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# Mindfulness as substitute for transformational leadership

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## Abstract

**Purpose** – Transformational leaders spark the intrinsic motivation of employees, thereby stimulating their extra-role performance. However, not all employees are lucky enough to have a transformational leader. The purpose of this paper is to investigate to what extent mindfulness can function as a substitute for transformational leadership. By being attentive to and aware of what is taking place in the present, mindfulness provides employees with a source of intrinsic motivation that lies within the person, thereby possibly making employees less dependent on transformational leadership.

**Design/methodology/approach** – An online survey was used to collect data of 382 employees working in diverse sectors in the Netherlands.

**Findings** – Moderated mediation analyses indicated that mindfulness partly compensates for a low levels of transformational leadership in fostering intrinsic motivation and in turn extra-role performance, thereby providing evidence for the substitutes for leadership theory. Moreover, the findings extend previous research on the contribution of mindfulness to in-role performance by showing its additional value for intrinsic motivation and extra-role performance.

**Research limitations/implications** – Despite the use of validated measures and the presence of an interaction effect, common-source bias cannot be out ruled completely.

**Practical implications** – Since mindfulness can be developed, the results suggest a training intervention to make employees less dependent on their leaders for their motivation.

**Originality/value** – This paper is the first to show that mindful people are more resilient against the absence of transformational leadership. Given the frequent changes in management layers in organizations, knowledge about resources for individual resilience and self-management is sorely needed.

**Keywords** Transformational leadership, Motivation, Mindfulness, Proactivity, Self-determination

**Paper type** Research paper

Because of their dynamic environments, today's organizations cannot anticipate on or specify all desired employee behaviors. Therefore, many organizations need their employees to engage in extra-role performance by taking on extra tasks and responsibilities and come up with creative solutions for problems. Extra-role performance is not formally rewarded but performed for self-generated, intrinsic reasons (Piccolo and Colquitt, 2006). Intrinsic motivation, doing an activity for the satisfaction that it gives rather than for its instrumentality in achieving rewards (Gagné and Deci, 2005), has been consistently found to predict extra-role performance (Cerasoli *et al.*, 2014). However, intrinsic motivation does not come naturally: according to a Gallup employee survey in 142 countries the majority of employees worldwide (63 percent) lack motivation and are less likely to invest discretionary effort in organizational goals or outcomes (Crabtree, 2013).

One way to motivate employees to engage in extra-role performance is via great leaders who make work more intrinsically motivating (Piccolo and Colquitt, 2006). Transformational leaders have consistently been shown to motivate employees to engage in extra-role performance (Wang *et al.*, 2011), because they are able to create a resourceful work environment that contributes to employees' intrinsic motivation (Piccolo and Colquitt, 2006). By being supportive, allowing followers to decide for themselves how to perform their tasks, and taking into account their individual needs and abilities when delegating tasks, transformational leaders fulfill their followers' basic needs for autonomy, competence, and relatedness (Deci and Ryan, 2000), leading to intrinsic motivation (Breevaart *et al.*, 2014).

However, the same dynamical context that demands for extra-role performance results in ongoing changes in management structures, leaving many subordinates uncertain about the availability of a transformational leader to motivate them (Zhao *et al.*, 2016). In such contexts, a psychological resource such as mindfulness may make up for the low levels of transformational leadership in maintaining positive attitudes and performance (Manz and Sims, 1980; Nübold *et al.*, 2013). Although the literature on positive organizational behavior and psychological capital has mainly focused on optimism, hope, resiliency, and self-efficacy as malleable human capacities that are associated with resiliency and self-management (Avey *et al.*, 2011; Luthans, 2002), it has also been suggested that there may be more psychological resources that are in need of discovering (Luthans *et al.*, 2007). We argue that mindfulness may be such a resource, because mindful individuals are more aware of their present experiences and are better able to regulate their behavior in line with their intrinsic needs (Rynes *et al.*, 2007), which facilitates their intrinsic motivation (Gagné and Deci, 2005).

