, to some extent = 3, to a high extent = 4, to a very high extent = 5. "Don't know"-answers coded as missing.

# 5. Qualitative data collection

[introduction to section five around here]

## Purpose and Background

The qualitative part follows up on the outcome of the treatments. This is done through qualitative semi structured discursive interviews with managers and selected employee focal groups following Kvale and Brinkmann's (2009) craft of qualitative interviews.

The qualitative part of this project will focus on the participants experience of the treatment courses, and how this has contributed to the organizational management focusing both on the effect on organizational as well as individual level (both managers and employees). Thus, we focus on both managers and employees reflections on the learned tools and input from the training. We would like to engage qualitatively with leadership identity, but also on a general level, we wish to obtain knowledge on how participants in practice have applied these new skills, why and how this is reciprocally related to institutional logics, identity creation and public service motivation (Thornton, Ocasio, and Lounsbury 2012, Meyer et al. 2014). This is done by asking the participants to describe both factual and perceived actions and initiatives as well as describing how this is influenced by previous logics as well as influence their self-understanding.

Likewise, the qualitative data collection will seek to emphasize possible challenges and obstacles in obtaining the desired outcomes. From this standpoint, we draw on management control literature (See for example Malmi and Brown 2008, Merchant and Otley 2006, Otley 2003, van der Kolk 2019, Nuhu, Baird, and Appuhami 2019) in order to understand the influence of organizational structures, existing managerial practices, and other structural conditions which is experienced as a barrier for development.

Specific concepts that we seek to apply and engage with in the qualitative part is, among others:

- Organisational level (could also be political aspects): structure, performance measures, accountability, management control systems, institutional logics
- Leadership/management level: Span of control, organizational behavior, change management, motivation, leadership identity
- Individual level: individual behaviour, motivation, learning, intrinsic motivation, public service motivation, identity creation

Some of these concepts, such as intrinsic motivation, behavioral aspects, leadership identity and public service motivation overlap with parts of the quantitative data collection and therefore provides us with opportunities to develop mixed method focus areas and papers.

## Data collection

In the data collection we focus on hospital entities due to its relevance and ability to develop papers within the health care field.

#### Interviews conducted:

	Visionary/transformational	Distributed leadership	Motivation
	leadership		
Hospital team1	5 leaders	5 leaders	5 leaders
	5 groups of employees	5 groups of employees	5 groups of employees
Hospital team2	5 leaders	5 leaders	5 leaders
	5 groups of employees	5 groups of employees	5 groups of employees
Total	10 leaders	10 leaders	10 leaders
	10 groups of employees	10 groups of employees	10 groups of employees

Interviews med ledere varighed ca. 1 time. Med medarbejdere 30 minutter – 1 time. De samme ledere og medarbejdere følges over tid.

Time of interviews:

- 1. round of interview 5-6 weeks after the treatment
- 2. round of interview 6 months after finishing the last treatment

Place:

- The interviews will be conducted at the participants locations

Duration:

- Leaders: 1 hour
- Focus group interviews of employees: 1,5 hours

[The actual question quide wil be intoduced in a later version of the report]

## References

- Alonso, Pablo, og Gregory B. Lewis. 2001. "Public Service Motivation and Job Performance Evidence from the Federal Sector". The American Review of Public Administration 31(4): 363–380.
- Andersen, Lotte Bøgh, Stefan Boye & Ronni Laursen (2018) Building support? The importance of verbal rewards for employee perceptions. International Public Management Journal 21 (1) 1-32.
- Andersen, Lotte Bøgh, Thomas Pallesen, og Lene Holm Pedersen. 2011. "Does ownership matter? Public service motivation among physiotherapists in the private and public sectors in Denmark". Review of Public Personnel Administration 31(1): 10–27.
- Boye, Stefan, Johannes Christensen, Ulrich Thy Jensen, Louise Ladegaard Bro, Anne Bøllingtoft, Tine Eriksen, Ann-Louise Holten, Christian Bøtcher Jacobsen, Jacob Ladenburg, Poul Aaes Nielsen, Heidi Houlberg Salomonsen, Niels Westergaard-Nielsen & Lotte Bøgh Andersen (2015) *LEAP – Leadership behavior and performance. Technical report Survey of leaders and employees, pre-treatment.* Accessed August 30th 2021 at

https://ps.au.dk/fileadmin/Statskundskab/Billeder/Forskning/Forskningsprojekter/LEAP/Dokumente r/LEAP\_technical\_report\_pretreatment.pdf

