

# Are Transformational and Transactional Types of Leadership Compatible? A Panel Study of Work Motivation

*(Preliminary draft)*

Poul Aaes Nielsen<sup>1</sup>  
Stefan Boye<sup>2</sup>  
Ann-Louise Holten<sup>3</sup>  
Christian Bøtcher Jacobsen<sup>4</sup>  
Lotte Bøgh Andersen<sup>2, 4</sup>

## Abstract

Despite great interest in leadership, little attention has been paid to whether different leadership strategies are compatible with or undermine each other. This study examines the combined effects of transformational and transactional leadership on employee work motivation, conceptualized as work engagement and intrinsic motivation. We differentiate between three types of transactional leadership (verbal rewards, material rewards, and sanctions) that may have different effects on work motivation. Moreover, we argue that these three types are not equally compatible with the exercise of transformational leadership. To gauge the causal effect of leadership while maintaining external validity, we conducted a large-scale panel study with survey responses from 385 leaders and 3,789 of their employees. Fixed effects panel analyses show positive effects on work motivation of especially transformational leadership, but this positive effect disappears when combined with contingent material rewards, indicating that transformational leadership is not compatible with all types of transactional leadership.

## Keywords:

Transformational leadership, transactional leadership, intrinsic motivation, work engagement, augmentation effect

## JEL codes:

H83, M12, M52,

- 1 University of Southern Denmark
- 2 KORA
- 3 University of Copenhagen
- 4 Aarhus University

## INTRODUCTION

How leadership can improve work motivation has long been considered one of the big questions of public management (Behn 1995). Particularly, the concepts of transformational leadership and transactional leadership have been central to leadership research in both public and generic management literatures. Yet, despite scholarly focus, little attention has been paid to the *combined* effects of transformational and transactional types of leadership, and whether these are compatible or build on opposing logics.

The purpose of this paper is to connect the concepts of transformational and transactional leadership in a more comprehensive way than in previous work, both theoretically and empirically. As public managers often exercise different types of leadership simultaneously (Van Wart 2013), studying the effects of transformational and transactional leadership separately risks conveying an incomplete picture, and we therefore examine how the combination of these leadership behaviors affects work motivation. According to the full range leadership theory, transformational and transactional leadership can and should be combined to simultaneously reap the positive effects of both, and some existing work finds support for this type of augmentation effect (Bass and Avolio 1993; Wang et al. 2011).

Yet, the simple cumulative logic of this augmentation effect ignores the potential interplay between different types of leadership. Thus, it does not address whether transformational and transactional leadership consistently reinforce each other's effects, or whether they can also undermine each other, which is better examined in an interaction framework. We argue here that the augmentation effect likely depends on how well one type of leadership behavior matches other leadership behaviors exercised by the same leader. House (1996), for example, proposed that the use of contingent rewards would negatively moderate the

effect of transformational leadership. Existing work on this important question, however scarce, shows mixed findings and does not distinguish between different types of transactional leadership (Schriesheim et al. 2006; Vecchio et al. 2008). Particularly, we argue that transactional leadership behaviors that do not impose a direct incentive on employees, i.e. verbal rewards, are better aligned with the attempts of transformational leaders to inspire and convey an appealing vision to their employees.

The need to distinguish between different aspects of transactional leadership is also evident from empirical findings. Thus, some transactional leadership behaviors, such as the use of material rewards, can potentially demotivate employees (Frey and Jegen 2001; Andersen & Pallesen 2008), while transactional behaviors focused on the use of contingent verbal rewards, have more generally been found to increase work motivation (Brevaart et al. 2014). We therefore conceptualize and measure transactional leadership as comprising three distinct behaviors, namely the use of contingent verbal rewards, material rewards, and sanctions.

To examine how transformational and transactional leadership – and the combination of these – affect work motivation, we collected panel data for 385 Danish public and private managers and 3,789 of their employees. To mitigate threats of common method bias, which are common in prior work, we study measures from two sources: leader-reported measures of leadership and employee assessments of their own work motivation. Moreover, we survey the same leaders and employees over time, allowing the use of employee fixed effects to control for time-invariant observables and non-observables.

We find that transformational leadership and to some extent contingent verbal rewards have positive effects on work motivation, whereas contingent sanctions reduce work motivation. Importantly, however, the positive effects of transformational leadership on work motivation

disappear if implemented in organizations with moderate to high use of contingent material rewards. Equally important, this negative moderation of the effect of transformational leadership is not found for the use of contingent verbal rewards.

In the following, we first define the concepts of transformational leadership, transactional leadership, and work motivation. We then discuss the broader theoretical arguments regarding the impact of leadership on work motivation, before turning to the new hypotheses on the interplay between transformational and transactional leadership. Next we describe the panel data, measures, and estimation methods. We then present the findings and proceed to discuss their practical implications in terms of the compatibility of different types of leadership behavior, and we point to important next steps for leadership research.

## **THEORY AND EXPECTATIONS**

### **Conceptual understandings of transformational and transactional leadership**

Based on the work of Burns (1978), the full range leadership theory conceptualizes leadership behaviors as transformational, transactional, or in-active, i.e. laissez-faire (see Bass et al. 2003 for an overview). Reflecting the recent critique by van Knippenberg and Sitkin (2013) of this theory and its measures, we conceptualize and measure leadership as specific and distinctive behaviors of the leader (and not as the effects of these behaviors).

We define transformational leadership as “a set of behaviors that seek to develop, share, and sustain a vision intended to encourage employees to transcend their own self-interest and achieve organizational goals” (Jacobsen and Andersen 2015, 832; see also Wright et al. 2012). Transformational leadership is one of the most dominant paradigms in the generic leadership literature ( Judge and Piccolo, 2004), and four recent reviews demonstrate that it has become

dominant in the public management literature (Chapman et al. 2015; Orazi et al. 2015; Van Wart 2013; Vogel and Masal 2015). For example, Wright et al. (2012) have shown a positive association between transformational leadership and public service motivation; and Moynihan et al. (2012a and 2012b) demonstrate associations between transformational leadership, red tape, and performance information use. Bellé's (2014) experiment with nurses also indicates that transformational leadership can affect performance through increased public service motivation.

Transactional leadership is characterized by the use of contingent rewards and sanctions, i.e. rewards and sanctions that are applied contingently based on employee behaviors, efforts, or results. While the full range leadership theory typically sees the contingent reward dimension as the sum of all types of contingent rewards (Bass 1997: 134; Schriesheim et al. 2006; Vecchio et al. 2008), for example material (e.g., pay bonuses) and psychological (e.g., praise), we theorize about and measure them separately as use of contingent material and use of contingent verbal rewards to capture potentially important differences in their effects. The use of contingent sanctions is a corrective form of leadership labeled "active management by exception" (Bass et al. 2003). This type of leadership is about specifying "the standards for compliance, as well as what constitutes ineffective performance, and ... punish followers for being out of compliance with those standards" (ibid., 208).

The distinction between transformational and transactional leadership does not necessarily imply that one is an alternative to or substitute of the other. As we discuss below, transformational and transactional leadership behaviors can be used simultaneously, potentially with cumulative effect or interacting effects. Below, we first discuss the conceptualization we apply of two work motivational states (intrinsic motivation and work engagement), before

turning to the potential mechanisms through which transformational leadership, transactional leadership, and the combination of the two may lead to these states.

### **Conceptual understanding of work motivation: Intrinsic motivation and work engagement**

The concept of work motivation has been defined and measured in various ways (Wright 2001, 2004). Conceptually, work motivation has, for instance, been described as the direction, intensity, and persistence of desired work-related behaviors (Mitchell 1997), and accordingly it is often described as a multi-dimensional construct. Some attempts have been made to develop a combined measure of work motivation (for instance, Baldwin 1990; Wright 2004). Our approach is slightly different, as we study two affective-motivational states that are not focused on any particular object, event, or behavior, but on work in general for a given employee. Instead of seeking to directly measure the broader and multi-dimensional concept of work motivation, we employ two separate motivational state constructs, which have been applied and validated in psychological research, namely intrinsic motivation and work engagement. Both these constructs capture work-related motivational states, yet focus on slightly different aspects of an individual's work experience. Although there are other concepts related to work motivation, including, for instance, public service motivation (Wright et al. 2012; Bellé 2014; Jacobsen et al. 2014), goal commitment (Locke and Latham 1991), and different kinds of extrinsic motivation (Ryan and Deci 2000b), intrinsic motivation and work engagement represent central expressions of a broader concept of work motivation.

