



Task complexity and transformational leadership: The mediating role of leaders' state core self-evaluations



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ABSTRACT

While substantial scholarly attention has been paid to the beneficial consequences of transformational leadership and the conditions in which this leadership style is most effective, there is a remarkable shortage of research on the contextual antecedents of transformational leadership behavior itself. To address this gap, a laboratory experiment was conducted in which we tested the relationship between task complexity and the emergence of transformational leadership behavior. In this experiment, 111 participants were divided in groups of three (comprising one leader and two subordinates), and were instructed to solve three decision-making tasks with varying levels of task complexity. Results indicated that task complexity was negatively related to transformational leadership behavior, and that this relationship was partially mediated by the leader's state core self-evaluations. In other words, when leaders encounter tasks that are overwhelmingly complex, they act in less transformational ways because they momentarily lack the psychological resources to do so. Limitations and future research directions are discussed.

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Introduction

Since the publication of Bass' theory in 1985, the transformational leadership framework has been the subject of sustained research attention and has become the dominant framework in the field of leadership research (Barling, Christie, & Hopton, 2011). Over these two and a half decades, considerable research efforts have been invested in exploring its various positive effects on subordinates and organizations (Barling, Slater, & Kelloway, 2000; Podsakoff, MacKenzie, & Bommer, 1996; Wang & Howell, 2010), on the processes through which these positive outcomes are realized (Korek, Felfe, & Zaepernick-Rothe, 2010; Liu, Siu, & Shi, 2010; Rode, 2010; Walumbwa, Avolio, & Zhu, 2008), and on the circumstances under which this leadership style works best (Avolio, Zhu, Koh, & Bhatia, 2004; Barling et al., 2011; Howell & Hall-Merenda, 1999; Keller, 2006). However, as it has been traditionally treated as stable within a leader, surprisingly little is known about the *conditions* under which leaders are prone to engage in transformational leadership—and the cognitive mechanisms that explain why they are inclined to show transformational behaviors under these conditions.

In the present study, we demonstrate that most leaders can engage in transformational leadership behavior to some extent given the right conditions. We do this by testing how differences in task complexity evoke fluctuations in transformational leadership behavior within a leader. Moreover, we examine the cognitive mechanisms underlying this relationship by testing how the relationship between task complexity and transformational leadership behavior is mediated by self-related cognitions. Inspired by the Conservation of Resources Theory (Hobfoll, 1989), we argue that, as the task becomes exceedingly complex and cognitively challenging, it depletes the leader's psychological resources (i.e., it alters his/her self-related cognitions for the

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worse) and because of that reason, it diminishes the emergence of transformational leadership. We thus believe that characteristics of a situation (e.g. a task with low complexity) activate encodings in the leader's mind (e.g. 'this task is not too difficult'), which activate other cognitive units (e.g. 'I can handle it') that in turn trigger certain behavioral scripts and behaviors (e.g. intellectually stimulating behaviors). Conversely, a task with high complexity may, in the same leader, generate the encoding 'this task is too difficult', which encoding may trigger the cognition 'I cannot handle it', which cognition may in turn activate avoidance behaviors (for a detailed description of this interactionist approach, see the cognitive affective personality system theory by Mischel & Shoda, 1995).

By testing the mediating effect of self-related cognitions on the relationship between task complexity and transformational leadership behavior, we aim to contribute to a better understanding of the contextual and cognitive antecedents of transformational leadership. Specifically, by exploring the external and internal triggers and obstacles of transformational leadership behavior, we want to shed some light on the question why in some situations leaders are inclined to and in others are blocked from performing transformational behaviors. Understanding these contextual influences and the mechanisms by which they exert their influence is important both from a theoretical and a practical point of view. Theoretically, it adds to the existing leadership literature by showing that leadership behavior is not only affected by the leader's dispositions, but also by the situation the leader is in. Practically, this knowledge can feed into suggestions on what circumstances need to be fostered in organizations and what cognitive skills need to be developed (among leaders) in order to promote transformational behaviors.

Transformational leadership

Transformational leadership is defined as a leadership style that enhances subordinates' motivation, morale, and performance through a variety of mechanisms, such as showing an example, providing a sense of mission and vision, and challenging subordinates' beliefs and assumptions. Transformational leadership manifests itself in four distinct behaviors. *Individual consideration* is shown when the leader attends to each subordinate's needs individually, cares about their well-being, gives them emotional support, and helps them to develop their skills and potentials. *Intellectual stimulation* is shown when the leader challenges the widely held, habitual assumptions and beliefs that subordinates rely on and encourages them to think for themselves. *Inspirational motivation* is shown when the leader articulates a vision that is appealing and inspiring for the subordinates and provides them with high but achievable challenges. *Idealized influence* is shown when the leader is driven by values and a concern for what is best for the subordinates, the organization and society, acts with integrity and beyond self-interest (Barling et al., 2011; Bass, 1999).

As opposed to transformational leadership, transactional leadership style implies the assumption that the relation between the leader and follower is fundamentally an exchange relationship to meet self-interests. Three kinds of transactional leadership have been identified: *active management by exception*, meaning that the leader focuses on subordinates' mistakes and takes corrective actions, *passive management by exception*, meaning that the leader only acts when there is a problem, and contingent reward, meaning that the leader clarifies expectations and makes rewards contingent on meeting such expectations. *Laissez-faire leadership*, meaning that the leader avoids tasks and responsibilities, belongs to a third category, namely non-leadership (Bass, 1999).

Up to this day, research on transformational leadership has mostly focused on its beneficial consequences as regards employees, as exemplified by improved well-being (Arnold, Turner, Barling, Kelloway, & McKee, 2007; Densten, 2005; Liu, Siu, & Shi, 2010), self-efficacy (Fitzgerald & Schutte, 2010; Gong, Huang, & Farh, 2009; Liu et al., 2010), creativity (Gong et al., 2009), job satisfaction (Yang, 2009), and reduced burnout, emotional exhaustion (Densten, 2005), and stress (Liu et al., 2010; Sosik & Godshalk, 2000). In addition to its beneficial effects on individual employees, research has shown that transformational leadership also generates competitive advantages for the organization as a whole as it boosts job performance and organizational success (Tsai, Chen, & Cheng, 2009; Waldman, Javidan, & Varella, 2004; Walumbwa et al., 2008) and improves branch-level financial performance and sales results (Barling, Weber, & Kelloway, 1996). In summary, transformational leadership is widely considered to be an effective strategy for managing the changing environment faced by modern organizations (Bass, 1999; Turner, Barling, & Zaharatos, 2002).

Despite its widely recognized strengths, it has been acknowledged that transformational leadership is not equally useful under all circumstances, and much attention has been paid to the conditions under which transformational leadership behaviors improve work outcomes (for a review, see Barling et al., 2011). Examples of such circumstances are a higher relative position of the leader in the organizational hierarchy (Fuller, Patterson, Hester, & Stringer, 1996), structural distance between leaders and subordinates (Avolio et al., 2004), close physical proximity (Howell & Hall-Merenda, 1999), conditions of low stress (Seltzer, Numerof & Bass) and research projects (Keller, 2006). Leadership scholars also scrutinized the role of subordinates and leader-subordinate relations in the effectiveness of transformational leadership. For example, research has shown that collectivist subordinates perform better under transformational leadership than individualists do (Jung & Avolio, 1999); and that the better the exchange quality between leader and subordinate (Piccolo & Colquitt, 2006) or the stronger their sense of common identity is (Ellemers, De Gilder, & Haslam, 2004) the more effective transformational leadership becomes.

