Uncertainty reduction in teams: The role of transformational leadership

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1. Introduction

Post-bureaucratic organization structures such as teams have been introduced in the public sector in response to changing demands in society requiring public organizations to be flexible, innovative, and responsive (Groeneveld 2016; Groeneveld & Kuipers 2014). Whereas these team-based organization types may succeed in achieving these aims, they may lose out on what was one of the original purposes of the bureaucracy: reducing uncertainty for employees (Gajduschek 2003). Where uncertainty reduction in traditional bureaucracies is achieved through standardization and formalization, uncertainty reduction in team based structures needs to be achieved through other means since formalization and standardization would undermine the increased flexibility and responsiveness of a team-based structure. Furthermore, rules and procedures cannot be expected to reduce all kinds of uncertainty. For instance, uncertainty that results from weighing the competing values in government, may not be reduced by rules (REF).

In the absence of rules, we hypothesize that uncertainty reduction may be realized through social interactions among team members and their supervisors. Uncertainty is here defined as the experience of incomplete, unclear or conflicting information regarding a professional's goals, roles or tasks (REF). Transformational leadership is then expected to be a crucial antecedent of uncertainty. We will hypothesize that transformational leaders by developing, sharing, and sustaining a vision for the organization (Jensen et al. 2019) not only directly reduce uncertainty regarding a professional's goals and roles. We will also hypothesize that transformational leaders enable teams to effectively work together (Zaccaro et al. 2001) and thus reduce uncertainty for their members. The research question of this study therefore is:

To what extent and how does transformational leadership contribute to uncertainty reduction?

By answering this research question, this article contributes to the literature in at least three ways. First, by researching these managerial rather than structural antecedents of uncertainty, this article expands on the current literature in which uncertainty reduction is generally achieved through high levels of formalization in the organization (cf. Raaphorst 2018). This has implications for practice as well, since it would allow organizations to maintain their decentralized and deregulated organization form whilst at the same time reducing or managing uncertainty for employees.

Second, the article informs the literature on transformational leadership by studying the effects of transformational leadership on uncertainty, both directly and mediated by team processes. Although there is already a wealth of literature on the effects of transformational leadership on among other things performance (Bass et al. 2003), motivation (Jensen & Bro 2018), job satisfaction (Podsakoff et al. 1990), and goal setting (Bronkhorst, Steijn & Vermeeren 2015), studying the effects of transformational leadership offers a novel perspective in determining the potentially beneficial effects of this leadership style. This may be even more so relevant in the public sector, where uncertainty is prominent because of often conflicting and ambiguous goals (Chun and Rainey 2005; Rainey and Jung 2010), unclear roles (Davis & Stazyk 2014; Pandey & Wright 2006), and daily work tasks which are surrounded by uncertainties about whether and how interventions work (Lipsky 1980).

Third, the vast majority of research of the effects of leadership perceptions is based on cross-sectional data, thus providing only a static understanding of these concepts. The present study adds to the literature by providing a more dynamic perspective, using longitudinal data in studying the relationship between leadership and team processes on the one hand and uncertainty on the other hand. Not only does this longitudinal design allow us to draw conclusions on actual uncertainty *reduction*, this design furthermore also reduces common source bias (Favero & Bullock 2014). The problem of common source bias arises when the measurements of the dependent and independent variables have correlated errors. However, under the assumption that an individual's perceptual error is constant over time, the longitudinal design effectively deals with this problem (ibidem).

In this paper, we study the influence of transformational leadership on the uncertainty experiences of public professionals. We do so by both looking at the direct effect on transformational leadership on uncertainty and by examining how this effect is mediated by two

teamwork processes, namely information elaboration and cohesion. The case we analyze is that of the social welfare teams in the Netherlands. In order to answer the research question, this paper proceeds as follows. First, we briefly describe the main dependent variable of the research: uncertainty. We then proceed by formulating our theoretical expectations. We first hypothesize about the direct effect of transformational leadership on uncertainty and then draw a mediation model in which we study the effects of team cohesion as a mediator between transformational leadership and goal and role uncertainty and the effect of team information elaboration as a mediator between transformational leadership and task uncertainty.