- Bøgh Andersen, Lotte, og Lene Holm Pedersen. 2012. "Public service motivation and professionalism". International Journal of Public Administration 35(1): 46–57.
- Brewer, Gene A. 2008. "Employee and organizational performance". Motivation in public management: The call of public service: 136–156.
- Brewer, Gene A., og Sally Coleman Selden. 2000. "Why elephants gallop: Assessing and predicting organizational performance in federal agencies". Journal of public administration research and theory 10(4): 685–712.
- Bright, Leonard. 2007. Does Person-Organization Fit Mediate the Relationship between Public Service Motivation and the Job Performance of Public Employees? Review of Public Personnel Administration 27(4): 361–79.
- Bro, Louise Ladegaard Lotte Bøgh Andersen & Anne Bøllingtoft (2017) Low-hanging fruit: Leadership, perceived prosocial impact and employee motivation International Journal of Public Administration. 40:9, 717-729.
- Cable, D. M., & Judge, T. A. (1996). Person–organization fit, job choice decisions, and organizational entry. Organizational behavior and human decision processes, 67(3), 294-311.
- Costa, P. T., Jr., & McCrae, R. R. (2011). The Five-Factor Model, Five-Factor Theory, and interpersonal psychology. In L. M. Horowitz & S. Strack (Eds.), Handbook of interpersonal psychology: Theory, research, assessment, and therapeutic interventions (p. 91–104). John Wiley & Sons, Inc.
- Coursey, David H., og Sanjay K. Pandey. 2007. "Public Service Motivation Measurement Testing an Abridged Version of Perry's Proposed Scale". Administration & Society 39(5): 547–568.
- Currie, G., Lockett, A. & Suhomlinova, O. 2009, 'The institutionalization of distributed leadership: a 'catch-22' in English public services', Human Relations, vol. 62, no. 11, pp. 1735-61.
- Day, D. V., & Sin, H.-P. (2011). Longitudinal tests of an integrative model of leader development: Charting and understanding developmental trajectories. The Leadership Quarterly, 22(3), 545-560. doi:10.1016/j.leaqua.2011.04.011

- Deci, E.L. & Ryan R.M. (2000). The "what" and "why" of goal pursuits: human needs and the selfdetermination of behavior. Psychological Inquiry, 11(4), 227-268.
- Epitropaki, O., Kark, R., Mainemelis, C., & Lord, R. G. (2017). Leadership and followership identity processes: A multilevel review. The Leadership Quarterly, 28(1), 104-129. doi:doi.org/10.1016/j.leaqua.2016.10.003
- Frankl, V. E. (1959). Man's search for meaning. Boston: Beacon Press.
- Frankl, V. E. (1966). What is meant by meaning. Journal of existentialism, 7 (25): 21-28
- Gagné, Marylène, og Edward L. Deci. 2005. "Self-determination theory and work motivation". Journal of Organizational behavior 26(4): 331–362.
- Gottlieb, T. & Gøtzsche-Astrup, O. (2020). Personality and work-related outcomes through the prism of socioanalytic theory: A review of meta-analyses, Nordic Psychology, 72(4), 346-362.

Gregersen, Daniel Skov, Kathe Udengaard Elbæk, Ine Bøge Eskildsen, Jakob Majlund Holm, Simon Calmar Andersen & Lotte Bøgh Andersen (2021) *DAVI – Data-informed visionary leadership. Technical report Survey of leaders and employees, pre-treatment, post-treatment*. Accessed August 30th 2021 at <u>https://ps.au.dk/fileadmin/Statskundskab/CPL/Hjemmeside/Datainformeret\_visionsledelse\_</u> <u>\_\_\_\_\_datarapport.pdf</u>