Whereas it has been recognized that the effectiveness of transformational leadership behavior depends on the context, the behavior itself has traditionally been conceptualized as a stable, innate characteristic of the leader. This way, differences in leadership style have often been attributed to differences between leaders regarding their trait or "default" level of transformational leadership. Supportive of this notion are the relationships between personality and transformational leadership behavior (Bono & Judge, 2004). For instance, the leader's emotional intelligence (Barling et al., 2000), core self-evaluations (Resick, Whitman, Weingarden, & Hiller, 2009), positive psychological traits such as hope, optimism, or resilience (Peterson, Walumbwa, Byron, & Myrowitz, 2009), internal locus of control, and extraversion (Judge & Bono, 2000a, 2000b) have all been shown to relate positively to transformational leadership ratings. However, for neuroticism, conscientiousness, openness to

experience, and agreeableness the findings were inconsistent (Barling et al., 2011; Judge & Bono, 2000a, 2000b). The lack of consistency in the results, and the fact that relationships with personality are moderate, hint toward there being more than a trait effect at play (Bono & Judge, 2004).

In support of this notion, leadership research has shown that leaders generally do not only differ in their default level of behavior, but that one leader can also engage in different behaviors in response to different work situations (e.g., Vroom & Jago, 1988; Vroom & Yetton, 1973) or in relation to different employees (Dansereau, Graen, & Haga, 1975; Lowin & Craig, 1968; Schriesheim, Castro, & Coglisier, 1999; Yukl, 1989). Specifically with regard to transformational and transactional leadership, the Full Range of Leadership Paradigm (Avolio & Bass, 1991) conceptualizes leadership as a pool of behaviors that all leaders perform (Kirkbride, 2006). The paradigm acknowledges that, while leaders do have dispositional behavioral tendencies, they display all behaviors from both sides of the leadership spectrum at different moments in time and to a different degree (Bass, 1985; Bass, 1999). As such, the Full Range of Leadership Paradigm offers an integrative approach to leadership that acknowledges both its stable, trait-, as well as its variable, state-aspect. Yet, at the same time, it falls short of offering an explanation *why* leaders would engage in different behaviors in different situations. It is furthermore remarkable that since its publication little research has been conducted on the possible contextual antecedents of transformational leadership (Nielsen & Cleal, 2011), especially because Bass had already identified this research gap in 1999, stating that 'Although the concepts of transformational and transactional leadership are found universally, much more still needs to be learned about how they are affected by the context in which the leadership occurs' (p. 23). The goal of the present paper is to do exactly that. In particular, we aim to contribute to our limited knowledge on the contextual and cognitive antecedents of transformational leadership by testing how differences in task complexity lead to variation in transformational leadership behavior and how this variation is driven by variation in the leader's cognitions about him/herself.

Task complexity as an antecedent of transformational leadership

According to the Conservation of Resources Theory (Hobfoll, 1989), people primarily strive to maintain and enhance their resources, which can be circumstances (e.g. employment, marriage), material resources (e.g. real estate), or psychological ones (e.g. self-esteem). When there is a loss or a potential loss of resources, stress occurs, and when people feel threatened by the loss of resources, they engage in behaviors to minimize further loss of resources. Conversely, when there is no threat of resource loss, people engage in behaviors directed at accumulating further resources. Environmental conditions, such as overwhelming job demands, can diminish resources or threaten the individual with the exhaustion of resources.

One important job demand that can put strain on people's psychological resources is task complexity. For example, it has been shown that task complexity relates positively with emotional exhaustion (Ito & Brotheridge, 2003) and affects employees' sense of self-efficacy (Gist & Mitchell, 1992). Furthermore, researchers have also demonstrated the influence of task complexity on work behavior and performance (Earley, 1985; Maynard & Hakel, 1997; Payne, 1976; Schroder & Suedfeld, 1971), and on leadership behavior. In particular, higher levels of task complexity were shown to predict task-emphasis leader behaviors (Barrow, 1976), and planning and structuring behaviors (Marta, Leritz, & Mumford, 2005). We believe that the level of task complexity will also affect the extent to which a leader displays transformational behaviors. In line with the Conservation of Resources Theory, we argue that, as task complexity grows, the leader's psychological resources will get depleted by the strenuous cognitive demands of the task, and the leader will no longer be able to engage in highly complex, resource-building transformational behaviors (e.g. coaching subordinates, inspiring them to think innovatively, providing them with a vision). Instead, (s)he will be inclined to perform non-transformational behaviors in order to avoid further resource loss (e.g. controlling and monitoring subordinates; avoiding responsibilities and decision-making). This prediction is in line with research that has shown that psychological resource depletion leads to a drop in transformational leadership behaviors (Byrne et al., 2014). Moreover, it has been shown that complex transformational leadership behaviors require the frontal lobe of the brain to be in charge, which is the most evolved brain region responsible for the highest-order cognitive functions (Balthazard, Waldman, Thatcher, & Hannah, 2012). As this part of the brain is the most sensitive to stress, even an experience of mild, uncontrollable stress (threatened resources) can cause the imminent loss of prefrontal cognitive abilities (Arnsten, 2009) that are required for the execution of transformational behaviors.

Hypothesis 1. There is a negative relationship between task complexity and transformational leadership, such that as task complexity grows, transformational leadership behaviors will decrease.

Furthermore, as argued above, we believe that this negative relationship is driven by the depletion of the leader's psychological resources, that is, the momentary deterioration of the leader's perception of him/herself and his/her capability to cope with the demands of the situation (state core self-evaluations).

The mediating role of state core self-evaluations

How people experience their psychological resources and how they perceive themselves and their capacities strongly affects how they feel and act in situations in- and outside the workplace. This general self-regard can be expressed and measured by core self-evaluations (CSE), or the fundamental appraisals individuals make about themselves, their worth, and their abilities (Judge, Erez, Bono, & Thoresen, 2003). CSE is a broad personality trait that shows in one's self-esteem (i.e., the worthiness one attributes to oneself as a person); generalized self-efficacy (i.e., one's beliefs about one's ability to handle situations and solve problems); locus of control (i.e., one's beliefs regarding one's capacity to influence life's events); and neuroticism (i.e., one's inclination to focus on negative

aspects of the self and experience negative affect) (Judge et al., 2003). A person with positive CSE generally has a positive self-regard across situations, an affirmative attitude toward him/herself, confidence about his/her abilities, and a tendency to experience positive affect (Judge, Van Vianen, & De Pater, 2004).

Employees' trait core self-evaluations have been shown to have an effect on important work outcomes, such as on employees' job satisfaction, performance, motivation, or stress level (Best, Stapleton, & Downey, 2005; Judge & Kammeyer-Mueller, 2011; Judge et al., 2004). Moreover, Resick et al. (2009) found that CSE also affects one's leadership style, with trait CSE relating positively to transformational leadership. The reasoning behind this relationship is that people with a positive self-regard are in possession of the self-confidence that is needed to perform such complex and challenging leadership behaviors.

Much like transformational leadership, CSE has traditionally been conceptualized as a stable personality trait. However, and in line with the evolution in personality psychology to also focus on intrapersonal fluctuations in personality traits (Fleeson, 2001; Funder, 2009), recent research has shown that besides its trait or between-person variability, CSE also varies considerably *within* the individual as a function of changes in the situation (Nübold, Muck, & Maier, 2012; Schinkel, Van Dierendonck, & Anderson, 2004). These results echo research findings regarding self-esteem, self-efficacy, and neuroticism, which have all been shown to contain both a stable trait, as well as a variable state component (Bandura, 2006; Heatherton & Polivy, 1991; McNiel & Fleeson, 2006). The state approach to CSE suggests that, even though people do have a stable, habitual way of relating to themselves (trait CSE), their self-evaluations can change considerably from situation to situation (state CSE), as if they fluctuate around a stable set point (Judge & Kammeyer-Mueller, 2004).

We expect that leaders' state CSE will be affected by situational features and will in turn shape leadership behavior. This prediction is in line with the interactionist view on personality that suggests that in different situations, different working self-concepts get activated in an individual, and that these self-concepts generate different behavioral responses (Andersen & Chen, 2002; Lord & Brown, 2004; Mischel & Shoda, 1995; Van Knippenberg, van Knippenberg, De Cremer, & Hogg, 2004). Building on this interactionist view, we suggest that (1) fluctuations in leaders' state CSE will be predicted by the level of task complexity, and (2) fluctuations in state CSE will relate to variation in transformational leadership behavior.