Intrinsic motivation concerns an “interest in and enjoyment of the work for its own sake” (Le Grand 2003, 53; see also Gagné and Deci 2005), and thus relates to the satisfaction obtained from performing specific tasks or actions as opposed to the resulting outcomes of those tasks.

Intrinsic (task) motivation conceptually concerns the pure enjoyment of the work tasks in a hedonic way. Intrinsic motivation is an example of autonomous motivation, and it conceptualizes the motivation behind engaging in pleasurable and/or interesting activities for their own sake. Intrinsic motivation thus describes the potential energy individuals are willing to put into doing their jobs, because they see their tasks as intrinsically rewarding.

Work engagement is defined as "a positive, fulfilling, work-related state of mind that (...) refers to a persistent and pervasive affective-cognitive state that is not focused on any particular object, event, individual, or behavior" (Schaufeli and Bakker, 2004, p. 295). Work engagement captures the perceived significance of the work, which includes the feeling that "one is moving toward self-realization in terms of developing one's unique individual potentials and furthering one's purposes in living" (sometimes referred to as a subjective state of Eudaimonia) (Waterman et al. 2008:42). This is both a question of feeling willing to move, captured by the work engagement dimension *vigor* which concerns the perceived level of energy and mental resilience while working, and persistence even in the face of difficulties, and a question of personal expressiveness captured by the dimension *dedication*, characterized by a sense of significance, enthusiasm, inspiration, pride and challenge connected to the work. Although there are various measures of work engagement, Bakker et al. (2011b) argue that there is a growing consensus that work engagement can be defined as a general construct representing high levels of energy and high levels of involvement in work. Indeed, work engagement has been shown to work as the positive counterpoint of burnout (Schaufeli, Bakker and Salanova 2006). Sometimes, the literature includes a third dimension of work engagement, absorption, which is characterized by "being fully concentrated and engrossed in one's work, whereby time passes quickly and one has difficulties with detaching oneself from work" (Salanova et al. 2008: 118).

However, we follow Salanova et al. (2003) in arguing that absorption should be considered a consequence of work engagement, rather than one of its components, and accordingly it is not included in this study.

Both intrinsic motivation and work engagement represent positive, subjective states. The constructs are not entirely independent, given that individuals, who are engaged in intellectually stimulating work-related activities, also tend to hedonistically enjoy these activities (Waterman et al. 2008). Yet, while work engagement can be expected to ensure goal-oriented behavior and persistence in attaining objectives through feelings of enthusiasm, identification, and job-related pride, intrinsic motivation can only be expected to increase effort, if these efforts are enjoyable in themselves. Testing our expectation for these two separate motivational constructs thus adds robustness to our findings if the associations with leadership are similar.

### **Transformational leadership and work motivation**

Transformational leadership has been proposed to affect work motivational states through different processes. Most importantly, the appeal of a strong vision can activate employee work motivation (Moynihan et al. 2014: 92), one mechanism being that transformational leadership reduces perceptions of (demotivating) red tape (Moynihan et al. 2012a; Hjelmar et al. 2014). Through the communication of an appealing vision for the organization, transformational leaders are also argued to provide a sense of purpose and significance of the work that promotes dedication and enthusiasm among their employees (Bellé 2014; Wright et al. 2012: 207). By communicating the vision of the future and showing confidence in their employees, transformational leaders are expected to strengthen followers' motivation to contribute to the realization of this vision (Rainey 2009). Transformational leadership is thus expected to increase



employees' work motivation, because this type of leadership provides a meaningful rationale for their work (Avolio & Yammarino, 2002). Another proposed mechanism is that transformational leadership behaviors can increase the employees' experience of being challenged and involved and thereby increase their work engagement (Bakker, Albrecht, and Leiter 2011b; Bakker 2015).

While a variety of observational studies do indeed suggest a positive association between transformational leadership and followers' work engagement (Ghadi et al. 2013; Gözükarar et al. 2015; Kovjanic et al. 2013; Tims et al. 2011; Vincent-Höper et al., 2012), a meta-analysis of 91 quantitative studies showed that transformational leadership and work engagement were associated, however only weakly (Christian, Garza, and Slaughter, 2011). We thus expect positive effects of transformational leadership on work motivational states as stated in hypothesis 1.

*H1. Transformational leadership increases work motivation.*

### **Transactional leadership and work motivation**

Expectancy theory (Vroom 1996) and cognitive evaluation theory (as part of self-determination theory, see Ryan & Deci 2000) represent considerable theoretical disagreement about the expected effects of transactional leadership on work motivation. Both theories, however, describe motivation through rewards. When related to transactional leadership, as argued previously, it is important to distinguish between the three types of transactional leadership behavior, namely the use of contingent verbal rewards, use of contingent material rewards, and use of contingent sanctions. In the following, we discuss each of these in turn.

The literature generally expects a positive effect of contingent verbal rewards on work motivation. This is true for expectancy theory in which the general claim is that employees are

motivated to the degree that they believe their efforts will lead to acceptable performance, which will be either rewarded with something of a significant positive value or by the absence of negatively valued sanctions (Lunenburg 2011). Cognitive evaluation theory (Deci 1972) argues that the effect of contingent rewards depends on the character of the rewards and that verbal rewards – positive feedback – are closely connected to the activity itself and have no independent value outside of the organizational context. Verbal rewards therefore have little positive value if the individual does not want to perform the activity, meaning that this type of reward cannot be used as a persuasion tool separate from the individual's own free will (Deci et al. 2001). In their meta-analysis, Deci et al. (1999) found that the use of contingent verbal rewards increases intrinsic motivation, while the use of contingent material rewards decreases intrinsic motivation. Other strands of literature see the same positive potential in verbal rewards (e.g. Bellé 2015; Malhotra et al. 2007; O'Reilly et al. 1980) and our second hypothesis reflects these expectations.

*H2. The use of contingent verbal rewards increases work motivation.*

The theoretical arguments and existing empirical findings are more mixed when we turn to contingent material rewards. Expectancy theory (Lunenburg 2011) suggests that material rewards increase work motivation. In addition to the incentive mechanism, material rewards might also signal to the employees that they are competent, thus increasing their basic need satisfaction (Jacobsen and Andersen 2016). Conversely, cognitive evaluation theory expects material rewards to decrease intrinsic motivation, because material rewards can be used to persuade people to do things they would not otherwise do, that is, to control their behavior (Deci 1971, 1972; Deci et al. 1999). Building on this literature, Frey (1997) argues that financial

rewards reduce intrinsic motivation when they are perceived as controlling (crowding out), while intrinsic motivation can be enhanced (crowded in) if the employees see the intervention as supportive. Several public administration studies support this prediction (Georgellis et al. 2011; Jacobsen et al. 2014; Mikkelsen et al. 2015; Weibel et al. 2010). Although Judge and Piccolo's (2004) meta-analysis shows that contingent rewards correlate with followers' work motivation, some employees may see material rewards as inherently controlling to the degree that the motivation crowding-out effect partially or fully neutralizes any positive effects. Considering that public sector employees are generally more likely to perceive material rewards as controlling (Andersen & Pallesen 2008), we do not expect work motivation to be significantly affected (on average) by their manager's use of material rewards. Using the concepts from the motivation crowding theory (Frey 1997), crowding in and crowding out for material rewards are thus expected to counterbalance each other, and our third hypothesis is that there is no net effect of leaders' use of material rewards on the two investigated types of work motivation.