2. Theory

2.1 Uncertainty

Previous research has shown that uncertainty is a multifaceted concept that affects different domains of the professional's work: goals, roles, and tasks (REF). Where goal uncertainty is concerned with the question what the aims of the work are, role uncertainty focusses on the behaviors that are needed and appropriate *given* certain goals. Finally, task uncertainty is concerned with how to go about performing a specific task in the work.

Uncertainty can not only affect different domains of the professional's work, it can also have different sources: incomplete information, ambiguous information, and conflicting information (REF). Uncertainty that is caused by incomplete information stems from Weber's notion of the bureaucracy in which rules and procedures are applied directly and impartially to cases (Weber 1922). In this view, uncertainty can always be reduced by more information. However, knowledge is not always "out there for bureaucrats to rely upon" (Raaphorst 2018, 487). Especially in the work of street-level bureaucrats, information is often ambiguous and conflicting, which can also cause uncertainty (cf. Lipsky 1980).

However closely related to for example ambiguity, uncertainty conceptually differs from ambiguity in that it recognizes multiple sources of uncertainty. Whereas ambiguity is by definition caused by the need to interpret ambiguous information, uncertainty can also be rooted in incomplete and conflicting information (REF).

2.2 Transformational leadership as antecedent of uncertainty

The concept of uncertainty features prominently in literature on bureaucracy and street-level

bureaucracy (Weber 1922; Gajduschek 2003; Raaphorst 2018). However, where the bureaucracy was designed in order to reduce uncertainty as much as possible by means of all-encompassing rules and procedures (Gajduschek 2003), we would argue that there is a crucial role for leadership in reducing uncertainty in more organic or post-bureaucratic organizational arrangements. Especially transformational leadership may be expected to play a large role in reducing uncertainty for professionals.

Transformational leadership is a leadership style that is about elevating the employees' individual goals to the goals of the team or organization with the aim of letting employees work together on these organizational or team goals (Bass, 1999). The traditional model of transformational leadership consists of four dimensions: intellectual stimulation, individualized consideration, inspirational motivation, and idealized influence (ibidem). In line with recent developments in research on transformational leadership, criticizing this traditional multi-dimensional model, we focus on the visionary aspect of transformational leadership (Van Knippenberg & Sitkin 2013; Jensen et al. 2019). Transformational leadership can then be defined as those behaviors 'that seek to develop, share, and sustain a vision' (Jensen et al. 2019: 10).

We expect that transformational leadership can play a role in the reduction of goal uncertainty in three ways. First, one of the sources of goal uncertainty is incomplete information concerning the goals of the organization. By sustaining a vision and by translating that vision in specific goals, transformational leaders make sure that the organization has goals. Furthermore, an important aspect of transformational leadership is to also communicate the goals to employees, thus making sure that all employees have knowledge of the goals (Bronkhorst, Steijn & Vermeeren 2015). In this way, we expect that transformational leaders reduce goal uncertainty that is rooted in incomplete information concerning the organization's goals.

Second, by concretizing the mission and by explaining to employees how they can contribute to the organization's goals, transformational leaders ensure that all employees understand the goals of the organization (Berson & Avolio 2004). In this way, transformational leaders make sure that goals are either unambiguous or they help employees in the interpretation of ambiguous goals (Bronkhorst, Steijn & Vermeeren 2015: 125). By enhancing goal clarity for employees, we expect that transformational leaders reduce goal uncertainty that stems from ambiguous goals.