With regard to the link between task complexity and state CSE, and in line with the Conservation of Resources Theory (Hobfoll, 1989), we expect that when task complexity becomes overwhelming, it will diminish the leaders' psychological resources by triggering negative cognitions about the self and its capacities. Particularly, the leader's appraisal of his/her own capacity to cope with the demands at hand, assessment of being in control, sense of self-efficacy and self-worth in the situation, that is, his/her state core self-evaluations, will be negatively affected. Regarding the link between state CSE and transformational leadership behaviors, we expect that the positive relationship between CSE and transformational leadership style that has been demonstrated on the between-person level (Resick et al., 2009) will hold on the within-person level too. In a context where the leader feels in control and confident about coping with the situation's demands, the leader will be in possession of the psychological resources necessary to act in transformational ways. However, in a situation where the leader does not appraise him/herself to be able to cope well, the leader will experience negative emotions and a low sense of efficacy, control and worth, and will not have the empowering cognitive and affective fuel that is needed to engage in challenging, transformational behaviors.

Hypothesis 2. The negative relationship between task complexity and transformational leadership will be mediated by the leader's state CSE.

Method

Participants

Our sample consisted of 111 participants. 91 were first year bachelor psychology students from the Vrije Universiteit Brussels, and 20 were university students from other disciplines. The participants' average age was 21.39 years ($SD = 7.99$), and 76.58% of them were women. Given our recruitment criteria, it is no surprise that most of the participants had maximally attained a high school degree (79.28%) as the majority was still in the first year of their university education. 5.40% attained a college degree, 13.51% attained a bachelor degree and 1.80% attained a masters degree. Participation in the study was rewarded by credit points for the psychology students, and by a small participation fee (5 euros) for students from other disciplines. Psychology students above the first year were not allowed to participate in the study to avoid that their knowledge of psychological experiments would interfere with the course of the sessions.

Procedure

The study employed an experimental design in which task complexity was manipulated, and where transformational leadership and core-self evaluations were measured. A week before the experiment, we sent a short, online questionnaire to the participants with socio-demographic questions, the trait CSE scale by Judge et al. (2003), and a short introduction to the experiment (i.e., the participants were told that the experiment would be about teamwork). The 111 participants were randomly assigned to one of 37 groups (3 participants per group). During the experimental session, after having signed the informed consent, the participants (in groups of three) were asked to take part in a role-play. One of the three participants was randomly assigned the role of the CEO of a fictional, fast-growing, clothes-producing company, the other two were assigned the roles of employees, and they were all attending the 'weekly meeting between CEO and employees'. To allow participants to familiarize themselves with the situation, they were first given a training task in which they were asked to choose the best one from four team-building day designs. Then the participants were invited

to solve three further decision-making tasks with varying level of task complexity. These tasks were: 1) choosing a new office space to rent for the company, 2) choosing a new product to put on the market, and 3) choosing a new project manager. The order of the tasks was randomized between the groups, and so was the level of task complexity between the three tasks (so that each task could appear at low/medium/high level of complexity). Note that the three topics (i.e., renting office space, choosing new product, and hiring new manager) inherently had the same level of complexity, and that the level of task complexity was manipulated by increasing/decreasing the number of options to choose from and the number of features that described each option.

In each group, the participant in the role of the CEO was asked to lead the meeting and was told that (s)he was responsible for having the group's choice written down by the end of each task-session. The participants had eight minutes to solve each task (except for the training task, for which they got 5 min), and were given a timer. To increase the involvement and commitment of the CEO to fulfill his/her role as a leader, the CEO's briefing mentioned that in case they find the best solution, (s)he and his/her employees would be rewarded after having completed all tasks (3 euros for the group per task).

After each task, the participants were asked to fill in a short (3 min) questionnaire, in which the two employees were asked to rate the leader's leadership style during the previous task, while the leaders were asked about their state core self-evaluations during the execution of the task. Both the employees and the leaders were also asked about their appraisal of the difficulty of the task (as a manipulation check), and both post-session questionnaires included several filler items to divert the participants' attention from the actual purpose of the experiment. For example, all participants had to fill in questions regarding the employee(s)' behavior too, as to not let them discover that we were only focusing on the leaders' behavior. Furthermore, the leaders did not know that the questionnaires that the employees filled in were different from theirs and contained questions regarding the leaders' leadership behavior. The participants were asked to stay in their role throughout the entire session and not discuss the questionnaires with each other.

The participants received written briefings throughout the experimental session, and the experimenters' role was mainly restricted to handing out the briefings, questionnaires, and other materials, in order to avoid that they would influence the participants' behavior. The experimenters had to work in a strictly standardized way, and they were thoroughly trained to do so beforehand by the first author. At the end of each experimental session, the experimenters conducted a follow-up interview to understand whether any of the participants had understood the real purpose of the experiment (none of the participants did). After this, the experimenter briefed the participants about the aim of the experiment and explained why it was necessary to use a cover story. Furthermore, (s)he gave each participant a 3 euros (1 euro/task) reward for his/her efforts to find the right solutions (beside the 5 euro participation fee mentioned above that students from other disciplines than psychology got).

Experimental manipulation

We operationalized task complexity in line with [Campbell \(1988\)](#) who viewed task complexity as a function of the task features that increase information load and diversity. In particular, we followed the example of [Payne \(1976\)](#) and [Olshavsky \(1979\)](#), and manipulated task complexity by increasing the number of alternatives the decision-makers could choose from and the number of attributes on which each alternative could be compared. Regarding the 'choosing an office-space' task, at the easiest level of task complexity, participants had to choose one from four different office-spaces, and regarding each office-space option they were provided with information about its rental fee, luminosity, ecological quality, and accessibility by public transport. At the medium level of task complexity they had eight office-space options to choose from and each option was described by eight features (previous 4 features + noise level, safety of neighborhood, need for renovation and size), and at the high level of task complexity they had 12 options to choose from, each one of them portrayed by 12 features (previous 8 features + outdoor space, parking, number of toilets and quality of façade). Analogously, regarding the 'choosing a new product to put on the market' task, at the low level of task complexity, participants had to choose from 4 products characterized by 4 features (target area, fabric quality, country of production and age of target group). At the level of medium complexity, they could choose from 8 products characterized by 8 features (previous 4 features + ecological damage generated by production, type of product, designer of product and color quality), and at the high level of complexity participants could choose from 12 products featured by 12 characteristics (previous 8 features + target group's financial situation, originality of product design, face of promotion and allergy risk). Regarding the 'choosing a new project manager' task, at the low level of complexity there were 4 project managers to choose from, each one of them described by 4 features (score in time management exercise, years of relevant job experience, strength and relevance of reference letters from former employees and score in problem solving skills test), at the medium level 8 project managers were available to choose from portrayed by 8 features (previous 4 feature + age, need for autonomy, creativity and sociability) and at the high level of complexity there were 12 candidates each characterized by 12 features (previous 8 feature + score in stress resilience exercise, people management skills, financial skills and language skills).

Measures

Transformational leadership

We used the seven-item Global Transformational Leadership Scale of [Carless, Wearing, and Mann \(2000\)](#) to measure leadership behavior. We chose to use this measure instead of the MLQ because of two reasons. First, some items of the MLQ were not compatible with the experimental situation in which the leader was guiding no more than two followers with whom (s)he never worked together before and will never work together again. Such items were: 'I help others develop themselves', 'I give personal attention to others who seem rejected', 'I am content to let others continue working in the same way as always', and 'Others are proud to be associated with me'. The items of the [Carless et al. \(2000\)](#) questionnaire were easy to transform to fit the experimental situation.

Second, we needed a short scale, as there were only a few minutes at the participants' disposal between the three experimental sessions to rate the leader's transformational leadership behavior. Because the scale of Carless and colleagues only consists of 7 items, it was short enough to use between the sessions. In their experience sampling study, Nielsen and Cleal (2011; p. 347) have also used the questionnaire of Carless and colleagues for the same reason, thereby arguing that: 'The scale consists of seven items and has been found to have a high degree of convergent validity with more established and lengthier questionnaires such as the MLQ and the LPI.'