- Grøn, C. H., Bro, L. L., & Andersen, L. B. (2019). Public managers' leadership identity: concept, causes, and consequences. Public Management Review, 1-21. doi:10.1080/14719037.2019.1645875
- Harris, A. 2008, 'Distributed leadership: according to the evidence', Journal of Educational Administration, vol. 46, no. 2, pp. 172-88.
- Hiller, N. (2006). An examination of leadership beliefs and leadership self-identity: Constructs, correlates, and outcomes.
- Høstrup, Marie Andersen, Lotte Bøgh (2020). Leading to make a difference for whom? How vision content moderates the relationship between transformational leadership and public service motivation. Online before print. International Public Management Journal
- House, R. J. 1998. "Appendix: Measures and Assessments for the Charismatic Leadership Approach: Scales, Latent Constructs, Loadings, Cronbach Alphas, and Interclass Correlations" in F. Dansereau, & F. J. Yammarino (Eds.), Leadership: The multiple level approaches contemporary and alternative, (24, Part B, pp. 23–30). London: JAI Press.
- Jacobsen, Christian Bøtcher, Johan Hvitved, og Lotte Bøgh Andersen. 2014. "Command and motivation: How the perception of external interventions relates to intrinsic motivation and public service motivation". Public Administration 92(4): 790–806.
- Jakobsen, M.L., Kjeldsen, A.M. & Pallesen, T. 2016, 'Distribueret ledelse i offentlige serviceorganisationer', Politica Tidsskrift for Politisk Videnskab, årg. 48, nr. 2, pp. 208-27.
- Jensen, Ulrich Thy, og Lotte Bøgh Andersen. 2015. "Public Service Motivation, User Orientation, and Prescription Behaviour: Doing Good for Society or for the Individual User?" Public Administration 93(3): 753–68.
- Jensen, Ulrich Thy. "Does perceived societal impact moderate the effect of transformational leadership on value congruence? Evidence from a field experiment." Public Administration Review 78.1 (2018): 48-57.

- Jensen, Ulrich Thy Andersen, Lotte Bøgh Jacobsen, Christian Bøtcher (2019). Only When We Agree! How Value Congruence Moderates the Impact of Goal-Oriented Leadership on Public Service Motivation. Public Administration Review, 79 (1): 12-24.
- Jensen, Ulrich Thy Andersen, Lotte Bøgh Ladegaard, Louise Bøllingtoft, Anne Mundbjerg Eriksen, Tine Louise Holten, Ann-Louise Jacobsen, Christian Bøtcher Ladenburg, Jacob Nielsen, Poul Aaes Salomonsen, Heidi Westergård-Nielsen, Niels Würtz, Allan (2019). Conceptualizing and Measuring Transformational and Transactional Leadership. Administration & Society. 51 (1): 3-33.
- Jønsson, T.F., Unterrainer, C.M., Jeppesen, H.J. & Jain, A.K. 2016, 'Measuring distributed leadership agency in a hospital context: development and validation of a new scale', Journal of Health Organization and Management, vol. 30, no. 6, pp. 908-26.
- Kim, Sangmook. 2005. "Individual-level factors and organizational performance in government organizations". Journal of public administration research and theory 15(2): 245–261.
- Kim, Sangmook. 2011. "Testing a revised measure of public service motivation: Reflective versus formative specification". Journal of Public Administration Research and Theory 21(3): 521–546.
- Kim, Sangmook. 2013. "Investigating the Structure and Meaning of Public Service Motivation across Populations: Developing an International Instrument and Addressing Issues of Measurement Invariance". Journal of Public Administration Research and Theory 23(1): 79–102.
- Kjeldsen, Anne Mette, og Christian Bøtcher Jacobsen. 2013. "Public Service Motivation and Employment Sector: Attraction or Socialization?" Journal of Public Administration Research and Theory 23(4): 899–926.
- Kjeldsen, Anne Mette, Thomas Jønsson, Christian Qvick og Lotte Bøgh Andersen (2020). Distribueret ledelse i den offentlige sektor. København: Djøf Forlaget.
- Kuvaas, B\aard m.fl. 2017. "Do intrinsic and extrinsic motivation relate differently to employee outcomes?" Journal of Economic Psychology 61: 244–258.
- Kvale, Steinar, and Svend Brinkmann. 2009. Interviews : learning the craft of qualitative research interviewing. 2. ed. ed. Los Angeles: Sage Publications.
- Kwok, N., Hanig, S., Brown, D. J., & Shen, W. (2018). How leader role identity influences the process of leader emergence: A social network analysis. The Leadership Quarterly, 29(6), 648-662. doi:10.1016/j.leaqua.2018.04.003
- Larsen, R., Buss, D., Wismeijer, A. and Song, J. (2017). Personality Psycho–logy: Domains of knowledge about human nature. London: McGraw Hill Education.
- Ledelsesevalueringen (2021). Faglig ledelse. Accessed September 1st 2021 at <u>https://ledelsesevaluering.dk/fileadmin/ledelsesevaluering/Dokumenter/Temanotater/Faglig\_ledels</u> <u>e\_- for\_organisationer.pdf</u>
- Ledelseskommissionen (2018). Put citizen first: Leadership and management in the public sector with focus on operational development: Recommendations from the Danish Leadership and Management Commission. Accessed August 30<sup>th</sup> 2021 at https://ledelseskom.dk/files/media/recommendations\_uk.pdf
- Leithwood, K., Mascall, B., Strauss, T., Sacks, R., Memon, N. & Yashkina, A. 2007, 'Distributing leadership to make schools smarter: taking the ego out of the system', Leadership and Policy in Schools, vol. 6, no. 1, pp. 37-67.