The main contribution of our paper not lies in providing evidence for the mechanism by which transformational leadership leads to extra-role performance, because this relationship has been well evidenced (Wang *et al.*, 2011; Den Hartog and Belschak, 2012; Piccolo and Colquitt, 2006). However, our main aim is to contribute to the still scarce research on interactions between leadership behavior and follower characteristics that predict the motivation and behavior of employees (Nübold *et al.*, 2013). Our paper builds on the "substitutes for leadership" theory (Kerr and Jermier, 1978; Podsakoff *et al.*, 1996), which posits that job, organization and worker characteristics may moderate the leader's ability to affect employee attitudes, behaviors, and performance. Because mindful employees are better able to regulate their motivation and behavior (Brown and Ryan, 2003), they are better self-leaders (Houghton and Neck, 2002), thereby potentially reducing the need for external leadership (Manz and Sims, 1980). By pinpointing intrinsic motivation as the crucial mechanism by which both transformational leadership and mindfulness contribute to positive employee behavior such as extra-role performance, we aim to investigate the extent to which mindfulness is another form of psychological capital that may compensate for transformational leadership in achieving intrinsic motivation and extra-role performance.

Our paper builds on positive organization behavior, which puts emphasis on human resource strengths and psychological capacities that are relatively malleable and can be developed to thrive at work (Luthans, 2002). Since mindfulness can be trained and improved (Brown and Ryan, 2003) it qualifies as an additional psychological resource capacity besides hope, optimism, and resilience (Malinowski and Lim, 2015; Youssef and Luthans, 2007). In addition, our paper contributes to the literature on mindfulness which until recently has neglected its work-specific outcomes (Dane, 2011; Hülsheger *et al.*, 2013; Leroy *et al.*, 2013), by not only addressing the question whether mindfulness works, but also providing insight into the mechanisms through which mindfulness works, thereby answering to the call of Shapiro *et al.* (2006).

## Transformational leadership, motivation, and extra-role performance
Transformational leaders involve their followers in their charismatic vision by setting example behavior, challenging their followers' assumptions and ideas and paying attention

to their needs (Bass and Stogdill, 1990). With these behaviors, leaders inspire their followers to shape, alter, and elevate their motives, values, and goals, encouraging them to do more than their formal duties and take on extra tasks or responsibilities, update required knowledge and skills, and come up with creative solutions for new problems (Burns, 1978). By using goal setting techniques, setting visionary goals and empowering employees to use job resources for accomplishing these goals they stimulate extra-role performance (Piccolo and Colquitt, 2006). Indeed, meta-analytic findings demonstrate that transformational leadership is related to extra-role performance (Wang *et al.*, 2011).

The mechanisms by which transformational leadership affect extra-role performance are found to be largely motivational (Piccolo and Colquitt, 2006). According to the self-determination theory, employees become intrinsically motivated when their basic needs for autonomy, competence, and relatedness are fulfilled (Deci and Ryan, 2000). By providing employees with feedback and tasks that match their abilities, transformational leaders play to the need for competence (Kovjanic *et al.*, 2012). By providing followers with job control and letting them participate in decision making, their need for autonomy is fulfilled, whereas their need for relatedness is met by giving personal attention and social support (Breevaart *et al.*, 2014; Kovjanic *et al.*, 2012, 2013). Hence, transformational leaders provide meaning to the work employees do, who then internalize this with their selves and become intrinsically motivated (Deci *et al.*, 2006). Intrinsically motivated employees are in turn more concerned with the quality of their work and their broader work context compared to more extrinsically motivated workers who are more concerned with the quantitative aspects of their main tasks (Cerasoli *et al.*, 2014). Therefore, it is hypothesized that:

> *H1.* The positive relationship between transformational leadership and extra-role performance is mediated by intrinsic motivation.