For each item, respondents indicated on a seven-point rating scale (ranging from 'not at all' = 1 to 'absolutely' = 7) to what extent they found that during the preceding task, the leader behaved in certain ways. Example items are 'Communicated a clear and positive vision'; 'Gave encouragement and recognition to staff'; 'Encouraged thinking about problems in new ways and questioned assumptions'. The Cronbach alpha reliability of this scale was .85 in the low, .90 in the moderate, and .88 in the high task complexity condition (see also Table 1). Because the two subordinates rated transformational leadership behavior after each task, we averaged their ratings to obtain one single transformational leadership score for each leader in each experimental condition (i.e., three scores per leader; one for the low, one for the moderate, and one for the high complexity condition).

Core self-evaluations

We used a self-developed four-item scale to measure state CSE where each item referred to one of the four indicators of core self-evaluations. The items were the following: 'To what degree did you feel confident about your abilities?' (self-efficacy); 'To what degree did you feel in control of the situation?' (locus of control); 'To what degree did you experience negative emotions?' (neuroticism); 'To what degree did you feel good about yourself?' (self-esteem). The leaders had to indicate their response regarding how they felt during the execution of the previous task on a 1 to 7 scale, ranging from 'not at all' (1) to 'absolutely' (7). The Cronbach alpha reliability of the scale was .80 in the low, .61 in the moderate, and .80 in the high task complexity condition (see also Table 1).

We used the short measure not only for the sake of brevity, but more importantly because the existing scale of Judge et al. (2003) includes several items that could not be transformed into a state measure. Some example items that would not have fit the experimental context without fundamentally altering them are: 'I am confident I get the success I deserve in life'; 'Sometimes I feel depressed'; 'When I try, I generally succeed'; 'Sometimes when I fail I feel worthless'; 'I determine what will happen in my life' and 'I do not feel in control of my success in my career'. We tested for convergent validity of our short state CSE scale by computing for each leader the average state CSE score (averaged across the three experimental conditions), and correlating this to the leader's trait CSE score measured by means of the scale of Judge et al. (2003) (note that this could only be done for the 37 leaders, because they were the only participants that provided state CSE ratings during the experiment). The result of this test revealed that there was a significant positive correlation between the average state CSE score as measured by our instrument, and the trait CSE score as measured by Judge's scale ($r = .34$; $p = .038$). As such, convergent validity of our short CSE measure was supported; especially because the average of the three state CSE scores should only be considered a rough approximation of the leader's trait CSE score.

Manipulation check

Perceived task complexity was measured by a single item in the questionnaire 'To what degree did you find the task difficult?' The participants were asked to indicate their answer on a 1 to 7 scale (1 = not at all, 7 = absolutely). We asked the participants about the difficulty of the task rather than its complexity, because we wanted to get to know the participants' personal, subjective experience of the task's complexity. We believe that this cognition could be better accessed by asking the participants about how difficult they found the task, rather than by asking them to make an assessment of the task's complexity. As Campbell (1988) argues in his review on task complexity, even though some tasks can be difficult without being complex, such as digging a hole in the ground, some tasks are difficult *because* they are complex (which was the case in our experiment). At such occasions these two terms can be used interchangeably.

Table 1

Means (*M*), standard deviations (*SD*), and correlations for core-self evaluations (CSE) and transformational leadership (TFL) in the low, moderate, and high task complexity conditions. Cronbach alpha coefficients are between brackets.

	<i>M</i>	<i>SD</i>	CSE low	CSE moderate	CSE high	TFL low	TFL moderate	TFL high
CSE low	5.07	.78	(.80)					
CSE moderate	4.61	.76	.56***	(.61)				
CSE high	4.77	1.02	.42**	.46**	(.80)			
TFL low	5.03	.80	.26	-.03	.23	(.85)		
TFL moderate	4.85	.94	.33*	.13	.19	.79***	(.90)	
TFL high	4.71	.96	.34*	.12	.39*	.80***	.78***	(.88)

*** $p < .001$.

** $p < .01$.

* $p < .05$.

Table 2

Results of the repeated measures ANOVA's comparing task difficulty/transformational leadership/core-self evaluations between the low, moderate, and high complexity conditions.

Effect	MS	Df	F	p-Value	Greenhouse–Geisser	Huynh–Feldt
<i>Task difficulty</i>						
Complexity	43.11	2	37.52	<.001	<.001	<.001
Error	1.15	220				
<i>Transformational leadership</i>						
Complexity	.95	2	5.34	.007	.007	.007
Error	.18	72				
<i>Core-self evaluations</i>						
Complexity	4.15	2	5.15	.008	.011	.010
Error	.40	72				

Results

As a first step, the means, standard deviations, and correlations for transformational leadership and CSE in the three experimental conditions are shown in Table 1. Note that the correlations in Table 1 are purely for descriptive reasons as they pertain to between-person differences and can therefore not be used to test our hypotheses (which all pertain to the within-person level).

As a second step, we tested whether our manipulation had the desired effect by performing a repeated measures ANOVA on the task difficulty ratings. This test (see Table 2) revealed that the three tasks indeed differed in terms of task difficulty ($F(2, 220) = 37.52$; $p < .001$), with the task in the least complex condition ($M = 3.31$; $SD = 1.34$) being significantly less difficult than the tasks in the moderate ($M = 3.75$; $SD = 1.36$; $p = .003$) and high ($M = 4.54$; $SD = 1.51$; $p < .001$) complexity condition. Also the moderate and high complexity conditions differed significantly from each other ($p < .001$).

To test our first hypothesis (i.e., increases in task complexity lead to decreases in transformational leadership), we performed a repeated measures ANOVA with transformational leadership as the dependent variable and task complexity as the within-subject factor. From this analysis (see Table 2) it appeared that the level of transformational leadership behavior indeed differed as a function of the degree of task complexity ($F(2, 72) = 5.34$; $p = .007$). Moreover, post-hoc tests with the Least Significant Difference (LSD) procedure revealed that there was a marginally significant difference in transformational leadership between the low complexity ($M = 5.03$; $SD = .80$) and the moderate complexity ($M = 4.85$; $SD = .94$) condition ($p = .068$); a statistically significant difference between the low complexity ($M = 5.03$; $SD = .80$) and the high complexity ($M = 4.71$; $SD = .96$) condition ($p = .002$); and no difference between the moderate and the high complexity condition ($p = .184$). As such, and in line with Hypothesis 1, our data suggest that variation in task complexity relates negatively to variation in transformational leadership behavior. Moreover, the nonsignificant difference between the moderate and high complexity condition suggests that there might be a threshold beyond which further increases in task complexity no longer result in decreases in transformational leadership.

To test our second hypothesis (i.e., state CSE mediates the relationship between task complexity and transformational leadership behavior), we first tested how state CSE varied as a function of the increases in task complexity. To do so, we performed a repeated measures ANOVA with state CSE as the dependent variable and task complexity as the within-subject factor. This test (see Table 2) revealed that CSE indeed differed as a function of the degree of task complexity ($F(2, 72) = 5.15$; $p = .008$), with state CSE being higher in the low ($M = 5.07$; $SD = .78$) than in the moderate ($M = 4.61$; $SD = .76$; $p < .001$) and high complexity condition ($M = 4.77$; $SD = 1.02$; $p = .070$). Moreover, and similar to the transformational leadership ratings, no difference was found between

Table 3

Results of the multilevel mediation path model.