*H3. The use of contingent material rewards is not associated with work motivation.*

Whereas contingent rewards are mainly based on positive reinforcement, the use of contingent sanctions implies an active search for deviations from rules and performance demands by use of corrective action, and is in line with descriptions of controlling motivation (Hetland et. al. 2011). Tims et al. (2011: 122) accordingly argue that this type of leadership behavior “lack[s] motivational power and inspirational appeal”, and Frey (1997) expects that the motivation crowding-out effect is more dominant for sanctions compared to positive incentives. Self-determination theory argues that this type of leadership behavior demotivates employees, because it is negatively related to the fulfillment of the basic needs for autonomy, competence

and relatedness (Hetland et al. 2011). Analyzing whether the sanctions in the “No Child Left Behind Act” motivate school staff to perform at higher levels and focus attention on student outcomes, Finnigan and Gross (2007: 624) find “that motivation decreases rather than increases for teachers in those schools that struggle the most.” We therefore hypothesize that use of contingent sanctions will have a negative effect on work motivation.

H4. *The use of contingent sanctions decreases work motivation.*

### **Combined effects of transformational and transactional leadership**

The question about whether transformational and transactional leadership are compatible when we focus on their motivational effects has at least two aspects: Are their positive effects (if they exist) additive or substitutes, and are these effects moderated by the presence of the other type of leadership. The augmentation hypothesis (Bass & Avolio, 1993) describes transformational leadership as building on transactional leadership. More specifically, transformational leadership is expected to add to the effects of transactional leadership on employee outcomes and performance (Bass 1997: 135; Judge & Piccolo, 2004: 756). The argument behind this effect is that transactional leadership specifies the link between performance and rewards and has a motivational effect through the use of performance goals, while transformational leadership enhances motivation and performance through different mechanisms such as increased expectancies and enhanced meaningfulness of goal accomplishment (Wang et al. 2011: 234). This has been confirmed empirically for some criteria (e.g. work engagement, commitment, satisfaction, and safety behavior), while the effect is not identified for other criteria such as turnover and academic performance (Koh et al. 1995; Clarke 2013; Breevaart et al. 2014). In a meta-analysis, Wang et al. (2011) find that transformational leadership did have an augmentation

effect over transactional leadership (contingent rewards) in predicting individual-level contextual performance and team-level performance but not in predicting individual-level task performance.

The original formulation of the augmentation hypothesis focused solely on how transformational leadership builds on transactional leadership, but some recent treatments examine them as mutually complementary, with each of them explaining unique variance in work motivation or other outcomes (Oberfield 2014; Vecchio et al. 2008; Wang et al. 2011). Hypothesis 5 below follows from this additive or cumulative logic. Although we examine the additive effects of all three types of transactional leadership behavior, we only include contingent verbal rewards in hypothesis 5, as we did not expect positive motivational effects from contingent material rewards or sanctions.

*H5. The combination of transformational leadership and contingent verbal rewards leads to higher work motivation than either of the two types of leadership behavior alone.*

The effects of transformational and transactional leadership on work motivation might not, however, be simply cumulative. Based on cognitive dissonance theory, House (1996) argued that in the absence of contingent extrinsic rewards, employees look to self-related justifications for their efforts; conversely, he expected the appeal to self-interest embedded in some types of transactional leadership to undermine employee moral involvement in work and contributing to a broader group. Accordingly, House (1996) proposed that value-based leadership such as transformational leadership is more effective when not combined with contingent extrinsic rewards.

Schriesheim et al. (2006) and Vecchio et al. (2008) were the first (and to our knowledge the only ones) to test whether transformational leadership is less beneficial when combined with the use of contingent rewards. Using roughly similar cross-sectional survey designs and measures, they arrive at opposite conclusions; Vecchio et al. (2008) partially confirmed House's (1996) proposition while Schriesheim et al. (2006) instead find that the presence of contingent rewards increases the association between transformational leadership and employee satisfaction and performance.

Apart from the potential methodological challenges in the cross-sectional designs, these mixed findings could be a result of their measure of contingent rewards. Both studies use a combined scale of contingent rewards (see Podsakoff et al. 1984) that does not distinguish between verbal and material rewards, and neither study examines contingent sanctions. Yet, different types of contingent rewards or sanctions could well differ in terms of their compatibility with transformational leadership. Indeed, in their conclusion Schriesheim et al. (2006, 33) note that "it may be that only extrinsic financial rewards produce the hypothesized effect. Extrinsic non-financial rewards (praise, recognition, etc.) may enhance the credibility of transformational leader behaviors such as vision and not cause cognitive dissonance processes to be evoked."

According to House (1996), the appeal of transactional leadership to subordinates' self-interest undermines the leader's ability to influence and guide employees through more value-oriented means. Contingent material rewards and sanctions are both characterized by creating an extrinsic incentive on employee behavior or performance whereby the failure to meet performance demands imposes a clear cost on employees. This focus on employee self-interest does not easily match the aim of transformational leaders to motivate employees by appealing to

an attractive vision for the organization and thereby encouraging employees to transcend their own self-interest in pursuit of this vision. Additionally, employees might perceive the use of contingent material rewards as signaling that the leader considers the employees to be primarily or only motivated by their self-interest, which would undermine the credibility of appealing to a more vision or value-based orientation. This is not to say that leaders will always fail in combining the transformational leadership with contingent rewards and sanctions, but that this will generally be a difficult task which may well fail more often than not.

However, contingent verbal rewards are not to the same extent a means of control. Unlike contingent material rewards and sanctions, a leader's use of verbal rewards is unlikely to be perceived by employees as a cost if they do not meet performance demands. Moreover, and unlike material rewards, the receipt of verbal rewards holds little value to employees if they do not agree with the performance goals. This also means that a leader's use of contingent verbal rewards does not risk signaling that the leader sees the employees as primarily self-interested. Consequently, we do not expect contingent verbal rewards to undermine motivational appeals to a broader vision for the organization. We therefore see no contradiction between appealing to a vision for the organization and verbally praising behaviors that contribute to the realization of this vision.

Summing up, we argue that some types of transactional leadership, specifically contingent verbal rewards, may be better aligned with the attempts of transformational leaders to inspire and convey an appealing vision to their employees than are the use of sanctions and material rewards. The key theoretical difference is whether the transaction attempts to regulate behavior by appealing to employee self-interest, and this is reflected in the following three

hypotheses concerning transactional behaviors as moderators of the effect of transformational leadership on work motivation:

H6a. *The effect of transformational leadership is not affected by the use of contingent verbal rewards.*

H6b. *The effect of transformational leadership is negatively moderated by the use of contingent material rewards.*

H6c. *The effect of transformational leadership is negatively moderated by the use of contingent sanctions.*

The theoretical arguments in the literature concern only how the impact of transformational leadership depends on the use of different types of transactional leadership. However, the effect of transactional leadership might also depend on the initial level of transformational leadership. If employees are used to a leadership behavior with emphasis on clarifying the vision, the transactional appeal to self-interest could shift the employees' focus away from the organizational vision. Moreover, employees could be outright offended if the leader also included behaviors assumed to appeal to individual self-interest, because this could signal that the leader no longer believed in the employees' willingness to contribute to the vision of their own accord. This might make employees less responsive to the introduction of contingent material rewards and sanctions, or possibly even lower their combined level of work motivation. However, by using less tangible rewards, i.e. contingent verbal rewards, initial transformational leadership should not be expected to negatively moderate the effect on work motivation, but there are also no obvious arguments for a positive moderation effect.



H7a. *The effect of contingent verbal rewards is not affected by the use of transformational leadership.*

H7b. *The effect of contingent material rewards is negatively moderated by the use of transformational leadership.*

H7c. *The effect of the use of contingent sanctions is negatively moderated by transformational leadership.*

## **RESEARCH DESIGN AND DATA**

The data for this study consists of two consecutive studies of 385 leaders and their 3,798 employees. The respondents represent five different areas: public and private schools (lower and upper secondary), daycare centers, tax offices, and banks. These areas were selected to allow us to study leadership effects across a wide range of organizations including service-producing organizations (schools and daycare), regulatory organizations (tax), and financial organizations (tax and banks). Moreover, the data includes private sector leaders from private schools (principals), private daycare centers (center leaders), and banks (branch managers and support unit managers), as well as public sector leaders from secondary schools (principals), primary schools (principals), daycare centers (center leaders and area managers (leaders of leaders)), and the tax department (middle managers from tax offices and support units).