*Mindfulness and intrinsic motivation*
Mindfulness is characterized by enhanced attention to and a receptive awareness of current experiences (Rynes *et al.*, 2007). Mindful individuals continually monitor the inner and outer environment and do not ruminate, worry or fantasize about the future (Brown and Ryan, 2003). Because mindful individuals are able to observe their experiences without judging, reflecting, evaluating or analyzing those, they become less vulnerable to the negative feelings associated with failure, opinions of others, rewards, status and conflicts (Brown and Ryan, 2003) and develop a capacity to monitor the positive side of life (Wright, 2006). More mindful people report higher levels of positive affect and lower levels of negative affect (Brown and Ryan, 2003) and experience more positive emotions like hope, resilience, and optimism (Malinowski and Lim, 2015; Youssef and Luthans, 2007). The positive and receptive attention to activities leads to an increased perception of detail, information, and subtle social cues, thereby enriching the quality of experiences, making individuals happily immersed in them and more intrinsically motivated (Brown and Ryan, 2003). By having a greater internal awareness, mindful individuals are more able to attend to prompts arising from their basic needs, enabling them to regulate their behavior in a way that fulfills these needs (Brown and Ryan, 2003), thereby stimulating their intrinsic motivation (Gagné and Deci, 2005). The enhanced awareness of one's emotions, thoughts, and behaviors stimulates the individuals to be aware of and act in accordance with one's core or true self (Kernis and Goldman, 2006) and to make the conscious decision to engage in work-related activities (Weinstein *et al.*, 2009). Also, mindful individuals are more aware of resources in their environment that support them in achieving their personal goals, thereby enabling them to select and optimize those resources that foster a fit between their personal goals and their work context (Deci and Ryan, 2000), resulting in more autonomous motivation (Kernis and Goldman, 2006).

Indeed, research has shown that a more mindful disposition leads to more autonomous motivation for day-to-day behavior (Brown and Ryan, 2003; Levesque and Brown, 2007). Therefore, we hypothesize:

*H2.* Mindfulness is positively related to intrinsic motivation.

*The compensating role of mindfulness at low levels of transformational leadership*
Substitutes for leadership theory (Kerr and Jermier, 1978) propose that worker characteristics may negate the superiors' ability to improve subordinate attitudes and effectiveness. For instance, previous studies have found that individual characteristics such as emotional stability and extraversion (Guay and Choi, 2015) positive affect (Gilmore *et al.*, 2013) and self-efficacy (Den Hartog and Belschak, 2012) are substitutes for transformational leadership in enhancing proactive behavior and that core self-evaluations may substitute transformational leadership in relation to task persistence (Nübold *et al.*, 2013). We propose that mindfulness may also act as a substitute of transformational leadership in sparking employees' intrinsic motivation and in turn stimulating their extra-role performance. Transformational leaders provide meaning to work which employees integrate with their self-perceptions, thereby becoming more intrinsically motivated (Kovjanic *et al.*, 2012) and in turn more likely to engage in extra-role performance. However, because mindful employees are more immersed in the task and better able to fulfill their basic needs (Brown and Ryan, 2003) they are more intrinsically motivated on their own behalf, making them less dependent on a transformational leader to stimulate their intrinsic motivation. Since mindfulness enables individuals to regulate their motivation and behavior (Brown and Ryan, 2003), it can be seen as a form of self-leadership, referring to the process by which people influence themselves to attain the self-direction and self-motivation that is needed to perform in desirable ways (Houghton and Neck, 2002), thereby potentially reducing the need for external leadership (Manz and Sims, 1980; Morgeson, 2005). This reasoning is in line with the functional approach to leadership which implies that leaders are especially needed for those tasks that workers are not capable of (Druskat and Wheeler, 2003). Because mindful employees are capable of regulating their own motivation and behavior, they do not need the positive encouragement of a transformational leader to boost their intrinsic motivation and in turn their extra-role performance.

Based on the reasoning above, we hypothesize:

*H3.* Mindfulness moderates the indirect positive relationship between transformational leadership and extra-role behavior via intrinsic motivation in such a way that this relationship is stronger for less mindful employees compared to more mindful employees.