Effect	γ	SE	p-Value
<i>Predictor → Mediator</i>			
Low complexity condition → CSE	–	–	–
Moderate complexity condition → CSE	–.47	.12	<.001
High complexity condition → CSE	–.30	.16	.059
<i>Mediator → Outcome</i>			
CSE → TFL	.15	.09	.069
<i>Predictor → Outcome</i>			
Low complexity condition → TFL	–	–	–
Moderate complexity condition → TFL	–.11	.10	.254
High complexity condition → TFL	–.28	.08	.001
<i>Predictor → Mediator → Outcome</i>			
Low complexity condition → CSE → TFL	–	–	–
Moderate complexity condition → CSE → TFL	–.07	.04	.043
High complexity condition → CSE → TFL	–.05	.03	.098

the moderate and high complexity condition ($p = .307$), which again suggests that there might be a level of task complexity beyond which further increases no longer have an effect on CSE.

To formally test the mediation effect of CSE, we followed the procedure by [Hayes and Preacher \(submitted for publication\)](#). Because our independent variable is multicategorical in nature (i.e., a low, moderate, and high complexity condition) we could not apply the traditional, continuous approach to test for mediation. Rather, the three experimental conditions were represented by two dummy variables with 0 0 representing the low complexity condition, 1 0 the moderate complexity condition, and 0 1 the high complexity condition. The implication of this reparametrization is that the effects from complexity to CSE, and the indirect mediation effects (which are a combination of the effects from complexity to CSE and the effect from CSE to transformational leadership behavior) are relative effects, that is, they are relative to the 0 0 or the low complex condition ([Hayes & Preacher, submitted for publication](#)). A second feature of our data was that the participants went through all experimental conditions, which implies that the data have a nested structure with measurements nested within individuals. To explicitly account for this nested data structure, the data were modeled using two-level path analysis in Mplus version 7.1 ([Muthén & Muthén, 2013](#)). The results of this analysis are summarized in [Table 3](#). Regarding the link between task complexity and CSE, the analysis revealed that the leader's CSE in the moderate complexity condition was significantly ($\gamma = -.47$; $p < .001$) and in the high complexity condition marginally significantly ($\gamma = -.30$; $p = .059$) lower than in the low complexity condition (note that this is completely in line with the results of the repeated measures ANOVA). With regard to the link between CSE and transformational leadership behavior, a positive, marginally significant relationship was found ($\gamma = .15$; $p = .069$). Together, these effects combine into a significant relative indirect effect for the moderate complexity condition ($\gamma = -.07$; $p = .043$), and a marginally significant relative indirect effect for the high complexity condition ($\gamma = -.05$; $p = .098$). Moreover, the relative direct effect of the moderate condition was non-significant ($\gamma = -.11$; $p = .254$), whereas that of the high complexity condition was statistically significant ($\gamma = -.28$; $p = .001$). As such, our data support [Hypothesis 2](#) by suggesting that a decrease in leader's CSE can (at least partially) account for the fact that they behave less transformational in the moderate and high complexity condition as compared to the low complexity condition.

Discussion

The aim of this study was to test whether increases in task complexity negatively affected the emergence of transformational leadership behavior. Furthermore, we aimed to explore whether such fluctuations in transformational leadership behavior can be explained by a drop in leaders' psychological resources (state core self-evaluations) resulting from the rise in task complexity. The results supported both of our hypotheses. We found that task complexity affected leadership style the way we expected it, that is, transformational leadership decreased as a result of increases in task complexity, and that this relationship was partially mediated by the leader's state core-evaluations. However, we also observed a threshold beyond which further increase in task complexity no longer resulted in decrease in transformational leadership behavior, which might be explained by the fact that in the moderate complexity condition, the psychological resources were already completely depleted and further depletion was no longer possible. In other words, already in the moderate condition the leader may have had the cognition that (s)he could not cope with the demands of the situation, and this cognition did not change when increasing the complexity of the task further. This explanation is supported by the finding that the leader's psychological resources (i.e., his/her state core self-evaluations) also demonstrated the same threshold effect, that is, when going from the moderate to the high complexity condition, there was no further decrease in state CSE, which indeed suggests that resources were already depleted in the moderate complexity condition. Note that the finding that the patterns of transformational leadership behavior and those of CSE are alike is particularly strong because the ratings originated from different sources (i.e., from the subordinates and the leaders respectively).

In their study, [Nielsen and Cleal \(2011\)](#) demonstrated that an activity that is cognitively demanding increases transformational leadership behaviors, which seems to be opposing the results of our study. However, we suggest that instead of contradicting them, our findings complement the ones of [Nielsen and Cleal \(2011\)](#). The study of [Nielsen and Cleal \(2011\)](#) indicates that the cognitive demands of a certain task must exceed a certain level to let transformational leadership behaviors emerge. The authors claim that tasks that allow the leader to challenge subordinates (e.g. problem-solving tasks) allow the use of transformational leadership behaviors, as opposed to tasks that don't allow the leader to stimulate and coach followers (e.g. planning tasks). We, in addition, argue that when the level of complexity becomes overly demanding, it leads to diminished resources and the leader is no longer able to perform transformational behaviors. For example, if the leader perceives the complexity of the task to be overwhelming, (s)he will no longer be capable of genuinely inspiring followers by making them believe that they can overcome obstacles (inspirational motivation), or encourage them to think creatively by providing them with a stream of innovative ideas (intellectual stimulation). The tasks in our experiment were decision-making tasks that provided the leader and the subordinates with challenges at all three levels of task complexity; therefore they allowed the use of transformational behaviors already in the low complexity condition. However, in the medium complexity condition, the cognitive demands of the task exceeded the point where it started to have a debilitating effect on the leader, instead of an inspiring one.

This dual vision of the relationship between task complexity and transformational leadership is supported by the notion of task complexity being a challenge demand ([Van den Broeck, De Cuyper, De Witte, & Vansteenkiste, 2010](#)), that is, a job demand that can both enhance motivation, well-being, and productive behaviors, or interfere with the positive functioning of employees, because even though such demands provide opportunities for goal achievement and personal development, they require considerable investment of energy and personal resources. Viewing task complexity as a two-sided coin, we argue that, to be inclined to perform transformational behaviors, the leaders' task needs to be somewhat, but not overly cognitively challenging. This suggestion is in line with

the findings of [Schroder and Suedfeld \(1971\)](#), who showed that performance moved from poor to optimal to poor again as task complexity increased from low to very high level.

Theoretical implications

The present study advances our understanding of transformational leadership in three ways. First, by showing that transformational leadership behaviors fluctuate across situations, and that these fluctuations can be predicted from changes in situational features, our findings add to the results of the few studies that have shown that there are within-leader fluctuations in transformational leadership behavior (e.g. [Nielsen & Cleal, 2011](#)). Moreover, while none of the previous studies on within-leader fluctuations did take into account the drivers and the underlying cognitive mechanisms of such within-leader fluctuations, we demonstrated that the relationship between task complexity and transformational leadership behavior can partly be explained by a loss in the leader's psychological resources. However, having found that state core self-evaluations *partially* mediated the relationship between task complexity and transformational leadership behavior, our data do imply that core self-evaluations cannot fully account for this relationship. We therefore suggest that this relationship might also be mediated by the leader's stress level; experienced time pressure (because as the complexity of the task grows the same amount of time becomes tighter and tighter), or the leader's trust in the employees' competence to solve the task efficiently. Another possible mediator is hinted by the study of [Seltzer, Numerof, and Bass \(1989\)](#). In this study, [Seltzer et al. \(1989\)](#) showed that even though under conditions of low stress, transformational leadership behavior has a positive effect on subordinates' wellbeing and productivity, under high stress it may add to their stress level and therefore become counterproductive. From this perspective, the leader's realization that under high stress there is no space for stimulating, inspiring behaviors or soliciting followers' ideas but it is more beneficial to give clear directions, would be the cognitive process that explains why leaders act less transformational as the complexity of the task increases. Future research may investigate the role of these mediators.