Third, transformational leaders are also able to mitigate the consequences of organizational goal conflict. Especially in the public sector, employees often have to balance conflicting goals such as working efficiently and giving individual attention to clients (cf. Lipsky 1980). Transformational leaders can provide clarity in these circumstances by providing employees with a collective sense of identity and by aligning the goals with the vision of the organization (Densten 2005). In doing so, transformational leaders prioritize certain goals over others in line with the vision of the organization and they thus reduce goal uncertainty stemming from conflicting goals for employees. This leads us to the following hypothesis:

Hypothesis 1a: Transformational leadership reduces goal uncertainty.

Besides reducing goal uncertainty, we also expect that there is an effect of transformational leadership on role uncertainty. Transformational leaders are not only focused on formulating and sustaining a vision for the organization, they also concretize the vision and explain to employees how they can contribute to achieving the organization's goals (Jensen et al. 2019). As such, they explicate which concrete actions and behaviors they expect from their employees. In doing so, transformational leaders may be expected to contribute to the reduction of role uncertainty for their employees.

Furthermore, we may expect that transformational leaders play an important role in aiding employees to shape their role in the organization conform the goals of the organizations and the employee's personal preferences (Paarlberg & Lavigna 2010). Where role uncertainty stems from conflicting or ambiguous roles, transformational leaders are important in encouraging employees to discuss these conflicts or ambiguities and helping them to reframe their roles in a consistent manner (ibidem). By both concretizing and shaping the roles of employees, we expect transformational leaders to reduce role uncertainty for employees. We therefore explicate the following hypothesis:

Hypothesis 1b: Transformational leadership reduces role uncertainty.

Where transformational leadership provides purpose and may thus be associated with goal and role uncertainty, we may not expect a direct effect of leadership on the uncertainties professionals experience while performing their everyday tasks. Direct colleagues are expected to have a greater impact on task uncertainty since they have a more intimate knowledge and are

closer to the work process than team leaders. However, we do expect that transformational leaders enable employees to effectively work together and share task relevant information with each other, thus reducing task uncertainty themselves. In other words, we expect that transformational leadership only has an effect on uncertainty reduction through its positive effect on team information elaboration. We will elaborate on this argument in paragraph 2.3.2.

2.3 The mediating effect of team processes

In order to further explain how transformational leadership contributes to uncertainty reduction, we focus on two different team processes. Team processes are known to be important mediators between transformational leadership and individual and team outcomes (Zaccaro et al. 2001) and we expect that team processes can at least partially explain how transformational leadership contributes to uncertainty reduction. In the following paragraphs, we will discuss two routes through which team processes are expected to mediate the relationship between transformational leadership and uncertainty reduction: an affective and a cognitive route (cf. Zaccaro et al. 2001). First, we expect that transformational leaders contribute to affective team processes by encouraging team members to work together in achieving the organizations goals (Bass et al. 2003). Second, we expect that transformational leaders also contribute to cognitive team processes, for example by explaining to employees how they can contribute to achieving the organizations goals (Bass et al. 2003). In this study, we capture these cognitive processes by team members engaging in information elaboration and we capture the affective processes by the team's cohesion (cf. Ashikali 2018).

2.3.1 Team cohesion as a mediator

Team cohesion is about the extent to which team members are united in achieving shared goals (Takleab et al. 2009). In a highly cohesive team, team members all take their responsibility and they work together in reaching the team's goals (ibidem). An important determinant of team cohesion is transformational leadership (Bass et al. 2003; Callow et al. 2009). Transformational leaders aim to develop personal and social identification among employees by aligning and elevating the individual goals of the team members to the level of the team (Bass et al. 2003). Furthermore, by explaining to team members how they can work together in achieving goals, the transformational leader stimulates the team to develop a sense of unitedness towards the goals of the team.