We surveyed the leaders and employees twice – in August-September 2014 and August-September 2015. In both rounds, the leader survey was concluded before we sent out the employee surveys. The employee surveys were distributed to all employees, who referred directly to the responding leaders. Thus, we sent out 19,952 questionnaires in 2014 and 15,132 on the same date in 2015. The response rates were 45.3 percent and 41.8 percent, respectively,

though they varied somewhat across the five areas. As we follow the same leaders and employees over time, we only include respondents who replied to both surveys. To avoid overloading the employees in the questionnaire, we only included the items measuring work engagement in a randomly chosen sub-sample of the full sample of employees. Accordingly, we have data from 3,798 employees for the analyses of intrinsic motivation and 845 employees for work engagement.

## **Measurement**

We measure leadership and the two dependent variables – intrinsic motivation and work engagement – as latent variables. We obtained repeated measures of the leadership variables in two consecutive leadership surveys, and the dependent variables were obtained in similar fashion in two consecutive employee surveys. The exact wordings of the questions used are provided in the appendix.

We used four questions to measure the employee intrinsic motivation. These items have been used and validated previously (Jacobsen et al. 2013). The response categories range from strongly disagree (1) to strongly agree (5), and they all loaded satisfactorily on a single factor with correlations between 0.63 to 0.82 and a Cronbach's alpha of 0.86 for the first survey in August 2014 and 0.85 for the second survey in August 2015 (see table A1).

Work engagement (vigor and dedication) is measured by six items from the Utrecht Work Engagement Scale (Schaufeli et al. 2006). The response categories range from never to always on a 7-point Likert scale. The six items all loaded on a single factor with correlations ranging from 0.73 to 0.90. Cronbach's alpha is 0.92 in the first survey and 0.93 in the second survey (see table A2).

Based on those employees who completed both sets of questions (n=889), confirmatory factor analysis demonstrated discriminant validity between the two dependent variables (Table A3).

To measure transformational leadership and the three elements of transactional leadership, we surveyed the leaders about their specific leadership behaviors. We use well-validated items employed in previous studies (Moynihan et al. 2012; MacKenzie et al. 2001; Podsakoff et al. 1996; Jacobsen & Andersen 2013; Rainey 2009; House 1998). The factor analyses for all investigated leadership behaviors perform very well. The items have significant and high loadings on the hypothesized factors and we find good convergent validity, and fit indicators for both surveys are good (table A4).

We have constructed additive indexes for both the dependent and the independent variables ranging from 0 (minimum) to 100 (maximum). In construction of the indexes we have imputed the mean responses from other employees, if an employee had forgotten or not answered one item in the particular index. We have also conducted the analyses with saved factor loadings, obtaining results that are essentially identical to those reported here. Table A5 shows descriptive statistics and correlations for the variables in the study.

### **Estimation strategy**

We use the panel data to examine how leadership behavior affects intrinsic motivation and work engagement. The use of observational data introduces challenges regarding possible selection effects (Angrist and Pischke 2009) and common source bias (Jakobsen and Jensen 2015). To address these challenges, we take two steps. First, we apply panel models with employee fixed effects, whereby we effectively study how changes in leadership affect changes in intrinsic motivation and work engagement, thus controlling for any and all possible time-invariant

confounders at both the employee and organizational level (Allison 2009). Because the employees are nested within organizations, we use cluster-robust standard errors at the organizational level. Second, in order to limit common source bias, we regress employee-reported intrinsic motivation and work engagement on leaders' self-assessments of their own leadership, thus combining data from separate sources. Although leaders likely overrate their own leadership behavior, and some leaders might be more prone to do so than others, our reliance on repeated measures (changes within leaders over time) should remove any related biases that might arise in similar cross-sectional designs.

To be able to examine how one type of leadership behavior moderates the effect of another type of leadership behavior on work motivation (hypotheses 6 and 7), we interact the *level* of the first-mentioned leadership behavior (the moderator) with the *change* in the other leadership behavior. If the two types of leadership behavior – which both vary over time – were interacted directly, this would only tell us whether the effect of a change in one type of leadership is moderated by a *simultaneous change* in the other. What we are interested in theoretically is whether the effect of an increase in one type of leadership is moderated by the use of another type of leadership, i.e. the level of this type of leadership. Accordingly, we use the mean level of each leadership behavior across the two time periods as moderators, by interacting them with the time-varying leadership variables. A rule-of-thumb in interaction models is to always include the constitutive terms of all interaction terms. However, in this case the time-constant moderators are already controlled for by the fixed effects specification and accordingly constitute an exception to this rule (Allison 2009).

## **FINDINGS AND DISCUSSION**

In this section we present the fixed effects panel estimates of the effects of the four types of leader-reported leadership behaviors on employee intrinsic motivation and work engagement. Concerning transformational leadership, Table 1 shows support for H1 with statistically significant positive effects on both concepts, and in both the uncontrolled models (1.1 and 1.4) and the models controlling for the transactional leadership behaviors (1.3 and 1.6), although the association for work engagement is only significant at the 0.1 level ( $p=0.079/0.064$ ).

Turning to the three types of transactional leadership behaviors, the findings for H2 regarding contingent verbal rewards point in the same direction, but with somewhat weaker results for both dependent variables. Yet, the estimated effect on intrinsic motivation is still significantly positive at the 0.05 level in the uncontrolled model (1.2) and at the 0.1 level ( $p=0.056$ ) in the controlled model. When each of the three transactional leadership variables is entered separately, the results remain highly similar to those presented in models 1.2 and 1.5.

**[Table 1 around here]**

As we move to the use of contingent material rewards, we find no significant effects across the two outcomes measures. However, for contingent sanctions we find statistically significant negative effects on both intrinsic motivation and work engagement, though for the latter only at the 0.1 level.

Thus, and as expected, the findings for intrinsic motivation (Model 1.3) and work engagement (Model 1.6) are fairly similar. The somewhat weaker statistical significance for the findings on work engagement might well be attributable to the smaller sample size, so these findings should not be interpreted as suggesting that leadership is more important to intrinsic

motivation than to work engagement. Indeed the estimated effect sizes are almost identical for the two measures. Summing up on H1-H4, the findings are generally in line with the hypothesized pattern of positive effects of transformational leadership and declining effects as we move from the use of contingent verbal reward across contingent material rewards to contingent sanctions, where we find negative effects on work motivation. The findings thus underline the importance of distinguishing clearly between different types of transactional leadership behaviors.

The augmentation hypothesis has traditionally stated that transformational leadership adds to the positive effects of transactional leadership behaviors, whereas with our Hypothesis 5 we test the more general hypothesis that either of the two types of leadership adds to the effect of the other. The first thing to note is that we only found indications of positive motivational effects from the use of contingent verbal rewards. For contingent material rewards and sanctions it would therefore make little sense to talk about augmentation. Yet, by comparing the models we see that all the estimates in the full models (1.3 and 1.6) are fairly similar to those reported in the uncontrolled models. Accordingly, each of the significant variables explains unique variation in the dependent variables, when controlling for the other type of leadership. Though this lends partial support to Hypothesis 5 concerning the positive effects of transformational leadership and use of contingent verbal rewards, it also suggests that the augmentation hypothesis should, apart from explicitly distinguishing between different types of transactional leadership behaviors, perhaps also be recast as whether each of the leadership behaviors explain unique variance, rather than assuming positive effects from each type of leadership behavior.

However, a potentially bigger challenge to the formulation of the augmentation hypothesis comes from Hypotheses 6 and 7 regarding whether the effects of transformational

and transactional leadership behaviors depend on how they are combined. To examine this we interact each of the three transactional leadership types with the mean *level* of transformational leadership, and vice versa. In Model 2.1 (Table 2), we thus examine whether the estimated effects of changes in the three types of transactional leadership behaviors on intrinsic motivation are moderated by the level of transformational leadership use, and model 2.2 shows the corresponding analyses for work engagement. We find little evidence of any moderation from transformational leadership on the associations between the three types of transactional leadership and work motivation. The effects of increasing the use of contingent verbal rewards or contingent material rewards do not seem to depend substantially on the level of transformational leadership. The results could indicate that sanctions might have a less negative effect on work engagement when introduced in a context with a high level of transformational leadership (Model 2.2), but, apart from its statistical insignificance, this interpretation is also challenged by the lack of a similar pattern for intrinsic motivation.