- MacKenzie, S. B., Podsakoff, P. M., & Rich, G. A. (2001). Transformational and transactional leadership and salesperson performance. Journal of the Academy of Marketing Science, 29, 115-134.
- Malmi, Teemu, and David A. Brown. 2008. "Management control systems as a package—Opportunities, challenges and research directions." Management Accounting Research 19 (4):287-300. doi: https://doi.org/10.1016/j.mar.2008.09.003.
- Martela, Ryan & Steger (2018). Meaningfulness as Satisfaction of Autonomy, Competence, Relatedness, and Beneficence: Comparing the Four Satisfactions and Positive Affect as Predictors of Meaning in Life. Journal of Happiness Studies, 19: 1261–1282
- Maslow, A. H. (1954). Motivation and personality. New York: Harper & Row.
- McAdams, D.P. (1982). Intimacy motivation. In: A. J. Stewart (ed.). Motivation and society. (pp. 133-171). San Fransico: Jossey-Bass.
- McClelland, D. C., Atkinson, J. W., Clark, R. A. & Lowell, E. L. (1953). The achievement motive. New York: Appleton-Century-Crofts.
- Merchant, Kenneth A., and David T. Otley. 2006. "A Review of the Literature on Control and Accountability." In Handbook of Management Accounting Research edited by C.S. Chapman, A.G. Hopwood and M.D. Shields, 785-802. Amsterdam: Elsevier Ltd.
- Meyer, Renate E., Isabell Egger-Peitler, Markus A. Höllerer, and Gerhard Hammerschmid. 2014. "OF BUREAUCRATS AND PASSIONATE PUBLIC MANAGERS: INSTITUTIONAL LOGICS, EXECUTIVE IDENTITIES, AND PUBLIC SERVICE MOTIVATION." Public Administration 92 (4):861-885. doi: https://doi.org/10.1111/j.1467-9299.2012.02105.x.
- Moynihan, D. P., S. K. Pandey, & B. E. Wright. 2012. "Setting the Table: How Transformational Leadership Fosters Performance Information Use." Journal of Public Administration Research and Theory 22 (1): 143–64.
- Murray, H. (1938). Explorations of personality. New York: Oxford University Press.
- Nielsen, P.A. and Jacobsen, C.B. (2018), Zone of Acceptance under Performance Measurement: Does Performance Information Affect Employee Acceptance of Management Authority?. Public Administration Review, 78(5): 684-693.
- Nielsen, Poul Aaes Boye, Stefan Holten, Ann-Louise Jacobsen, Christian Bøtcher Andersen, Lotte Bøgh (2019). Are Transformational and Transactional Types of Leadership Compatible? A Two-Wave Study of Employee Motivation. Public Administration, 97 (2) 413-428.
- Nuhu, Nuraddeen Abubakar, Kevin Baird, and Ranjith Appuhami. 2019. "The impact of management control systems on organisational change and performance in the public sector." Journal of Accounting & Organizational Change 15 (3):473-495. doi: 10.1108/JAOC-08-2018-0084.
- O'Reilly, C. A., & J. Chatman. 1986. "Organizational Commitment and Psychological Attachment: The Effects of Compliance, Identification, and Internalization on Prosocial Behavior." Journal of Applied Psychology 71 (3): 492–99
- Otley, David. 2003. "Management control and performance management: whence and whither?" The British Accounting Review 35 (4):309-326. doi: http://dx.doi.org/10.1016/j.bar.2003.08.002.
- Perry, James L. 1996. "Measuring public service motivation: An assessment of construct reliability and validity". Journal of public administration research and theory 6(1): 5–22.