We expect that the relationship between transformational leadership and goal uncertainty is mediated through team cohesion. Team cohesion is expected to reduce goal uncertainty for employees since it is about employees working together on joint goals. By working together on shared goals, members of cohesive teams may be expected to critically assess and discuss the team's goals amongst each other. In doing so, the team members both share the content of the goals amongst each other, thus reducing goal uncertainty that is caused by incomplete information, and they discuss and prioritize the goals with each other, thus reducing goal uncertainty that is caused by ambiguous or incomplete information. We therefore formulate the following hypothesis:

> *Hypothesis 2a: Team cohesion mediates the relationship of transformational leadership and goal uncertainty.*

Furthermore, team cohesion may be expected to mediate the relationship between transformational leadership and role uncertainty. As discussed previously, we may expect transformational leaders to shape team cohesion (Bass et al. 2003; Callow et al. 2009). Furthermore, we also expect that members of cohesive teams experience less role uncertainty. We do so, since we expect members of cohesive teams to have a more intimate knowledge of the roles of other team members and that they therefore are also better able to shape their own role in the team (Bosselut et al. 2012; Eys and Carron 2001).

In addition to that, in a similar argument as laid out for the relationship between transformational leadership and role uncertainty, we may also expect that cohesion contributes to lower levels of role uncertainty since team members can help each other in shaping their roles. In cohesive teams, team members work together in achieving the team's goals and they may be expected to help each other in interpreting ambiguous roles and in prioritizing conflicting roles and in explicating which behaviors they expect of others in achieving the team's goals. We therefore come to the following hypothesis:

> *Hypothesis 2b: Team cohesion mediates the relationship of transformational leadership and role uncertainty.*

2.3.2 Team information elaboration as a mediator

With regard to task uncertainty, we expect cognitive team processes to facilitate uncertainty

reduction. In studying the 'cognitive route' to uncertainty reduction, we focus on the process of team information elaboration. This can be defined as 'the exchange, discussion, and integration of task-relevant information and perspectives' (Van Dick et al. 2008: 1466). In teams with high levels of information elaboration, team members make optimal use of each other's knowledge and expertise. This process is expected to reduce task uncertainty in different ways. First, by exchanging task-relevant information, team members reduce task uncertainty that is rooted in incomplete information. Second, by the discussion and integration of task-relevant insights, team members are expected to come up with shared interpretations of this information, thus reducing uncertainty that is rooted in ambiguous or conflicting information.

The concept of team information elaboration is especially relevant in reducing task uncertainty in the context of diverse teams, such as the multi-disciplinary teams that form the empirical case of the current study (Van Zijl et al. 2018). The multidisciplinary character of the work demands knowledge on a broad range of topics from the professional and in teams with much information elaboration, team members are more inclined to share their expertise with other team members, thus reducing task uncertainty for their colleagues.

Team information elaboration does not emerge completely independently. It is in important ways shaped by both transformational leadership and team cohesion (Kearney and Gebert 2009; Van Knippenberg et al. 2004). With regard to the former, we expect that transformational leaders stimulate information elaboration in the team by emphasizing how team members need to work together in achieving the team's goals. By stressing the importance of the collective in achieving work tasks, team members are challenged to actively share information with each other in achieving these tasks. Furthermore, since team members place collective goals over individual goals, they are even expected to engage in information elaboration if this incites criticism (Kearney and Gebert 2009).

With regard to the influence of team cohesion on information elaboration, we expect that team cohesion is an important determinant for team members to share task relevant information (Van Knippenberg et al. 2004; Ashikali 2018). In highly cohesive teams, team members work together in achieving the team's goals. In doing so, they are expected to engage more in the information elaboration that is needed in achieving these goals (Ashikali 2018). This argumentation leads us to the following hypotheses:

Hypothesis 3a: Team information elaboration mediates the relationship of transformational leadership and task uncertainty.

Hypothesis 3b: Team information elaboration mediates the relationship of team cohesion and task uncertainty.