Second, our findings also complement studies that have found that the context in which the leadership behavior takes place affects the relationship between transformational leadership behavior and performance. For example, in his longitudinal study, [Keller \(2006\)](#) found that the type of task acts as a moderator between transformational leadership and performance. In particular, his results showed that the relationship between transformational leadership and performance was stronger in research projects that require the use of scientific and technological knowledge from outside the team's realm and call for the generation of new knowledge, than in development projects that rely on existing knowledge residing within the team. Combining Keller's findings with ours, we can conclude that, even though there is an increased need for transformational leadership in the context of complex tasks, there is a decreased probability that this leadership behavior will actually emerge. This discrepancy between the 'demand for' and the 'supply of' transformational leadership in cognitively challenging work situations underlines the importance of combining results from both research streams.

The third important implication of our findings is that we have shown that fluctuations in transformational leadership behavior can be incited in an experimental design. Whereas there have been experiments that have manipulated transformational leadership itself and have then looked at its effects on follower and organizational outcomes ([Dvir, Eden, Avolio, & Shamir, 2002](#); [Jung & Avolio, 2000](#); [Nübold et al., 2012](#)), or explored the effects of feedback regarding subordinates' performance on the emergence of leaders' transformational or transactional cognitions ([Goodwin, Wofford, & Boyd, 2000](#)), we did not find any experiment where transformational leadership *behavior* was the dependent variable. The fact that we demonstrated that transformational leadership behavior changes as a function of manipulations in task complexity is crucial as it supports (1) the premise of the Full Range of Leadership Paradigm that leaders become more or less transformational as a function of the situation, and (2) the idea that these changes in transformational leadership behavior are causally related to changes in task complexity.

We also believe that our research enriches core self-evaluations theory, as our study has demonstrated that core self-evaluations indeed fluctuate across situations as a result of contextual changes. So far there have been very few studies that revealed such variability (for some exceptions, see [Nübold et al., 2012](#); [Schinkel et al., 2004](#)). Furthermore, our findings also suggest that fluctuations in momentary core self-evaluations predict variations in momentary transformational leadership behavior. Building on these findings, further research may explore the role of state core self-evaluations in predicting other forms of organizational behavior. So far, the important effect of trait core self-evaluations on organizational outcomes has been extensively researched ([Erez & Judge, 2001](#); [Judge, 2009](#); [Judge & Bono, 2001](#); [Judge, Bono, Erez, & Locke, 2005](#)), but because of the conventional conceptualization of core self-evaluations being a stable trait, the effect of state core self-evaluations on organizational behaviors has not yet been explored. Future research may also investigate the long-term changes in personality (that is, in trait-level leadership style and core self-evaluations) induced by organizational contexts exposing employees to a pattern of situations characterized by certain features (e.g. excessive task demands), as it has been shown that personality dispositions are shaped by enduring occupational experiences ([Wille & De Fruyt, 2014](#); [Wille, Hofmans, Feys, & De Fruyt, 2014](#)).

Limitations

Because of the experimental design, we could ensure that the relationship between task complexity and transformational leadership was not inflated due to confounding variables. Moreover, because leadership behavior was rated by the employees and not by the leaders themselves, we avoided that the self-serving bias ([Funder & Colvin, 1997](#)) of leaders would distort the results.

Beside its advantages, the experimental design has some weaknesses too. First, the ecological validity of the results may be questioned. Our sample consisted of students who lack the experience in leadership; a limitation that may limit the

generalizability of our results. Moreover, leaders often have to work with more than two subordinates, already have a professional relationship with their followers and work together for an extended period of time. As such, the context of the task in our experiment was different from the real context leaders face day to day, and therefore, future research might replicate the present findings with organizational samples or leaders as participants, with different tasks to solve and more than two 'subordinates' present. Future research may also use non-experimental designs that collect data from real-life situations (for example using an experience-sampling method; see Nielsen & Cleal, 2011), and where 'real' subordinates provide ratings on the leaders' behavior.

A second limitation of our study is that we have manipulated task complexity and measured core self-evaluations and transformational leadership behavior. As a result, we could demonstrate that changes in task complexity lead to changes in core self-evaluations and transformational leadership behavior. However, the casual sequence of the relationship between state core self-evaluations and transformational leadership could not be tested.

Practical implications

The results of the study indicate that the development of a core self-evaluations based intervention to enhance transformational leadership may be fruitful. In a meta-analysis, Powell and Yalcin (2010) studied the effectiveness of managerial trainings between 1952 and 2002, and found that there wasn't a lot of improvement in the trainings' effectiveness over the period of 50 years. Many training programs fail as participants do not manage to apply at work what they learned at the training (Collins & Holton, 2004), and when they get back to their jobs, they tend to fall back to old behavioral patterns (Day, 2001; Powell & Yalcin, 2010). An important reason for this crucial shortcoming is that trainings tend to solely focus on developing new behaviors. However, if the drivers of behaviors remain unaffected, the inclination for habitual behaviors remains high, especially under stressful circumstances. Specifically, leadership trainings are often inefficient because they do not address the cognitive mechanisms that underlie the behaviors (Emiliani, 2003). If organizations want their leaders to act effectively in a wide range of contexts, they may help them to become aware of their negative self-evaluations in challenging situations that interfere with transformational behaviors, and teach them how to modify these appraisals. Organizations may do this with the help of trainers and coaches that work with cognitive-behavioral methods, as such methods have been repeatedly shown to have an outstanding success in modifying people's dysfunctional cognitions and behaviors, both in clinical (Butler, Chapman, Forman, & Beck, 2006) and organizational settings (Proudfoot, Corr, Guest, & Dunn, 2009; Ruwaard, Lange, Bouwman, Broeksteeg, & Schrieken, 2007).

Conclusion

In summary, the results of the present study indicated that one leader can show different levels of transformational leadership behavior in different situations, and that this fluctuation is triggered by the complexity of the task (s)he encounters. Furthermore, the data suggested that leaders' state core self-evaluations also fluctuate across situations as a function of variation in the level of task complexity, and that these fluctuations in the leaders' self-evaluations (at least partly) explain the change in transformational leadership behavior. Besides contributing to theory on the contextual and cognitive antecedents of transformational leadership behavior, our findings also contribute to organizational practice by revealing situational conditions and cognitive skills that organizations need to promote if they want to facilitate the emergence of transformational leadership behavior.

References

- Andersen, S. M., & Chen, S. (2002). The relational self: An interpersonal social-cognitive theory. *Psychological Review*, 109, 619–645.
- Arnold, K. A., Turner, N., Barling, J., Kelloway, K., & McKee, M. C. (2007). Transformational leadership and psychological well-being: The mediating role of meaningful work. *Journal of Occupational Health Psychology*, 12, 193–203.
- Armsten, A. F. (2009). Stress signalling pathways that impair prefrontal cortex structure and function. *Nature Reviews. Neuroscience*, 10, 410–422.
- Avolio, B. J., & Bass, B. M. (1991). *The full range leadership development programs: Basic and advanced manuals*. Binghamton, NY: Bass, Avolio & Associates.
- Avolio, B. J., Zhu, W., Koh, W., & Bhatia, P. (2004). Transformational leadership and organizational commitment: Mediating role of psychological empowerment and moderating role of structural distance. *Journal of Organizational Behavior*, 25, 951–968.
- Balthazard, P. A., Waldman, D. A., Thatcher, R. W., & Hannah, S. T. (2012). Differentiating transformational and non-transformational leaders on the basis of neurological imaging. *The Leadership Quarterly*, 23, 244–258.
- Bandura, A. (2006). Guide for constructing self-efficacy scales. *Self-efficacy Beliefs of Adolescents*, 5, 307–337.
- Barling, J., Christie, A., & Hopton, A. (2011). Leadership. In S. Zedeck (Ed.), *APA handbook of industrial and organizational psychology. Building and developing the organization*, vol 1. (pp. 183–240). Washington, DC: American Psychological Association.
- Barling, J., Slater, F., & Kelloway, E. K. (2000). Transformational leadership and emotional intelligence: An exploratory study. *Leadership and Organization Development Journal*, 21, 157–161.
- Barling, J., Weber, T., & Kelloway, E. K. (1996). Effects of transformational leadership training on attitudinal and financial outcomes: A field experiment. *Journal of Applied Psychology*, 81, 827–832.
- Barrow, J. C. (1976). Worker performance and task complexity as causal determinants of leader behavior style and flexibility. *Journal of Applied Psychology*, 61, 433.
- Bass, B. M. (1985). *Leadership and performance beyond expectations*. New York: Free Press.
- Bass, B. M. (1999). Two decades of research and development in transformational leadership. *European Journal of Work and Organizational Psychology*, 8, 9–32.
- Best, R. G., Stapleton, L. M., & Downey, R. G. (2005). Core self-evaluations and job burnout: The test of alternative models. *Journal of Occupational Health Psychology*, 10, 441.
- Bono, J., & Judge, T. A. (2004). Personality and transformational and transactional leadership: A meta-analysis. *Journal of Applied Psychology*, 89, 901–910.
- Butler, A. C., Chapman, J. E., Forman, E. M., & Beck, A. T. (2006). The empirical status of cognitive-behavioral therapy: A review of meta-analyses. *Clinical Psychology Review*, 26, 17–31.
- Byrne, A., Dionisi, A. M., Barling, J., Akers, A., Robertson, J., Lys, R., Wylie, J., & Dupré, K. (2014). The depleted leader: The influence of leaders' diminished psychological resources on leadership behaviors. *The Leadership Quarterly*, 25(2), 344–357.