- Perry, James L., Annie Hondeghem, og Lois Recascino Wise. 2010. "Revisiting the motivational bases of public service: Twenty years of research and an agenda for the future". Public administration review 70(5): 681–690.
- Perry, James L., og Annie Hondeghem. 2008. Motivation in public management: The call of public service. New York: Oxford University Press, USA.
- Podsakoff, P. M., S. B. MacKenzie, & W. H. Bommer. 1996. "Transformational Leader Behaviors and Substitutes for Leadership as Determinants of Employee Satisfaction, Commitment, Trust, and Organizational Citizenship Behaviors." Journal of Management 22 (2): 259–98.
- Podsakoff, P. M., W. H. Bommer, N. P. Podsakoff, & S. B. MacKenzie. 2006. "Relationships between Leader Reward and Punishment Behavior and Subordinate Attitudes, Perceptions, and Behaviors: A Meta-Analytic Review of Existing and New Research." Organizational Behavior and Human Decision Processes 99 (2): 113–42.
- Ryan, R.M., Deci, E.L. (2017). Self-determination theory. Basic psychological needs in motivation, development and wellness. New York: The Guilford Press.
- Ryan, Richard M., og Edward L. Deci. 2000. "Intrinsic and extrinsic motivations: Classic definitions and new directions". Contemporary educational psychology 25(1): 54–67.
- Steger, M.F., Frazier, P. Oishi, S. & Kaler, M. (2006). The meaning in life questionnaire: assessing the presence of and search for meaning in life. Journal of Counseling Psychology 53 (1), 80–93
- Steijn, B. 2008. "Person-Environment Fit and Public Service Motivation." International Public Management Journal 11 (1): 13–27.
- Taylor, J.. 2008. "Organizational Influences, Public Service Motivation and Work Outcomes: An Australian Study." International Public Management Journal 11 (1): 67–88.
- Thornton, Patricia H., William Ocasio, and Michael Lounsbury. 2012. Dynamics of Organizational Practices and Identities. Oxford: Oxford University Press.
- Tønnesvang, J. (2019). Psykologiske behov, motivation og vitaliserende miljøer. I: T. N. Rasmussen & A. Søndberg (red.), Motivation: i klasseledelse, relationer og didaktik (s. 127-149). Aarhus, DK: KvaN.
- van der Kolk, Berend. 2019. "Management control packages: a literature review and guidelines for public sector research." Public Money & Management 39 (7):512-520. doi: 10.1080/09540962.2019.1592922.
- Vandenabeele, W. 2009. "The Mediating Effect of Job-satisfaction and Organizational Commitment on Self-reported Performance: More Robust Evidence of the PSM-Performance Relationship. *International Review of Administrative Sciences*, Vol. 75, pp. 11-34.
- Vedel, A., Gøtzsche-Astrup, O. & Holm, P. (2019) The Danish IPIP-NEO-120: A free, validated five-factor measure of personality, Nordic Psychology, 71:1, 62-77, DOI: 10.1080/19012276.2018.1470553
- Weinstein, N., Ryan, R. M. & Deci, E. L. (2012/2017). Motivation, meaning, and wellness: a self-determination perspective on the creation and internalization of personal meanings and life goals.
  In: Paul T. P. Wong (ed). The human quest for meaning (pp. 81-106). New York: Routledge
- Winter, D.G. (1973). The power motive. New York: Free Press.
- Wright, Bradley E., and Sanjay K. Pandey. 2008. Public Service Motivation and the Assumption of Person-Organization Fit: Testing the Mediating Effect of Value Congruence. Administration & Society 40(5): 502–21.

- Wright, Bradley E., and Sanjay K. Pandey. 2008. Public Service Motivation and the Assumption of Person-Organization Fit: Testing the Mediating Effect of Value Congruence. Administration & Society 40(5): 502–21.
- Wright, Bradley E., Donald P. Moynihan, og Sanjay K. Pandey. 2012. "Pulling the Levers: Transformational Leadership, Public Service Motivation, and Mission Valence". Public Administration Review 72(2): 206–15.
- Wright, Bradley E., Robert K. Christensen, og Sanjay K. Pandey. 2013. "Measuring public service motivation: Exploring the equivalence of existing global measures". International Public Management Journal 16(2): 197–223.
- Yukl, G. 2013, Leadership in organizations, 8th edition, Pearson Education, Prentice Hall.
- Zhang, H., Sang, Z., Chen, C. & Deng, W. (2018). Need for meaning, meaning confusion, meaning anxiety, and meaning avoidance: additional dimensions of meaning in life. Journal of Happiness Studies, 19, 191–212.