In figure 1 we present our conceptual model. This model includes both the direct relationships between transformational leadership and goal and role uncertainty and the hypothesized mediation effects of team cohesion and information elaboration.
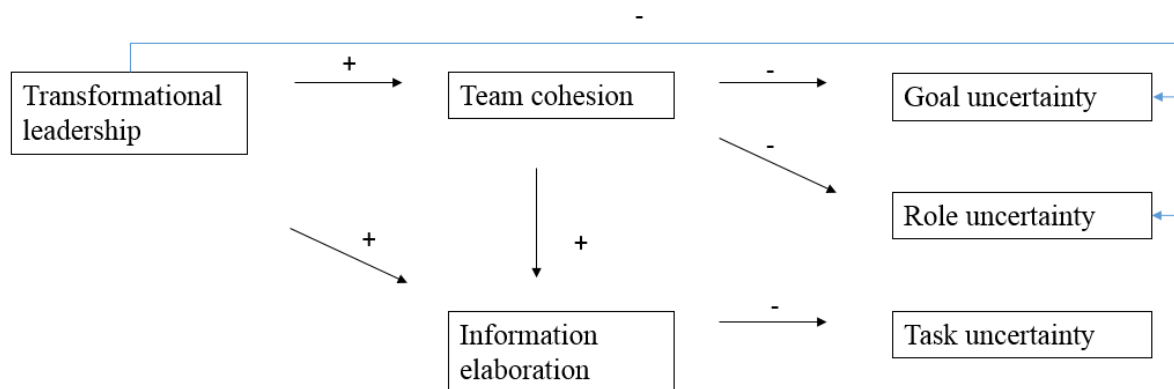

Figure 1: Conceptual model

3. Methods

3.1 Research context

The research context is that of the municipal social welfare teams in the Netherlands. These teams have been introduced in the Netherlands from 2015 onwards in response to new legislation that decentralizes social and healthcare responsibilities to local governments (Van Zijl et al. 2018). The teams have adopted a new way of working in which professionals of various different disciplines work together in achieving common goals for clients (ibid.). As such, these teams exemplify the shift from bureaucratic to more organic ways of organizing in government in recent years. We expect that this case therefore offers us ample opportunity in studying uncertainty in post-bureaucratic organization forms. Additionally, at the time of the research, reforms were still ongoing in the teams and organizational structures were not yet completely fixed. This might have further contributed to the uncertainty experiences of the professionals working in the teams.

These teams present a good case in studying teamwork processes because of the high levels of goal dependence of the team members, i.e. the team members need each other in achieving the team's goals. Teams in this respect differ from other work groups in that they share collective goals and in the fact that team members have to work together in order to achieve those goals (Van der Hoek et al. 2016; Cohen and Bailey 1997). The high levels of functional heterogeneity in the teams make a focus on teamwork processes especially relevant. Whereas working together with professionals from different backgrounds may itself be a source of uncertainty (REF), we expect that when team members are able to overcome their professional differences and effectively work together this might in fact contribute to uncertainty reduction.

3.2 Data collection

The data for this study were collected using a large-scale online survey among public welfare professionals in the Netherlands. This survey has 1020 respondents from 126 teams from three large and fourteen small to medium sized Dutch municipalities. After excluding those respondents from teams with a response below 30 per cent, 117 teams and 969 respondents remain in the data set. The response percentage within these 117 teams is 51 per cent (969 respondents out of 1899 invitations sent). The respondents are by a large majority female (88 per cent) and range in age from 21 to 70 years old with a mean age of 42 years. Similarly, respondents vary greatly in terms of experience levels, from newcomers who have just started working to veterans with over 40 years of experience in social work.

NB. We are currently analyzing cross-sectional data of the first 'wave' of this survey. However, the aim of the article is to study the within-person differences between two years. The data collection process for the second wave is currently ongoing. This longitudinal approach would enable us to draw conclusions on actual uncertainty reduction.