- Campbell, D. J. (1988). Task complexity: A review and analysis. *The Academy of Management Review*, 13, 40.
- Carless, S. A., Wearing, A. J., & Mann, L. (2000). A short measure of transformational leadership. *Journal of Business and Psychology*, 14, 389–405.
- Collins, D. B., & Holton, E. F. (2004). The effectiveness of managerial leadership development programs: A meta-analysis of studies from 1982 to 2001. *Human Resource Development Quarterly*, 15, 153–170.
- Dansereau, F., Graen, G., & Haga, W. J. (1975). A vertical dyad linkage approach to leadership within formal organizations: A longitudinal investigation of the role making process. *Organizational Behavior and Human Performance*, 13, 46–78.
- Day, D. (2001). Leadership development: A review in context. *The Leadership Quarterly*, 11, 581–613.
- Densten, I. L. (2005). The relationship between visioning behaviours of leaders and follower burnout. *British Journal of Management*, 16, 105–118.
- Dvir, T., Eden, D., Avolio, B. J., & Shamir, B. (2002). Impact of transformational leadership on follower development and performance: A field experiment. *Academy of Management Journal*, 45, 735–744.
- Earley, P. C. (1985). Influence of information, choice and task complexity upon goal acceptance, performance, and personal goals. *Journal of Applied Psychology*, 70, 481.
- Ellemers, N., De Gilder, D., & Haslam, S. A. (2004). Motivating individuals and groups at work: A social identity perspective on leadership and group performance. *Academy of Management Review*, 29, 459–478.
- Emiliani, M. L. (2003). Linking leaders' beliefs to their behaviors and competencies. *Management Decision*, 41, 893–910.
- Erez, A., & Judge, T. A. (2001). Relationship of core self-evaluations to goal setting, motivation, and performance. *Journal of Applied Psychology*, 86, 1270.
- Fitzgerald, S., & Schutte, N. S. (2010). Increasing transformational leadership through enhancing self-efficacy. *The Journal of Management Development*, 29, 495–505.
- Fleeson, W. (2001). Toward a structure-and process-integrated view of personality: Traits as density distributions of states. *Journal of Personality and Social Psychology*, 80, 1011.
- Fuller, J. B., Patterson, C. E., Hester, K., & Stringer, D. Y. (1996). A quantitative review of research on charismatic leadership. *Psychological Reports*, 78, 271–287.
- Funder, D. C. (2009). Persons, behaviors and situations: An agenda for personality psychology in the postwar era. *Journal of Research in Personality*, 43, 120–126.
- Funder, D. C., & Colvin, C. R. (1997). Congruence of others' and self-judgments of personality. In R. Hogan, J. Johnson, & S. Briggs (Eds.), *Handbook of personality psychology* (pp. 617–647). San Diego, CA: Academic Press.
- Gist, M. E., & Mitchell, T. R. (1992). Self-efficacy: A theoretical analysis of its determinants and malleability. *Academy of Management Review*, 17, 183–211.
- Gong, Y., Huang, J. C., & Farh, J. L. (2009). Employee learning orientation, transformational leadership, and employee creativity: The mediating role of employee creative self-efficacy. *Academy of Management Journal*, 52, 765–778.
- Goodwin, V. L., Wofford, J. C., & Boyd, N. G. (2000). A laboratory experiment testing the antecedents of leader cognitions. *Journal of Organizational Behavior*, 21, 769–788.
- Hayes, A. F., & Preacher, K. J. (2012n). *Statistical mediation analysis with a multicategorical independent variable*. <http://dx.doi.org/10.1111/bmsp.12028> (Manuscript submitted for publication).
- Heatherton, T. F., & Polivy, J. (1991). Development and validation of a scale for measuring state self-esteem. *Journal of Personality and Social Psychology*, 60, 895.
- Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, 44, 513.
- Howell, J. M., & Hall-Merenda, K. E. (1999). The ties that bind: The impact of leader-member exchange, transformational and transactional leadership, and distance on predicting follower performance. *Journal of Applied Psychology*, 84, 680.
- Ito, J. K., & Brotheridge, C. M. (2003). Resources, coping strategies, and emotional exhaustion: A conservation of resources perspective. *Journal of Vocational Behavior*, 63, 490–509.
- Judge, T. A. (2009). Core self-evaluations and work success. *Current Directions in Psychological Science*, 18, 58–62.
- Judge, T. A., & Bono, J. E. (2000a). Five-factor model of personality and transformational leadership. *The Journal of Applied Psychology*, 85, 751–765.
- Judge, T. A., & Bono, J. E. (2000b). Five-factor model of personality and transformational leadership. *Journal of Applied Psychology*, 85, 751.
- Judge, T. A., & Bono, J. E. (2001). Relationship of core self-evaluations traits—Self-esteem, generalized self-efficacy, locus of control, and emotional stability—With job satisfaction and job performance: A meta-analysis. *Journal of Applied Psychology*, 86, 80.
- Judge, T. A., Bono, J. E., Erez, A., & Locke, E. A. (2005). Core self-evaluations and job and life satisfaction: The role of self-concordance and goal attainment. *Journal of Applied Psychology*, 90, 257.
- Judge, T. A., Erez, A., Bono, J. E., & Thoresen, C. J. (2003). The core self-evaluations scale: Development of a measure. *Personnel Psychology*, 56, 303–331.
- Judge, T. A., & Kammeyer-Mueller, J. D. (2004). Core self-evaluations, aspirations, success, and persistence: An attributional model. In M. J. Martinko (Ed.), *Advances in attribution theory* (pp. 111–132). Greenwich, CT: Information Age Publishing.
- Judge, T. A., & Kammeyer-Mueller, J. D. (2011). Implications of core self-evaluations for a changing organizational context. *Human Resource Management Review*, 21, 331–341.
- Judge, T. A., Van Vianen, A. E., & De Pater, I. E. (2004). Emotional stability, core self-evaluations, and job outcomes: A review of the evidence and an agenda for future research. *Human Performance*, 17, 325–346.
- Jung, D. I., & Avolio, B. J. (1999). Effects of leadership style and followers' cultural orientation on performance in group and individual task conditions. *Academy of Management Journal*, 42, 208–218.
- Jung, D. I., & Avolio, B. J. (2000). Opening the black box: An experimental investigation of the mediating effects of trust and value congruence on transformational and transactional leadership. *Journal of Organizational Behavior*, 21, 949–964.
- Keller, R. T. (2006). Transformational leadership, initiating structure, and substitutes for leadership: A longitudinal study of research and development project team performance. *Journal of Applied Psychology*, 91, 202–210.
- Kirkbride, P. (2006). Developing transformational leaders: The full range leadership model in action. *Industrial and Commercial Training*, 38, 23–32.
- Korek, S., Felfe, J., & Zaepfner-Rothe, U. (2010). Transformational leadership and commitment: A multilevel analysis of group-level influences and mediating processes. *European Journal of Work and Organizational Psychology*, 19(3), 364–387.
- Liu, J., Siu, O. L., & Shi, K. (2010). Transformational leadership and employee well-being: The mediating role of trust in the leader and self-efficacy. *Applied Psychology: An International Review*, 59(3), 454–479.
- Lord, R. G., & Brown, D. J. (2004). *Leadership processes and follower self-identity*. Lawrence Erlbaum Associates Publishers.
- Lowin, A., & Craig, J. R. (1968). The influence of level of performance on managerial style: An experimental object-lesson in the ambiguity of correlational data. *Organizational Behavior and Human Performance*, 3, 440–458.
- Marta, S., Leritz, L. E., & Mumford, M. D. (2005). Leadership skills and the group performance: Situational demands, behavioral requirements, and planning. *The Leadership Quarterly*, 16, 97–120.
- Maynard, D. C., & Hakel, M. D. (1997). Effects of objective and subjective task complexity on performance. *Human Performance*, 10, 303–330.
- McNiel, J. M., & Fleeson, W. (2006). The causal effects of extraversion on positive affect and neuroticism on negative affect: Manipulating state extraversion and state neuroticism in an experimental approach. *Journal of Research in Personality*, 40, 529–550.
- Mischel, W., & Shoda, Y. (1995). A cognitive-affective system theory of personality: Reconceptualizing situations, dispositions, dynamics, and invariance in personality structure. *Psychological Review*, 102, 246.
- Muthén, L. K., & Muthén, B. O. (2013). *Mplus user's guide* (7th ed.). Los Angeles, CA: Muthén & Muthén.
- Nielsen, K., & Cleal, B. (2011). Under which conditions do middle managers exhibit transformational leadership behaviors? An experience sampling method study on the predictors of transformational leadership behaviors. *The Leadership Quarterly*, 22, 344–352.
- Nübold, A., Muck, P. M., & Maier, G. W. (2012). A new substitute for leadership? Followers' state core self-evaluations. *The Leadership Quarterly*, 24, 29–44.
- Olshavsky, R. W. (1979). Task complexity and contingent processing in decision making: A replication and extension. *Organizational Behavior and Human Performance*, 24, 300–316.
- Payne, J. W. (1976). Task complexity and contingent processing in decision making: An information search and protocol analysis. *Organizational Behavior and Human Performance*, 16, 366–387.
- Peterson, S. J., Walumbwa, F. O., Byron, K., & Myrowitz, J. (2009). CEO positive psychological traits, transformational leadership, and firm performance in high-technology start-up and established firms. *Journal of Management*, 35, 348–368.