## Method
### Sample and procedure
Data were collected by approaching employees working in various sectors in the Netherlands who had a direct supervisor. First, 218 individuals from the personal networks of the researchers were directly contacted by e-mail using convenience sampling. Next, these individuals were asked to spread a link to an online questionnaire among their colleagues. After two weeks, the initial group of contacted employees received a reminder. In total, 535 respondents filled in the questionnaire. After excluding those respondents who did not meet the criterion of having a supervisor and those who left too many questions unanswered, a total sample of 382 respondents remained. The average age of the respondents was 40.23 years (SD = 12.50) of whom 43.2 percent were male and 56.5 percent were female. Of all respondents, 36.5 percent completed postgraduate education,

38.8 percent completed a bachelor degree, and 24.7 percent had a lower vocational background. Manager-employee tenure was on average 4.23 years (SD = 5.70) and 63 percent of the respondents had tenure of more than one year. In total, 38.4 percent of the respondents did not only have a supervisor, but were supervisors themselves as well. Respondents were employed either in the services sector (72.8 percent, e.g. health, education, and consultancy) or in the manufacturing sector (27.2 percent, e.g. construction, industry, and agriculture).

*Measures*

Mindfulness was measured with the Mindfulness Attention Awareness Scale (MAAS), which measures one's dispositional tendency for the attention to and awareness of what is occurring in the present moment (Brown and Ryan, 2003). This scale has been validated in various populations, including non-clinical samples and samples that are not specifically trained in mindfulness (Brown and Ryan, 2003; MacKillop and Anderson, 2007) and has been translated and validated in Dutch by Schroevers *et al.* (2008). The scale contains 15 items which are all reverse coded. An example item is "I find myself doing things without paying attention." Respondents rated their experiences on a six-point Likert scale, ranging from 1 (almost never) to 6 (almost always) ($\alpha = 0.86$).

Intrinsic motivation was measured with a ten-item scale developed by Van Yperen and Diderich (1998). This scale is based on the Sport Motivation Scale (Pelletier *et al.*, 1995) and has been adapted to the work context and translated and validated in Dutch. An example items is "I do this job because of the complacency I feel when improving my weak points on the job." Answers were provided on a seven-point Likert scale ranging from 1 (totally disagree) to 7 (totally agree) ($\alpha = 0.93$).

Extra-role performance was measured with an eight-item scale by Koopmans *et al.* (2014). Answers were provided on a four-point Likert scale ranging from 1 (never) to 4 (always). An example item is "In the last three months I have taken extra responsibilities" ($\alpha = 0.82$).

Transformational leadership was measured with a Dutch language 12-item scale by Celik *et al.* (2013), who based their measure on the operationalization of transformational leadership by Bass *et al.* (2003). Answers were provided on a five-point scale, ranging from 1 (totally disagree) to 5 (totally agree). An example item is "My leader talks about the importance of ethics and values" ($\alpha = 0.92$).

We conducted confirmatory factor analyses (CFA) to evaluate the distinctiveness of our measures. A four-factor model with transformational leadership, mindfulness, intrinsic motivation, and extra-role performance loading on four separate factors ($\chi^2 = 2311.51$, df = 939; CFI = 0.84, TLI = 0.83, RMSEA = 0.06, SRMR = 0.05) fitted significantly better to the data than other one-, two- and three-factor models. To ensure that our measures were sufficiently distinct from each other we deleted five items in total, resulting in an acceptable fit of the four-factor model to the data with levels of 0.90 or higher for CFI and TLI, and 0.08 or lower for RMSEA and SRMR (Hu and Bentler, 1999)[1]. A test of our conceptual model with the original measures including all items pointed out that the deletion of these five items did not lead to different results.

*Statistical analysis*

Conditional process analysis (Hayes, 2013) was conducted to test the path model which comprises a mediation (*H1*), a moderation (*H2*) and a moderated mediation (*H3*). Conditional process analysis quantifies the association between an indirect effect and a moderator and provides an index of moderated mediation that quantifies whether the mediated buffer effect is significant (please see Hayes, 2015). The method is based on procedures for investigating indirect (mediation) effects as suggested by MacKinnon *et al.* (2007), in combination with procedures suggested for examining conditional (interaction) effects by Muller *et al.* (2005). The procedure uses bootstrapping with an SPSS application (PROCESS) developed by

Preacher and Hayes (2004). PROCESS provides a method for probing the significance of conditional indirect effects at different values of the moderator (i.e. mindfulness) (Preacher and Hayes, 2004). Before running the analyses, all variables in the model were centered as recommended by Aiken and West (1991). Because the results of analyses without the control variables age and gender were not substantially different compared to analyses that did include these control variables, the results are presented without control variables.