**[Table 2 around here]**

In contrast, Model 2.3 shows that the estimated effect of transformational leadership on intrinsic motivation is significantly negatively moderated by the use of contingent material rewards ( $p=0.003$ ). Thus, although there is generally a positive motivational effect of introducing transformational leadership, this positive effect disappears when the leader is already making use of contingent material rewards. Lending further support to this finding, the same significantly negative moderating effect is found for work engagement (Model 2.4).

To provide further detail about the negative moderation, Figures 1a and 1b show the marginal effects of transformational leadership at different levels of contingent material rewards.

Figure 1a shows that the marginal effect of transformational leadership on intrinsic motivation is only significantly positive when leaders make limited or no use of contingent material rewards (<53), whereas the positive effect disappears at higher levels of use of contingent material rewards. Although at the highest level of contingent material reward usage the model even indicates a significantly negative marginal effect of transformational leadership, this may well be a statistical artifact as there is too little data at the tails to properly estimate the confidence intervals. As illustrated by Figure 1b, we again find the same pattern for work engagement. Thus the marginal effect of transformational leadership is only significantly positive at lower levels of contingent material reward usage (<47).

**[Figure 1 around here]**

This indicates that contingent material rewards and transformational leadership – in contradiction with the recommendations of the full range of leadership theory – do not complement each other, but might instead serve to undermine each other. In line with the proposition of House (1996), a plausible explanation is that leaders' efforts to promote an appealing vision for the organization and speak to the better natures of their employees are undermined when leaders simultaneously employ contingent material rewards that only speak to the self-interests of employees. Indeed, employees might perceive leadership use of contingent material rewards as signaling that the leader primarily considers the employees to be motivated by their self-interest, which would question the credibility of introducing transformational leadership behaviors. The interaction findings only show that existing use of transactional leadership elements undercuts the benefits of introducing transformational leadership, and not vice versa. However, the null finding for the reverse interaction effect (in Models 2.1 and 2.2)



could well be due to the absence of a significant main or average effect of using contingent material rewards (see Models 1.3 and 1.6).

## **CONCLUSION**

This study has examined whether leaders' transformational and transactional leadership behaviors affect employee intrinsic motivation and work engagement. We find that transformational leadership increases intrinsic motivation and work engagement, and leadership use of contingent verbal rewards increases intrinsic motivation, whereas contingent sanctions appear to reduce both employee intrinsic motivation and work engagement. When mutually controlling for the different leadership behaviors, these effects all explain unique variance in the two work motivation measures, thus lending partial support to the augmentation hypothesis. Moreover, interaction analyses reveal that the benefits of increasing transformational leadership are potentially undermined when combined with existing leadership usage of contingent material rewards.

The paper contributes in a number of ways to existing work on leadership effects. First, we demonstrate the need to distinguish theoretically and empirically between different types of transactional leadership and show that these have different and even opposing effects on work motivation. Also, instead of examining only one particular type of leadership, we simultaneously examine the effects of transformational leadership and three separate types of transactional leadership, thus mutually controlling for the other types of leadership that might to different extents be employed simultaneously within the same organization.

Second, due to the simultaneous examination of different types of leadership, we were able to examine whether and to what extent transformational and transactional leadership

behaviors have additive and/or interactive effects, that is, whether they mutually reinforce or undermine each other. As we have shown here this approach provides valuable information to leadership theory about combined effects of leadership and about the effects of individual leadership behaviors. Most importantly, transformational leadership and contingent verbal rewards are, as suggested in the literature (Bass, 1997; Judge & Piccolo, 2004), shown to have augmenting effects meaning that they can supplement each other. Yet, we also show that the effect of transformational leadership on work motivation disappears when implemented in organizations featuring a moderate to high use of contingent material rewards.

Finally, we employ a fixed effects panel design based on repeated measures that allow us to examine the dynamic effects of leadership over time and control for any and all possible time-invariant confounders. Moreover, whereas most existing work is vulnerable to common source bias (Jakobsen and Jensen 2015), we regress employee-reported measures of intrinsic motivation and work engagement on leader-reported leadership behavior.

Our primary recommendation for future studies is that they should examine whether the findings presented here also extend to other organizational outcomes, particularly regarding leadership effects on organizational performance. The investigated types of leadership might, for example, also affect other types of employee motivation, retention of existing employees, and selection of future employees in ways that could potentially have other performance effects.

Our findings have a number of important implications for practice. Most importantly, across the range of organizations examined here the exercise of transformational leadership and use of contingent verbal rewards hold the greatest promise in terms of creating more motivated and engaged employees. In contrast, using contingent sanctions generally lowers intrinsic motivation and work engagement. Moreover, leaders should consider carefully whether mixing

different leadership styles can sometimes be too much of a good thing, particularly regarding the combination of transformational leadership and the use of contingent material rewards. If leaders nevertheless attempt to combine these, they should pay serious attention to how their employees perceive and respond to their leadership.

## REFERENCES

- Andersen, L. B. and T. Pallesen. 2008. “‘Not Just for the Money?’ How Financial Incentives Affect the Number of Publications at Danish Research Institutions.” *International Public Management Journal* 11(1): 28-47.
- Andersen, L. B., N. Kristensen, and L. H. Pedersen. 2015. “Documentation Requirements, Intrinsic Motivation, and Worker Absence?” *International Public Management Journal*. 18 (4): 483-51.
- Avolio, B. J., & Yammarino, F. J. (2002). *Transformational and charismatic leadership: The road ahead*. Oxford, UK: Elsevier Science.
- Bakker, Arnold B. (2015). A Job Demands–Resources Approach to Public Service Motivation, *Public Administration Review*, 75 (5): 723-32.
- Bakker, Arnold B., Albrecht, Simon L. and Leiter, Michael P. (2011a) 'Work engagement: Further reflections on the state of play', *European Journal of Work and Organizational Psychology*, 20 (1): 74— 88.
- Bakker, A. B., Albrecht, S. L., & Leiter, M. P. (2011b). Key questions regarding work engagement. *European Journal of Work and Organizational Psychology*, 20(1), 4-28.
- Bakker, A. B., & Demerouti, E. (2008). Towards a model of work engagement. *Career development international*, 13(3), 209-223.
- Bass, B. M., & Avolio, B. J. (1993). Transformational leadership: A response to critiques. In M. M. Chemers, & R. Ayman (Eds.), *Leadership theory and research: Perspectives and directions* (pp. 49–80). San Diego, CA: Academic Press.
- Bass, Bernard M. (1997): Does the Transactional-Transformational Leadership Paradigm Transcend Organizational and National Boundaries? *American Psychologist* 52 (2): 130-139
- Bass, Bernard M. (1999): Two Decades of Research and Development in Transformational Leadership. *European Journal of Work and Organizational Psychology* 8(1):9-32.
- Bellé, Nicola (2014). Leading to make a difference: A field experiment on the performance effects of transformational leadership, perceived social impact, and public service motivation. *Journal of Public Administration Research and Theory*, 24, 109–136.
- Bellé, Nicola (2015) Performance-Related Pay and the Crowding Out of Motivation in the Public Sector: A Randomized Field Experiment. *Public Administration Review*. 75, (2): 230–241.
- Breevaart, K., Bakker, A., Hetland, J., Demerouti, E., Olsen, O. K. and Espevik, R. (2014), Daily transactional and transformational leadership and daily employee engagement. *Journal of Occupational and Organizational Psychology*, 87 (1): 138–157.