- Piccolo, R. F., & Colquitt, J. A. (2006). Transformational leadership and job behaviors: The mediating role of core job characteristics. *Academy of Management Journal*, 49, 327–340.
- Podsakoff, P. M., MacKenzie, S. B., & Bommer, W. H. (1996). Transformational leader behaviors and substitutes for leadership as determinants of employee satisfaction, commitment, trust, and organizational citizenship behaviors. *Journal of Management*, 22, 259–298.
- Powell, K. S., & Yalcin, S. (2010). Managerial training effectiveness: A meta-analysis 1952–2002. *Personnel Review*, 39, 227–241.
- Proudfoot, J. G., Corr, P. J., Guest, D. E., & Dunn, G. (2009). Cognitive-behavioural training to change attributional style improves employee well-being, job satisfaction, productivity, and turnover. *Personality and Individual Differences*, 46, 147–153.
- Resick, C. J., Whitman, D. S., Weingarden, S. M., & Hiller, N. J. (2009). The bright-side and the dark-side of CEO personality: Examining core self-evaluations, narcissism, transformational leadership, and strategic influence. *Journal of Applied Psychology*, 94, 1365.
- Rode, J. C. (2010). Transformational leadership and follower creativity: The moderating effects of identification with leader and organizational climate. *Human Relations*, 63, 1105–1128.
- Ruwaard, J., Lange, A., Bouwman, M., Broeksteeg, J., & Schrieken, B. (2007). E-mailed standardized cognitive behavioural treatment of work-related stress: A randomized controlled trial. *Cognitive Behaviour Therapy*, 36, 179–192.
- Schinkel, S., Van Dierendonck, D., & Anderson, N. (2004). The impact of selection encounters on applicants: An experimental study into feedback effects after a negative selection decision. *International Journal of Selection and Assessment*, 12, 197–205.
- Schriesheim, C. A., Castro, S. L., & Coglisier, C. C. (1999). Leader–member exchange (LMX) research: A comprehensive review of theory, measurement, and data-analytic practices. *The Leadership Quarterly*, 10, 63–113.
- Schroder, H., & Suedfeld, P. (1971). *Personality theory and information processing*. New York: Ronald Press.
- Seltzer, J., Numerof, R. E., & Bass, B. M. (1989). Transformational leadership: Is it a source of more burnout and stress. *Journal of Health and Human Resources Administration*, 12, 174–185.
- Sosik, J. J., & Godshalk, V. M. (2000). Leadership styles, mentoring functions received, and job-related stress: A conceptual model and preliminary study. *Journal of Organizational Behavior*, 21, 365–390.
- Tsai, W. C., Chen, H. W., & Cheng, J. W. (2009). Employee positive moods as a mediator linking transformational leadership and employee work outcomes. *The International Journal of Human Resource Management*, 20, 206–219.
- Turner, N., Barling, J., & Zaharatos, A. (2002). Positive psychology at work. In C. R. Snyder, & S. Lopez (Eds.), *Handbook of positive psychology* (pp. 715–728). Oxford, UK: Oxford University Press.
- Van den Broeck, A., De Cuyper, N., De Witte, H., & Vansteenkiste, M. (2010). Not all job demands are equal: Differentiating job hindrances and job challenges in the Job Demands–Resources model. *European Journal of Work and Organizational Psychology*, 19, 735–759.
- Van Knippenberg, D., van Knippenberg, B., De Cremer, D., & Hogg, M. A. (2004). Leadership, self, and identity: A review and research agenda. *The Leadership Quarterly*, 15, 825–856.
- Vroom, V. H., & Jago, A. G. (1988). *The new leadership: Managing participation in organizations*. Englewood Cliffs, NJ: Prentice.
- Vroom, V. H., & Yetton, P. W. (1973). *Leadership and decision making*. Pittsburgh, PA: University of Pittsburgh Press.
- Waldman, D. A., Javidan, M., & Varella, P. (2004). Charismatic leadership at the strategic level: A new application of upper echelons theory. *The Leadership Quarterly*, 15, 355–380.
- Walumbwa, F. O., Avolio, B. J., & Zhu, W. (2008). How transformational leadership weaves its influence on individual job performance: The role of identification and efficacy beliefs. *Personnel Psychology*, 61, 793–825.
- Wang, X. -H. F., & Howell, J. M. (2010). Exploring the dual-level effects of transformational leadership on followers. *The Journal of Applied Psychology*, 95, 1134–1144.
- Wille, B., & De Fruyt, F. (2014). Vocations as a source of identity: Reciprocal relations between Big Five personality traits and RIASEC characteristics. *Journal of Applied Psychology*, 99, 262–281.
- Wille, B., Hofmans, J., Feys, M., & De Fruyt, F. (2014). Maturation of work attitudes: Correlated change with Big Five personality traits and reciprocal effects over 15 years. *Journal of Organizational Behavior*, 35, 507–529.
- Yang, Y. F. (2009). An investigation of group interaction functioning stimulated by transformational leadership on employee intrinsic and extrinsic job satisfaction: An extension of the resource-based theory perspective. *Social Behavior and Personality*, 37, 1259–1278.
- Yukl, G. (1989). Managerial leadership: A review of theory and research. *Journal of Management*, 15, 251–289.