## Results
### Descriptives and correlations
Means, standard deviations, and correlations among the study variables are presented in Table I. The results show that transformational leadership, intrinsic motivation, and mindfulness were all associated with extra-role performance ($r = 0.16$, $p < 0.01$, $r = 0.30$, $p < 0.01$ and $r = 0.11$, $p < 0.05$, respectively). Table I also indicates that both mindfulness and transformational leadership were associated with intrinsic motivation ($r = 0.18$, $p < 0.01$ and $r = 0.29$, $p < 0.01$, respectively). Mindfulness and transformational leadership were not significantly correlated ($r = 0.00$ns). Moreover, mindfulness was positively related to age and negatively to gender (i.e. women reported lower levels of mindfulness) ($r = 0.26$, $p < 0.01$ and $r = -0.21$, $p < 0.01$, respectively).

### Hypotheses testing
The results of the PROCESS analyses are displayed in Table II. Model 1, $F(3, 378) = 19.63$, $p < 0.001$, shows the main effects of transformational leadership, mindfulness, and the interaction between these variables on intrinsic motivation (the mediator variable). Model 2, $F(2, 379) = 20.32$, $p < 0.001$, shows the main effects of mindfulness and intrinsic motivation on extra-role performance (the dependent variable).

As can be seen in Table II, transformational leadership was significantly related to intrinsic motivation ($B = 0.42$, $p < 0.001$), whereas intrinsic motivation was significantly related to extra-role performance ($B = 0.17$, $p < 0.001$) and transformational leadership was not directly related to extra-role performance ($B = 0.07$ns). The bootstrap results for the indirect effect of transformational leadership on extra-role performance, mediated by intrinsic motivation support our first hypothesis by indicating that this effect was significant when the moderator value is 0, with a confidence interval excluding 0 (0.03-0.14 at the 95 % confidence level). Furthermore, mindfulness was significantly related to intrinsic motivation ($B = 0.25$, $p < 0.001$), confirming our second hypothesis.

The product term of transformational leadership and mindfulness was significantly related to intrinsic motivation ($B = -0.30$, $p < 0.01$). Simple slope tests indicated that the simple slopes for employees with low and high levels of mindfulness were both significantly different from zero ($B = 0.62$, SE $= 0.10$, $p < 0.001$ and $B = 0.22$, SE $= 0.08$, $p < 0.01$, respectively). The Johnson-Neyman analysis indicated that the effect of transformational leadership on intrinsic motivation was significant for values of

| | $M$ | SD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|
| 1. Extra-role performance | 2.82 | 0.53 | | | | | |
| 2. Transformational leadership | 3.51 | 0.63 | 0.16** | | | | |
| 3. Intrinsic motivation | 5.73 | 0.86 | 0.30** | 0.29** | | | |
| 4. Mindfulness | 4.18 | 0.66 | 0.11* | 0.00 | 0.18** | | |
| 5. Gender (women) | 0.57 | | −0.07 | −0.05 | −0.00 | −0.21** | |
| 6. Age | 40.23 | 12.50 | −0.05 | −0.07 | 0.01 | 0.26** | −0.28** |

**Notes:** *$p < 0.05$; **$p < 0.01$

Table I.
Means, standard deviations, correlations

| Predictor variable | $B$ | SE | $t$ | $R^2$ |
|---|---|---|---|---|
| *Model 1: F(3, 378) = 19.63\*\*\** | | | | 0.14\*\*\* |
| Main effect on the mediator variable: intrinsic motivation | | | | |
| Transformational leadership | 0.42\*\*\* | 0.07 | 6.42 | |
| Mindfulness | 0.25\*\*\* | 0.06 | 3.97 | |
| Mindfulness × Transformational leadership | −0.30\*\* | 0.10 | −3.12 | |
| *Model 2: F(2, 379) = 20.32\*\*\** | | | | 0.10\*\*\* |
| Main effect on the dependent variable: extra-role performance | | | | |
| Intrinsic motivation | 0.17\*\*\* | 0.03 | 5.48 | |
| Transformational leadership | 0.07 | 0.04 | 1.55 | |