3.3 Measures

Uncertainty

The dependent variable uncertainty was measured as a multi-dimensional concept, differentiating between goal, role, and task uncertainty (REF). We have developed a new scale for uncertainty that was validated through an expert focus group (n = xx). The items were inspired on existing scales of goal, role, and work method ambiguity (Rainey and Jung 2010, Rainey 1983, Breaugh and Colihan 1994). Examples of items included the following: 'I know the goals of my team' (goal), 'In my role in the team, I know exactly what is expected of me'

(role), and 'When I work on a case, I know what the best approach is to do my work' (task). All items were measured using a five-point Likert scale ranging from '1' *strongly disagree* to '5' *strongly agree*. The dimensions had good reliability scores (alpha is .855 for goal uncertainty, .888 for role uncertainty, and .860 for task uncertainty) and evidence for construct validity was provided by a confirmatory factor analysis. An overview of all the items used to measure the dependent and independent variables can be found in table 1.

Transformational leadership

In line with recent research (Van Knippenberg & Sitkin 2013), transformational leadership was conceptualized and measured focusing on the visionary component of transformational leadership. We used five items from the scale of Jensen et al. (2019) and aggregated the items to the team level. An example item is: 'My manager communicates a clear vision of the organization's future'. The items were measured using the same five-point Likert scale. Reliability scores are good (alpha is .910). We have measured employee perceptions of leadership characteristics since previous research has shown that there are substantial differences in employee-perceived and leader-intended leadership and that only the former is related to performance (Jacobsen and Andersen 2015).

Cohesion

Cohesion was measured using a scale based on Carless & De Paola (2000). The scale consisted of five self-reported items and was aggregated to the team level. An example of an item is: 'In this team, we work as one in achieving our goals'. Also these items were measured with the same five-point Likert scale. The scale has a good reliability score (alpha is .898).

Information elaboration

Information elaboration was measured using a six-item self-reported scale based on Van Dick et al. (2008). An example item is: 'In my team, we regularly discuss the content of our work'. The items were aggregated to the team level as well. These items were measured with the same five-point Likert scale. Reliability of the scale is good (alpha is .883).

Table 1: list of items

Goal uncertainty	
GU1	"I know what the mission of my team is"
GU2	"I know what the goals of my team are"
GU3	"I know how the goals of my team can be evaluated"
Role uncertainty	

RU1	"In my role as team member, I know exactly what is expected of me"
RU2	"In my role as team member, I know what my responsibilities are"
RU3	"In my role as team member, I know what my objectives are"
RU4	"In my role as team member, I know how much authority I have"

Task uncertainty

TU1	"When I work on a case, I know how to go about getting my job done"
TU2	"When I work on a case, I know what is the best approach to do my work"
TU3	"When I work on a case, I know which procedures to use"

Transformational leadership (visionary leadership)

TL1	"Communicates a clear vision of the organization's future"
TL2	"Makes a continuous effort to generate enthusiasm for the organization's vision"
TL3	"Has a clear sense of where he or she believes our organization should be in 5 years"
TL4	"Strives to get the organization to work together in the direction of the vision"
TL5	"Strives to clarify for the employees how they can contribute to achieve the organization's goals"

Information elaboration

IE1	"My team members exchange a lot of information about the task"
IE2	"My team members often say things that lead me to learn something new about the job"
IE3	"In my team, we discuss the content of our work a lot"
IE4	"In my team, we often talk about our ideas about the task"
IE5	"My team members often say things that lead me to new ideas"
IE6	"I often think deeply about what other team members say about the job"

Team cohesion

TC1	"Our team is united in trying to reach its goals for performance"
TC2	"In this team, we all take our responsibility for setbacks or poor team performance"
TC3	"Team members help each other to complete team tasks"
TC4	"Our team members work well together"
TC5	"Team members are loyal to each other"

3.4 Analysis

Aggregation of individual data

Several of the concepts were measured at the individual level and need to be aggregated to the team level. This applies to transformational leadership and for the team processes information elaboration and cohesion. In order to determine whether aggregation to the team level is justified, we calculated the intra-class correlation (ICC) scores. Table 2 gives an overview of the ICC values. We have calculated both the ICC1 value, indicating the proportion of variance that can be explained by team membership, and the ICC2 value, which indicates the reliability of the team mean scores. For transformational leadership and team cohesion the ICC values indicate that that aggregation to the team level is justified, with ICC1 values falling within the typical range of .05 to .20 (Bliese 2000) and acceptable reliability of the scale with ICC2 values over .60. Information elaboration scores somewhat problematic on both ICC values but since ICC1 still falls within the .05 to .20 range and since it is conceptually relevant to aggregate these items to the team level, we have decided that aggregation to the team level is justified.