- Burns, J.M. (1978): *Leadership*. New York: Harper & Row.
- Chapman, C., Getha-Taylor, H., Holmes, M. H., Jacobson, W. S., Morse, R. S. and Sowa, J. E. (2015), How public service leadership is studied: An examination of a quarter century of scholarship. Online before print 8 AUG 2015. *Public Administration*. doi: 10.1111/padm.12199
- Christian, M. S., Garza, A. S., & Slaughter, J. E. (2011). Work engagement: A quantitative review and test of its relations with task and contextual performance. *Personnel Psychology*, 64(1), 89-136.
- Clarke, S. (2013), Safety leadership: A meta-analytic review of transformational and transactional leadership styles as antecedents of safety behaviours. *Journal of Occupational and Organizational Psychology*, 86 (1): 22–49.
- Deci, E. L. 1971. “Effects of externally mediated rewards on intrinsic motivation.” *Journal of Personality and Social Psychology* 18: 105-115.
- Deci, E. L. 1972. “Effects of contingent and non-contingent rewards and controls on intrinsic motivation.” *Organizational Behavior and Human Performance* 8: 217-229.
- Deci, E. L., R. Koestner, and R. M. Ryan. 1999. “A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation.” *Psychological Bulletin* 125: 627-668.
- Deci, E. L., R. Koestner, and R. M. Ryan. 2001. “Extrinsic Rewards and Intrinsic Motivation in Education: Reconsidered Once Again.” *Review of Educational Research* 71(1): 1-27.
- Dvir, T.; D. Eden, B.J. Avolio & B. Shamir. 2002: Impact of Transformational Leadership on Follower Development and Performance: A Field Experiment. *The Academy of Management Journal* 45(4):735-744.
- Finnigan, Kara S. and Betheny Gross. 2007. Do Accountability Policy Sanctions Influence Teacher Motivation? Lessons From Chicago’s Low-Performing Schools *American Educational Research Journal* 44 (3): 594-630.
- Frey, B. 1997. *Not just for the money. An Economic Theory of Personal Motivation*. Cheltenham and Brookfield: Edward Elgar Publishing.
- Frey, Bruno S. and Jegen, Reto (2001), Motivation Crowding Theory: A Survey of Empirical Evidence. *Journal of Economic Surveys*, 15 (5): 589-611.
- Gagné, M. and E. L. Deci. 2005. “Self-Determination Theory and Work Motivation.” *Journal of Organizational Behavior* 26(4): 331-362.
- Georgellis, Y., E. Iossa, and V. Tabvuma. 2011. “Crowding Out Intrinsic Motivation in the Public Sector.” *Journal of Public Administration Research and Theory* 21(3): 473-493.

- Ghadi, Mohammed Yasin; Mario Fernando & Peter Caputi, (2013) "Transformational leadership and work engagement: The mediating effect of meaning in work", *Leadership & Organization Development Journal*, 34 (6): 532 – 550
- Gözükara, İzlem; Omer Faruk Şimşek (2015), Linking Transformational Leadership to Work Engagement and the Mediator Effect of Job Autonomy: A Study in a Turkish Private Non-Profit University, *Procedia - Social and Behavioral Sciences*, 195: 963-971.
- Hetland, Hilde, Jørn Hetland, Cecilie Schou Andreassen, Ståle Pallesen & Guy Notelaers. 2011. Leadership and fulfillment of the three basic psychological needs at work", *Career Development International*, 16 (5): 507 – 523.
- Hjelmar, Ulf; Lene Holm Pedersen and Mats Joe Bordacconi (2013) *Det unødige bureaukrati – sammenhængen med motivation, innovation og organisatoriske forhold* [http://www.kora.dk/media/333415/det\\_unoedige\\_bureaukrati.pdf](http://www.kora.dk/media/333415/det_unoedige_bureaukrati.pdf) (accessed February 15 2016).
- Holten, Ann-Louise & Sten Olof Brenner , (2015),"Leadership style and the process of organizational change", *Leadership & Organization Development Journal*, 36(1): 2 – 16.
- House, Robert J. (1996) Path-goal theory of leadership: Lessons, legacy, and a reformulated theory *The Leadership Quarterly* 7(3): 323-352.
- 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 and F. J. Yammarino, eds., *Leadership: The multiple-level approaches contemporary and alternative*, Vol. 24, Part B. London: JAI Press.
- Jacobsen, Christian Bøtcher and Lotte Bøgh Andersen (2015), Is Leadership in the Eye of the Beholder? A Study of Intended and Perceived Leadership Practices and Organizational Performance. *Public Administration Review*. 75, (6): 829–841.
- Jacobsen, Christian Bøtcher & Lotte Bøgh Andersen. 2016. Leading Public Service Organisations: How to obtain high employee self-efficacy and organisational performance. Published online April 12 2016 in *Public Management Review*.
- Jacobsen, C. B., J. Hvitved, and L. B. 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. and R. Jensen. 2015. "Common Method Bias in Public Management Studies." *International Public Management Journal* 18(1): 3-20.
- Judge, T. A., & Piccolo, R. F. (2004). Transformational and transactional leadership: A meta-analytic test of their relative validity. *Journal of Applied Psychology*, 89, 755–768.

- Knippenberg, D. V. and S. B. Sitkin. 2013. "A Critical Assessment of Charismatic-Transformational Leadership Research: Back to the Drawing Board?" *The Academy of Management Annals* 7(1): 1-60.
- Koh, W. L., Steers, R. M. and Terborg, J. R. (1995), The effects of transformational leadership on teacher attitudes and student performance in Singapore. *Journal of Organizational Behavior*, 16 (4): 319–333.
- Kovjanic, S., Schuh, S. C. and Jonas, K. (2013), Transformational leadership and performance: An experimental investigation of the mediating effects of basic needs satisfaction and work engagement. *Journal of Occupational and Organizational Psychology*, 86 (4): 543–555.
- Le Grand, J. 2003. *Motivation, Agency, and Public Policy: Of Knights and Knaves, Pawns and Queens*. Oxford: Oxford University Press.
- Lunenburg, F. C. 2011. "Expectancy Theory of Motivation: Motivating by Altering Expectations." *International Journal of Management, Business, and Administration* 15(1): 1-6.
- Malhotra, N., Budhwar, P., & Prowse, P. (2007). Linking rewards to commitment: An empirical investigation of four UK call centres. *International Journal of Human Resource Management*, 18(12), 2095–2017.
- Mikkelsen, M. F., C. B. Jacobsen, and L. B. Andersen. 2015. "Managing employee motivation: Exploring the connections between managers' enforcement actions, employee perceptions, and employee intrinsic motivation." *International Public Management Journal*.
- Moynihan, D.P., Wright, B.E. & Pandey, S.K. (2012a). Working within constraints: Can transformational leaders alter the experience of red tape? *International Public Management Journal*, 15(3), 315-336.
- Moynihan, D. P., S. K. Pandey, and B. E. Wright. 2012b. "Setting the Table: How Transformational Leadership Fosters Performance Information Use." *Journal of Public Administration Research and Theory* 22(1): 143-164.
- Moynihan, Donald P., Pandey, Sanjay K., and Wright, Bradley E. 2014. "Transformational Leadership in the Public Sector: Empirical Evidence of its Effects". In Yogesh K. Dwivedi, Mahmud A. Shareef, Sanjay K. Pandey, and Vinod Kumar (Editors), pp. 87-104, *Public Administration Reformation: Market Demand from Public Organizations*. Routledge/Taylor and Francis.
- O'Reilly, C.A., & Caldwell, D.F. (1980). Job choice: The impact of intrinsic and extrinsic factors on subsequent satisfaction and commitment. *Journal of Applied Psychology*, 65(5), 559–565.