*Moderated mediation analysis*
Bootstrap results for conditional indirect effect of transformational leadership on extra-role performance at values of the moderator (mindfulness)

| Boot indirect effect | | Boot SE | LL 95% CI | UL 95% CI |
|---|---|---|---|---|
| −0.66 (−1SD) | 0.11\* | 0.04 | 0.05 | 0.20 |
| −0.00 (0SD) | 0.07\* | 0.03 | 0.03 | 0.14 |
| 0.66 (+1SD) | 0.04\* | 0.02 | 0.01 | 0.09 |

*Index of moderated mediation*

| | | | | |
|---|---|---|---|---|
| | −0.05 | −0.03 | −0.11 | −0.01 |

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**Table II.**
Conditional direct and indirect effects of transformational leadership on extra-role performance, mediated by intrinsic motivation, and moderated by mindfulness

**Notes:** $n = 382$. Bootstrap sample size = 50,000. LL, lower limit; CI, confidence interval; UL, upper limit. Centralized regression coefficients are reported. Results of analyses with the control variables age and gender were not substantially different. \*$p < 0.05$; \*\*$p < 0.01$; \*\*\*$p < 0.001$

mindfulness between −2.40 ($B = 1.14$, $p < 0.001$) and 0.75 ($B = 0.75$, $p < 0.05$) and insignificant for values of mindfulness between 0.79 ($B = 0.80$ns) and 1.53 ($B = −0.03$ns). Reversely, the simple slope for mindfulness at the low levels of transformational leadership was significant (−1SD, $B = 0.435$, $p < 0.001$), whereas this slope was insignificant at high levels of transformational leadership (+1SD, $B = 0.056$ns), indicating that mindfulness buffers for the low levels of transformational leadership.

Figure 1 displays the interaction plot for the association between transformational leadership and intrinsic motivation under the condition of low (−1SD), medium (0SD), and high (+1SD) mindfulness. As can be seen from Figure 1, the association between transformational leadership and intrinsic motivation is weaker when mindfulness is high.

Finally, the index of moderated mediation supports our third hypothesis regarding the full moderated mediation model. This index is negative (−0.05) and the 0 value is not within the bootstrap confidence interval.

## Discussion

To maintain the effective functioning of organizations in times of restructuring, reorganizing, and delayering much depends on employees' intrinsic motivation to take ownership for the quality of their work by keeping an open eye to the context of their jobs and displaying extra-role performance (Cerasoli *et al.*, 2014). In line with previous research, we found that transformational leaders may spark the intrinsic motivation of employees, thereby stimulating their extra-role performance (Piccolo and Colquitt, 2006). However, we also found initial evidence that mindfulness partly compensates for the low levels of transformational leadership in fostering intrinsic motivation and in turn extra-role performance.

This result is consistent with our theoretical arguments that both transformational leadership and mindfulness may inspire a greater intrinsic motivation in employees, which in turn is associated with higher levels of extra-role performance.
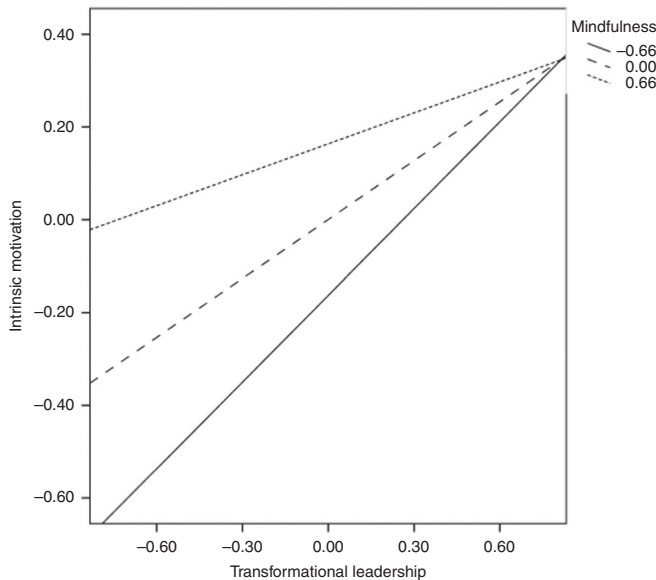
**Note:** All variables are mean centered