Table 2: Intraclass correlations ($n = 969$)

	ICC1	ICC2
Transformational leadership	.09	.61
Information elaboration	.05	.44
Cohesion	.11	.66

Note: ICC values are calculated as follows:
ICC1 = (MSB-MSW)/(MSB + (k-1) x MSW))
ICC2 = (MSB-MSW)/MSB
MSB = mean square between teams; MSW = mean square within teams; k = estimated team size[1].

Hypothesis testing

The analysis is based on the individual scores of goal, role, and task uncertainty and the team mean scores of transformational leadership, information elaboration and cohesion. The direct effect of transformational leadership on goal and role uncertainty (hypotheses 1a and 1b) is tested using a standard linear regression analysis. Furthermore, in hypothesis 2 and 3 we test for mediation effects in order to gain an understanding of the process through which transformational leadership contributes to uncertainty reduction. In order to test the mediation hypotheses, we first need to establish a significant relationship between the independent and dependent variables and a significant relationship between the independent variable and the mediator. We test these relationships using a regression analysis. In order to then test for partial (or complete) mediation, we perform the same regression analysis of the independent on the dependent variable but include the mediator in the regression equation. If there is a mediation effect, the effect of the independent variable on the dependent variable should decrease (or disappear in case of full mediation). We test for the significance of the mediation effect by performing a Sobel test (Baron and Kenny 1986; Preacher and Hayes 2004).

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[1] Since group sizes differed considerably between teams (ranging from 6 to 45), we have used an estimate for group size using the following formula (Bliese & Halverson 1998, 168):

$Ng = (1$ (Number of teams − 1))×(Σ Team sizes − (Σ Team sizes² / Σ Team sizes))

$= 1/(117−1)×(1899−(37809/1899)=16.20$

4. Results

The results are presented in table three to six. The results of our analysis show that, in line with our theoretical expectations, there is a significant direct relation between transformational leadership and uncertainty at the levels of goals and roles (respectively β = -.178 for goal uncertainty and β = -.135 for role uncertainty). The correlations are, furthermore, not only statistically significant, but also substantially strong to be relevant. We can thus confirm hypothesis 1a and 1b.

Hypothesis 2a and 2b state that the effect of transformational leadership on respectively goal and role uncertainty can in part be explained by the positive effect of transformational leadership on team cohesion. Team cohesion, in turn, has a negative effect on goal and role uncertainty, i.e. team cohesion is associated with lower levels of uncertainty. The analysis shows that there is indeed a significant negative correlation between team cohesion and goal and role uncertainty. Furthermore, a Sobel test was conducted and found partial mediation in the model (z-score $= 3.331$, $p < .01$ for the model with goal uncertainty as the dependent variable and z-score $= 3.177$, $p < .01$ for the model with role uncertainty as the dependent variable). It was found that team cohesion partially mediated the relationship between both transformational leadership and goal uncertainty and transformational leadership and role uncertainty. In conclusion, both hypothesis 2a and 2b can be confirmed.

Hypothesis 3a and 3b state that information elaboration acts as a mediator between the relationship between transformational leadership and task uncertainty and team cohesion and task uncertainty. In the analysis, we find that both transformational leadership and team cohesion are highly correlated with team information elaboration (β of .463 and .741 respectively). However, we do not find a significant effect of information elaboration on task uncertainty, thus indicating that there could not be a mediation effect of information elaboration. This means that hypothesis 3a and 3b are both rejected.