- Oberfield, Zachary W. (2014). Public Management in Time: A Longitudinal Examination of the Full Range of Leadership Theory *J Public Adm Res Theory* 24 (2): 407-429.
- Orazi, Davide Christian; Alex Turrini; Giovanni Valotti (2013). Public sector leadership: new perspectives for research and practice *International Review of Administrative Sciences* 79 (3): 486-504.
- Podsakoff, P.M.; W. D. Todor; R. A. Grover; V. L. Huber (1984). Situational Moderators of Leader Reward and Punishment Behaviors: Fact or Fiction? *Organizational behavior and human performance* 34, 21-63.
- Rainey, H. G. 2009. *Understanding and Managing Public Organizations*, 4th ed. San Francisco: Jossey-Bass.
- Ryan, R. M. and E. L. Deci (2000). "Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being." *American Psychologist* 55(1): 68-78.
- Salanova, M., & Schaufeli, W. B. (2008). A cross-national study of work engagement as a mediator between job resources and proactive behaviour. *The International Journal of Human Resource Management*, 19(1), 116-131.
- Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of organizational Behavior*, 25(3), 293-315.
- Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The measurement of work engagement with a short questionnaire a cross-national study. *Educational and psychological measurement*, 66(4), 701-716.
- Schaufeli, W. B., Bakker, A. B. and Van Rhenen, W. (2009) How changes in job demands and resources predict burnout, work engagement, and sickness absenteeism. *Journal of Organizational Behavior*, 30(7): 893–917.
- Schaufeli, W.B., Salanova, M., Gonzalez-Roma, V., & Bakker, A.B. (2002). The measurement of burnout and engagement: A confirmatory factor analytic approach. *Journal of Happiness Studies*, 3, 71-92.
- Schriesheim, Chester A., Stephanie L. Castro, Xiaohua (Tracy) Zhou, Leslie A. DeChurch (2006). An investigation of path-goal and transformational leadership theory predictions at the individual level of analysis *The Leadership Quarterly* 17: 21– 38.
- Tims, M., Bakker, A.B., & Xanthopoulou, D. (2011). Do transformational leaders enhance their followers' daily work engagement? *The Leadership Quarterly*, 22, 121-131
- Van Wart, Montgomery (2013), Administrative leadership theory: A reassessment after 10 years. *Public Administration*, 91: 521–543.



- Vecchio, Robert P.; Joseph E. Justin and Craig L. Pearce (2008). The utility of transactional and transformational leadership for predicting performance and satisfaction within a path-goal theory framework *Journal of Occupational and Organizational Psychology* 81, 71–82.
- Vincent-Höper, S., Muser, C., & Janneck, M. (2012). Transformational leadership, work engagement, and occupational success. *Career Development International*, 17(7), 663-682.
- Vogel, Rick & Doris Masal (2015) Public Leadership: A review of the literature and framework for future research, *Public Management Review*, 17:8, 1165-1189.
- Vroom, V. H. 1964. *Work and motivation*. New York: Wiley.
- Wang, Gang, In-Sue Oh, Stephen H. Courtright, and Amy E. Colbert. 2011. Transformational Leadership and Performance Across Criteria and Levels: A Meta-Analytic Review of 25 Years of Research *Group & Organization Management* 36(2) 223–270.
- Weibel, A., K. Rost, and M. Osterloh. 2010. “Pay for Performance in the Public Sector – Benefits and (Hidden) Costs.” *Journal of Public Administration Research and Theory* 20(2): 387-412.
- Wright, B. E., D. P. Moynihan, and S. K. Pandey. 2012. “Pulling the levers: Transformational leadership, Public Service Motivation, and mission valence.” *Public Administration Review* 72(2): 206-215.

**Table 1.** Fixed effects panel regression of employee intrinsic motivation and work engagement on leader-reported leadership.

	<b>Intrinsic Motivation (model 1.1)</b>	<b>Intrinsic Motivation (model 1.2)</b>	<b>Intrinsic Motivation (model 1.3)</b>	<b>Work Engagement (model 1.4)</b>	<b>Work Engagement (model 1.5)</b>	<b>Work Engagement (model 1.6)</b>
Transformational leadership	0.068** (3.08)		0.068** (3.06)	0.064† (1.76)		0.068† (1.86)
Contingent verbal rewards		0.035* (2.42)	0.027† (1.91)		0.033 (1.49)	0.023 (1.02)
Contingent material rewards		0.009 (0.76)	0.007 (0.66)		0.012 (0.67)	0.009 (0.52)
Contingent sanctions		-0.025 (-1.53)	-0.032* (-2.12)		-0.040 (-1.42)	-0.048† (-1.72)
Time dummy	-0.585* (-2.21)	-0.630* (-2.26)	-0.515† (1.87)	0.172 (0.38)	0.054 (0.12)	0.171 (0.37)
Constant	73.58*** (39.47)	77.62*** (47.36)	73.14*** (32.98)	65.18*** (21.16)	65.75*** (17.42)	65.75*** (17.42)
<i>N observations</i>	3,798	3,798	3,798	845	845	845
<i>N leaders</i>	385	385	385	287	287	287

Note: *t* statistics in parentheses clustered by leader. †  $p < 0.1$  \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

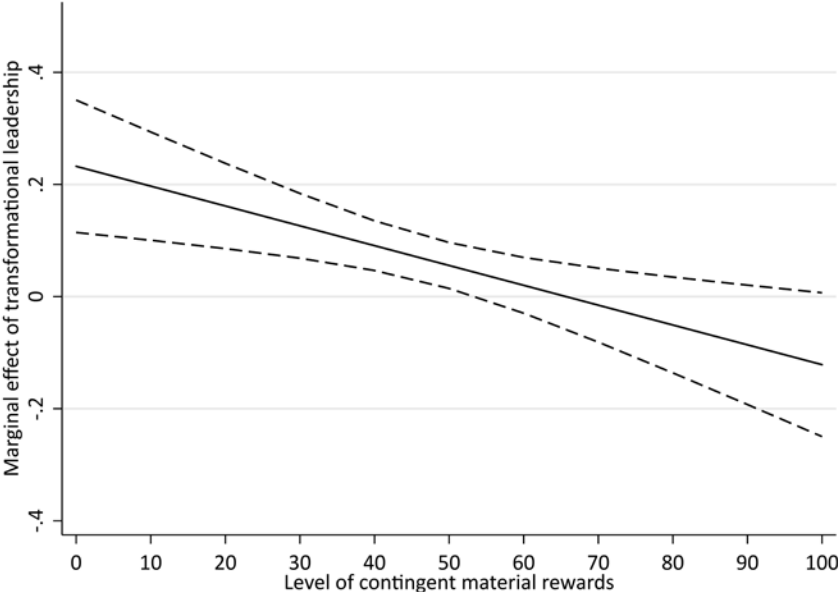
When each of the transactional leadership variables are entered separately, the results are highly similar to those presented in models 1.2 and 1.5 and the *p*-values do not change above or below the 0.05 or 0.1 significance thresholds,

**Table 2.** Fixed effects panel regression of employee intrinsic motivation and work engagement on leadership (interaction models).

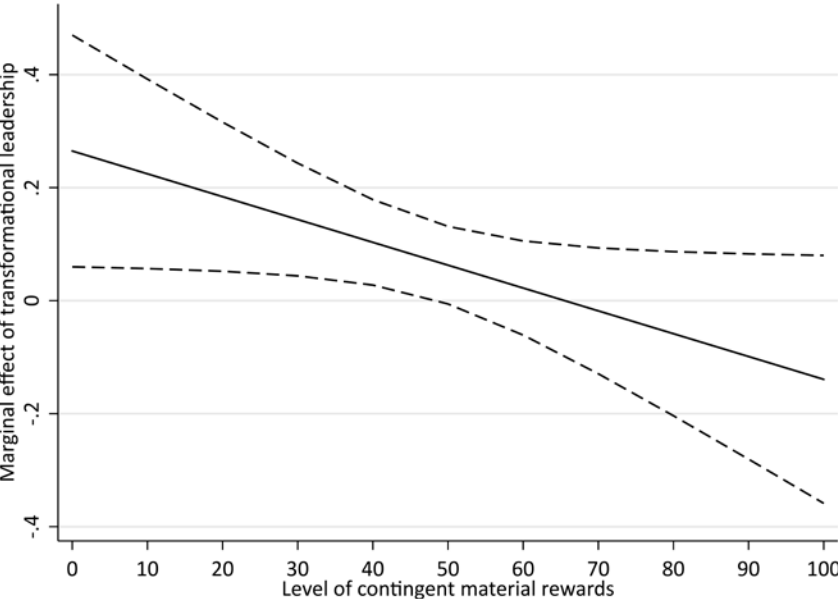
	<b>Intrinsic Motivation (model 2.1)</b>	<b>Work Engagement (model 2.2)</b>	<b>Intrinsic Motivation (model 2.3)</b>	<b>Work Engagement (model 2.4)</b>
Transformational leadership	0.067** (3.02)	0.064† (1.77)	0.183 (1.19)	0.169 (0.72)
Transformational leadership × level of verbal rewards			-0.0001 (-0.04)	0.0033 (1.32)
Transformational leadership × level of material rewards			-0.0035** (-2.99)	-0.0040* (-1.97)
Transformational leadership × level of sanctions			0.0009 (0.54)	-0.003 (-0.89)
Contingent verbal rewards	0.109 (1.13)	0.101 (0.49)	0.0265* (1.99)	0.0240 (1.10)
Contingent verbal rewards × level of transformational leadership	-0.00093 (-0.85)	-0.0011 (-0.46)		
Contingent material rewards	-0.0044 (-0.05)	0.204 (1.14)	0.0089 (0.84)	0.014 (0.78)
Contingent material rewards × level of transformational leadership	0.00013 (0.12)	-0.0024 (-1.11)		
Contingent sanctions	0.104 (0.80)	-0.469† (-1.82)	-0.0352* (-2.29)	-0.049† (-1.79)
Contingent sanctions × level of transformational leadership	-0.0016 (-1.04)	0.0051 (1.63)		
Time dummy	-0.508† (-1.85)	0.088 (0.20)	-0.405 (-1.51)	0.274 (0.60)
Constant	72.92*** (32.75)	68.89*** (17.39)	73.14*** (35.03)	64.81*** (17.02)
<i>N observations</i>	3,797	849	3,797	849
<i>N leaders</i>	385	287	385	287