# Appendix

## Former scale for Distributed Leadership

	Leaders: Jeg har aktivt involveret mine medarbejdere i	Source
	Employees: Min leder har aktivt involveret mig og mine	
	kollegaer i	
dl1_gl	At formulere målsætninger for udvikling af enheden	(Jønsson et al. 2018)
dl2_gl	At udarbejde forslag til enhedens drift og udvikling	(Jønsson et al. 2018)
dl3_gl	At tage ansvar for tilrettelæggelse af arbejdsopgaver i enheden	(Jønsson et al. 2018)
dl4_gl	At indgå i beslutningsprocesser om enhedens drift og udvikling	(Jønsson et al. 2018)
dl5_gl	At arbejde med styring af, hvordan ressourcer fordeles i	(Jønsson et al. 2018)
	enheden	
dl6_gl	At tilrettelægge aktiviteter for kompetenceudvikling for	(Jønsson et al. 2018)
	medarbejderne	
dl7_gl	At løse personalekonflikter i enheden	(Jønsson et al. 2018)

R<sup>2</sup> .226

Below a confirmatory factor analysis is shown for participants who answered the old questions regarding distributed leadership. Furthermore, the distribution of responses are shown for an additive scale containing all 7 items.

able x. commutatory factor analysis. Distributed leadership reported by leaders			
Jeg har aktivt involveret mine medarbejdere i	Loadings		
At formulere målsætninger for udvikling af enheden	.476***		
	(.122)		
At udarbejde forslag til enhedens drift og udvikling	.475***		
	(.112)		

Table x. Confirmatory factor analysis: Distributed leadership reported by leaders

	(.122)	
At udarbejde forslag til enhedens drift og udvikling	.475***	.225
	(.112)	
At tage ansvar for tilrettelæggelse af arbejdsopgaver i enheden	.686***	.471
	(.089)	
At indgå i beslutningsprocesser om enhedens drift og udvikling	.797***	.635
	(.069)	
At arbejde med styring af, hvordan ressourcer fordeles i enheden	.837***	.701
	(.061)	
At tilrettelægge aktiviteter for kompetenceudvikling for	475***	.226
medarbejderne	(.121)	
At løse personalekonflikter i enheden	.785***	.608
	(.069)	

Note: Standardized coefficients from the SEM-regression of each item on the predicted factor. N = 49. \*p<.05, \*\*p<.01, \*\*\*p<.001. CFI = .917 TLI = .876 RMSEA = .122. Cronbach's alpha = .837.

Table x. Confirmatory fac	ctor analysis:	Distributed	leadership	reported by	y employees
---------------------------	----------------	-------------	------------	-------------	-------------

Min leder har aktivt involveret mig og mine kollegaer i	Loadings	R <sup>2</sup>
At formulere målsætninger for udvikling af enheden	.754***	.568
	(.018)	
At udarbejde forslag til enhedens drift og udvikling	.778***	.606
	(.017)	
At tage ansvar for tilrettelæggelse af arbejdsopgaver i enheden	.647***	.419
--	---------	------
	(.023)	
At indgå i beslutningsprocesser om enhedens drift og udvikling	.839***	.704
	(.014)	
At arbejde med styring af, hvordan ressourcer fordeles i enheden	.777***	.604
	(.017)	
At tilrettelægge aktiviteter for kompetenceudvikling for	.718***	.515
medarbejderne	(.020)	
At løse personalekonflikter i enheden	.623***	.389
	(.025)	

Note: Standardized coefficients from the SEM-regression of each item on the predicted factor. N = 773. \*p<.05, \*\*p<.01, \*\*\*p<.001. CFI = .937 TLI = .905 RMSEA = .126. Cronbach's alpha = .890.



## Figure x. Distribution of distributed leadership as reported by leaders

Note: N = 49, mean = 3.50, std. dev = 0.66, min = 1.86, max = 5, skewness = -.293, kurtosis = 2.81. If the respondents had missing values on three items, the missing values were replaced with mean values of the items they answered. Respondents with more than three missing values (i.e. less than four answers) were excluded from the analysis.



## Figure x. Distribution of distributed leadership as reported by leaders

Note: N = 761, mean = 55.96, std. dev = 22.45, min = 0, max = 100, skewness = -.266, kurtosis = 2.66. If the respondents had missing values on three items, the missing values were replaced with mean values of the items they answered. Respondents with more than three missing values (i.e. less than four answers) were excluded from the analysis.

## **Corona specific sickness**

Of the 13 leaders, that answered the additional question regarding corona, none reported sick absence due to corona, hence no graph is shown.



Figure x. Sick absence due to corona as reported by employees, distribution

Note: N = 128, mean = .36, std. dev = 1.49, min = 0, max = 14, skewness = -.271, kurtosis = 2.65