Table 3: regression analysis on goal and role uncertainty

Dependent variable:	Goal uncertainty				Role uncertainty			
	B	β	B	β	B	β	B	β
Constant	3.260**		3.862**		3.125**		3.656**	
Gender (1 is male)	-,140	-,062	-,152*	-,068*	-,144*	-,070*	-,155*	-,075*
Age	-,001	-,010	-,001	-,012	-,005*	-,084*	-,005**	-,086**
Education level	,050	,042	,057	,047	-,006	-,005	,000	,000
Transformational leadership	-,320**	-,178**	-,229**	-,127**	-,224**	-,135**	-,143*	-,086*
Team cohesion			-,240**	-,121**			-,212**	-,116**

Note: ** p < 0.01; * p < 0.05

Table 4: regression analysis on team cohesion

Dependent variable:	Cohesion	
	B	β
Constant	2,504	
Gender (1 is male)	-,050	-,044
Age	-,001	-,017
Education level	,031	,051
Transformational leadership	,380**	,419**

Note: ** p < 0.01; * p < 0.05

Table 5: regression analysis on task uncertainty

Dependent variable:	Task uncertainty							
	B	β	B	β	B	β	B	β
Constant	2.814**		2.973**		3.051**		2.963**	
Gender (1 is male)	-,037	-,020	-,036	-,020	-,042	-,023	-,045	-,025
Age	-,005**	-,094**	-,005**	-,095**	-,005**	-,096**	-,005**	-,095**
Education level	-,046	-,047	-,044	-,045	-,044	-,045	-,045	-,046
Transformational leadership	-,088	-,060	-,068	-,046				
Team cohesion					-,141**	-,087**	-,176*	-,109*
Information elaboration			-,065	-,031			,063	,029

Note: ** p < 0.01; * p < 0.05

Table 6: regression analysis on information elaboration

Dependent variable:	Information elaboration			
	B	β	B	β
Constant	2,444**		1,400**	
Gender (1 is male)	,019	,022	,043*	,050*
Age	-,001	-,038	-,001	-,024
Education level	,033*	,074*	,021*	,048*
Transformational leadership	,315**	,463**		
Cohesion			,556**	,741**

Note: ** p < 0.01; * p < 0.05

Discussion and conclusion

We have to be cautious in drawing conclusions based on the present analysis of cross-sectional data since no causal inferences can be made based on the correlations found in the present data set. That having said, a first analysis of the data does provide us with some insights of the relationships between transformational leadership and the different types of uncertainty. Furthermore, testing the mediating effects team cohesion and information elaboration provides us with insights in the way how transformational leadership may influence uncertainty perceptions of employees.

The results of our analysis show that there is a significant negative association between transformational leadership and goal and role uncertainty, i.e. transformational leadership is associated with lower levels of goal and role uncertainty. Furthermore, we also tested the mediation effect of team cohesion on the relationship between transformational leadership and goal and role uncertainty. The results show that the effect of transformational leadership on uncertainty can indeed be partially explained by the positive influence transformational leaders have on team cohesion.

With regard to the hypotheses concerning task uncertainty, we do not find a significant mediation effect of information elaboration on task uncertainty. We do, however, find a significant association between team cohesion and task uncertainty. This might indicate that members of cohesive teams are better able to share and thus reduce their uncertainty with team members.

One of the limitations of the study concerns the measurement of transformational leadership. In this study, we have conceptualized transformational leadership by its visionary component. Although this is in line with recent developments in the field, it does have implications for the relationship between transformational leadership and task uncertainty. Whereas we did not find a relationship between visionary leadership and task uncertainty, a broader conceptualization of transformational leadership which includes individualized consideration might in fact uncover a relationship between this leadership style and task uncertainty.

The next steps of this article include an analysis of longitudinal data in order to study within-person differences of their perceptions of leadership, teamwork, and uncertainty, and the use of structural equation modeling. Structural equation modeling has the advantage that it enables us to test our entire theoretical model that includes multiple dependent variables.

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