Note: *t* statistics in parentheses clustered by leader. †  $p < 0.1$  \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

**Figure 1a.** Marginal effects of transformational leadership on intrinsic motivation at different levels of contingent material rewards (based on Model 2.3).



**Figure 1b.** Marginal effects of transformational leadership on work engagement at different levels of contingent material rewards (based on Model 2.4).



## APPENDIX

**Table A1.** Confirmatory factor analysis of intrinsic motivation (separate for each survey)

	<b>Intrinsic motivation</b>	First survey (August 2014)	Second survey (August 2015)
1	I very much enjoy my daily work	0.814	0.834
2	A rather large part of my tasks at work are boring (reversed)	-0.655	-0.626
3	My work is very exciting	0.858	0.841
4	I like performing most of my work processes	0.798	0.815
	Alpha	0.857	0.854
	N	4,136	4,115

Note: RMSEA: 0.105 (first survey), 0.080 (second survey), CFI: 0.988 (first survey), 0.993 (second survey), TLI: 0.965 (first survey), 0.980 (second survey).

**Table A2.** Confirmatory factor analysis of work engagement (separate for each survey)

	<b>Work engagement</b>	First survey (August 2014)	Second survey (August 2015)
1	At my work, I feel bursting with energy	0.838	0.860
2	At my job, I feel strong and vigorous	0.830	0.847
3	When I get up in the morning, I feel like going to work	0.779	0.783
4	I am enthusiastic about my job	0.868	0.900
5	My job inspires me	0.811	0.812
6	I am proud of the work that I do	0.725	0.721
	Alpha	0.919	0.925
	n	908	912

Note: RMSEA: 0.107 (first survey), 0.112 (second survey), CFI: 0.975 (both first and second survey), TLI: 0.958 (both first and second survey).

**Table A3.** Full confirmatory factor analysis of work engagement and intrinsic motivation

		First survey (August 2014)	Second survey (August 2015)
<b>Work engagement</b>			
1	At my work, I feel bursting with energy	0.837	0.883
2	At my job, I feel strong and vigorous	0.856	0.880
3	When I get up in the morning, I feel like going to work	0.796	0.838
4	I am enthusiastic about my job	0.892	0.919
5	My job inspires me	0.845	0.861
6	I am proud of the work that I do	0.773	0.781
<b>Intrinsic motivation</b>			
1	I very much enjoy my daily work	0.890	0.903
2	A rather large part of my tasks at work are boring (reversed)	-0.623	-0.683
3	My work is very exciting	0.884	0.884
4	I like performing most of my work processes	0.766	0.829
n		889	889

Note: RMSEA: 0.062 (first survey), 0.066 (second survey), CFI: 0.797 (first survey), 0.788 (second survey), TLI: 0.731 (first survey), 0.719 (second survey).

**Table A4.** Confirmatory factor analysis of transformational and transactional leadership, reported by leaders (separate for each survey)

		First survey (August 2014)	Second survey (August 2015)
<b>Transformational leadership (TFL) – As a leader I...</b>			
1	Concretize a clear vision for the [ORGANIZATION TYPES] future	0.506	0.513
2	Seek to make employees accept common goals for the [ORGANIZATION TYPE]	0.654	0.684
3	Strive to get the [ORGANIZATION TYPE] to work together in the direction of the vision	0.793	0.744
4	Strive to clarify for the employees how they can contribute to achieving the [ORGANIZATION TYPES] goals	0.604	0.681
Alpha		0.729	0.742
<b>Transactional leadership behavior</b>			
<b>Contingent verbal rewards (CVR) – My leader...</b>			
1	Give individual employees positive feedback when they perform well	0.814	0.806
2	Actively show my appreciation of employees who do their jobs better than expected	0.722	0.763
3	Personally compliment employees when they do outstanding work	0.731	0.809
Alpha		0.795	0.833
<b>Contingent material rewards (CMR) – My leader...</b>			
1	Reward the employees' performance, when they live up to my requirements	0.886	0.872
2	Reward the employees' dependent on how well they perform their jobs	0.781	0.784
3	Point out what employees will receive if they do what is required	0.556	0.564
Alpha		0.777	0.770
<b>Contingent sanctions (CS) – My leader...</b>			
1	Give negative consequences to the employees if they perform worse than their colleagues	0.568	0.662
2	Make sure that it has consequences for the employees if they do not consistently perform as required.	0.691	0.680
3	Give negative consequences to employees if they do not perform as required	0.797	0.706
Alpha		0.719	0.718
n		405	395

Note: RMSEA: 0.032 (first survey), 0.049 (second survey), CFI: 0.983 (first survey), 0.965 (second survey), TLI: 0.978 (first survey), 0.954 (second survey)

**Table A5.** Descriptive statistics and correlations

		M	SD	Min	Max	(1)	(2)	(3)	(4)	(5)
1	Intrinsic motivation, first survey	79.16	16.40	0	100	1				
2	Intrinsic motivation, second survey	78.52	16.69	0	100	0.643*	1			
3	Work engagement, first survey	70.42	17.35	2.78	100	0.695*	0.588*	1		
4	Work engagement, second survey	70.62	17.49	2.78	100	0.572*	0.731*	0.703*	1	
5	TFL (leaders), first survey	85.05	12.11	43.75	100	0.05*	0.009	0.087*	0.097*	1
6	TFL (leaders), second survey	82.06	11.57	50	100	0.018	0.013	0.035	0.081*	0.451*
7	CVR (leaders), first survey	83.39	14.20	0	100	0.059*	0.016	0.069*	0.062*	0.289*
8	CVR (leaders), second survey	79.49	16.07	0	100	0.031*	0.021	0.001	0.034	0.108*
9	CMR (leaders), first survey	43.22	21.42	0	100	-0.065*	-0.051*	-0.027	0.016	0.063*
10	CMR (leaders), second survey	44.52	21.37	0	91.67	-0.048*	-0.019	-0.057*	-0.005	0.014
11	CS (leaders), first survey	66.42	16.22	0	100	-0.007	-0.024	0.024	0.047	0.334*
12	CS (leaders), second survey	65.71	15.80	6.25	100	0.002	0.006	0.012	0.037	0.284*

Note: \*:  $p < 0.05$ 

(Continued)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
6 Intrinsic motivation, second survey	1						
7 Work engagement, first survey	0.185*	1					
8 Work engagement, second survey	0.189*	0.352*	1				
9 TFL (leaders), first survey	0.083*	0.200*	0.243*	1			
10 TFL (leaders), second survey	0.201*	0.179*	0.260*	0.407*	1		
11 CVR (leaders), first survey	0.211*	0.124*	0.185*	0.254*	0.191*	1	
12 CVR (leaders), second survey	0.313*	-0.009	0.291*	0.193*	0.248*	0.491*	1