Figure 1.
Interaction effects of
transformational
leadership and
mindfulness on
intrinsic motivation

*Theoretical implications and agenda for future research*
Both transformational leadership and mindfulness may contribute to the fulfillment of basic needs, leading to intrinsic motivation. Transformational leaders may fulfill followers basic needs for autonomy, competence, and relatedness by providing them with feedback, job control, and personal attention (Deci and Ryan, 2000). Mindfulness may contribute to the fulfillment of basic needs by enriching the quality of experiences and by enabling individuals to take self-leadership in regulating their behavior in a way that fulfills their basic needs (Brown and Ryan, 2003). Because we did not directly measure the fulfillment of basic needs, future research would need to examine whether needs fulfillment is indeed the key mechanism by which transformational leadership and mindfulness foster intrinsic motivation.

Previous studies found that positive psychological capacities such as positive affect (Gilmore *et al.*, 2013), role breadth self-efficacy (Den Hartog and Belschak, 2012), and core self-evaluations (Nübold *et al.*, 2013) may also act as substitutes for transformational leadership. The finding that mindfulness, which is considered to be a trainable metacognitive skill (Hülsheger *et al.*, 2013, 2015; Shapiro *et al.*, 2007), is also able to compensate for a low levels of transformational leadership is an important contribution to the substitutes for leadership theory (Kerr and Jermier, 1978; Podsakoff *et al.*, 1996), providing actionable strategies for organizations seeking to foster employees' intrinsic motivation. Future research could examine to what extent mindfulness is indeed another aspect of psychological capital (Youssef and Luthans, 2007) that makes employees less in need of an external leader (Manz and Sims, 1980).

Our results contribute to the mindfulness literature by addressing its still under researched work-specific outcomes and by providing insight into the mechanisms through which mindfulness works. While there is initial evidence for the relationship between mindfulness and in-role performance (Chatzisarantis and Hagger, 2007; Dane and Brummel, 2014; Reb *et al.*, 2013), our study is one of the first to find initial evidence for the association with extra-role performance. Although previous studies have already shown that

dispositional mindfulness is positively related to intrinsic motivation for daily behavior (Brown and Ryan, 2003; Levesque and Brown, 2007), this study is the first to extend this finding to intrinsic motivation in a work context. Possibly, mindfulness helps employees to be more aware of available resources in their environment that support them in achieving more autonomous motivation (Kernis and Goldman, 2006) and higher levels of self-leadership (Neck and Houghton, 2006).

Although we found that mindfulness can to a certain degree substitute the effect of transformational leadership on intrinsic motivation and performance, we still found a significant effect of transformational leadership. This means that being mindful does not completely neutralize the low levels of transformational leadership, indicating that "leadership still matters" (Dionne *et al.*, 2005). It should be noted that our respondents were not trained for mindfulness. As the human mind is prone to drift away from the present and focus on memories of the past or thoughts about the future (Dane and Brummel, 2014), new studies could examine whether the buffering effect of mindfulness is more powerful when employees have been trained in how to use this metacognitive skill at work.

*Limitations*
Although the integration of mindfulness into the management literature is a strength of our study, several limitations should be taken in account when interpreting our results. First, it should be noted that there is not yet one agreed upon measure for mindfulness. Although the MAAS questionnaire was found to be a valid and reliable measure (Brown and Ryan, 2003; Park *et al.*, 2013), it taps mostly into attentiveness (Baer *et al.*, 2006; Bishop *et al.*, 2004; Brown and Ryan, 2004) and does not cover acceptance, openness, and curiosity that have also been suggested as the components of mindfulness (Baer *et al.*, 2006). However, attentiveness as measured in the MAAS might be seen as a precondition for other components of mindfulness such as acceptance and curiosity (Brown and Ryan, 2004). Nevertheless, future research could investigate to what extent other elements of mindfulness such as acceptance, curiosity, and openness have a similar effect on intrinsic motivation and may also act as the substitutes of transformational leadership.

Second, our sampling procedure in which the questionnaire was sent out to a convenience sample of individuals in various sectors, who then were asked to spread a link to an online questionnaire among their colleagues, may have caused interdependency in our data, possibly resulting in an overestimation of effect sizes. Unfortunately, we do not know which and how many of our respondents were direct colleagues, therefore future research including a similar sample should take into account the nested data structure by conducting multi-level analyses. Although we do not want to trivialize this weakness in our research design, most of our variables (mindfulness, intrinsic motivation, and extra-role behavior) are clearly individual-level constructs for which the intraclass correlations can be expected to be very low. Even though the construct transformational leadership implies that followers will form some consensual attribution about their leader, there is often considerable variance among raters (Feinberg *et al.*, 2005; Graen and Uhl-Bein, 1995), making it less problematic that we could not correct for our nested data structure.

A third issue that is also related to our convenience sample across different sectors is that we do not know to what extent mindfulness can be a substitute of leadership within different work populations. Although we found a substituting effect in our broad convenience sample, this does not necessarily mean that the substituting effect is significant within different work populations. Future studies could investigate whether the substituting effect of mindfulness itself is contingent on factors such as task autonomy or task complexity (three-way interactions) which would also explain why research on the substitutes of leadership has not always shown consistent results (Den Hartog and Belschak, 2012).

A fourth limitation is that our study relies exclusively on cross-sectional self-report data. Although self-perceptions may be more important than objective reality for understanding what people feel, think, and do (Wood *et al.*, 2011), future research should try to include more objective indicators of transformational leadership and extra-role performance. Moreover, because of our reliance on cross-sectional self-report data one needs to consider the threat of common-source bias. To diminish these risks, we used well-validated measures. Moreover, because CFA showed our measures to be distinct, we found low inter-construct correlations (Spector, 2006), and a moderation effect (Siemsen *et al.*, 2010) it can be assumed that common-source bias is not a major problem in this study. Of course our cross-sectional research design does not allow for causal interpretations. Therefore, experimental research (quasi) is needed to confirm our results. Moreover, although previous research established positive outcomes of mindfulness at both the within- and between-person level (Hülsheger *et al.*, 2014), diary studies or studies using experience sampling methods are needed to examine whether our between-person model also holds at the within-person level.

### Practical implications

By providing initial evidence for mindfulness as a partial substitute of leadership in achieving intrinsic motivation and extra-role behavior, this paper offers organizations a clear tool to stimulate their employees to take self-leadership for the quality of their work. First, as mindful employees are less dependent on a transformational leadership for their intrinsic motivation, leaders may dedicate their attention to those employees who are less mindful and need their attention to become motivated. Leadership training could, therefore, focus on recognizing followers who are more prone to get distracted from their current work activities by ruminations about the past or worries or fantasies about the future, and on understanding that these followers are more in need of their support. Possibly, leaders could even play a role in stimulating mindfulness at work by explaining to their followers the value of attention to and awareness of what is occurring in the present moment.

Alternatively, a mindfulness training may benefit employees to become somewhat less dependent on the presence of a transformational leader. This is particularly relevant in dynamic work environments where changes in jobs, structures, and leaders happen frequently, or in work contexts where employees work outside conventional working hours and workplaces without the direct supervision from a leader (Breevaart *et al.*, 2014). Learning to attune to present moment events at work may foster employee resilience and self-management, which can reduce the need for transformational leadership (Manz and Sims, 1980). Providing mindfulness training to their employees is a relatively small investment for organizations to realize a more motivated and proactive workforce. Even simple and short interventions focusing on meditation techniques in work contexts (Hülsheger *et al.*, 2013, 2015) or short web-based programs that combine live, weekly hour-long virtual classes with accompanying online applied training have shown promising results (Aikens *et al.*, 2014). Mindfulness-based mobile apps may have potential as an alternative delivery medium for training (Mani *et al.*, 2015). These simple interventions, which come at affordable expenses, may therefore play an important role in bolstering employee resilience and self-management.

### Note

1. The results of all CFA's and a specification of the deleted items can be obtained from the authors upon request.

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