ARTICLES FOR FACULTY MEMBERS

TRANSFORMATIONAL AND TRANSACTIONAL LEADERSHIP

Title/Author	**Conceptualizing and measuring transformational and transactional leadership / Jensen, U. T., Andersen, L. B., Bro, L. L., Bøllingtoft, A., Eriksen, T. L. M., Holten, A.-L., Jacobsen, C. B., Ladenburg, J., Nielsen, P. A., Salomonsen, H. H., Westergård-Nielsen, N., & Würtz, A.**
Source	***Administration & Society*** **Volume 51 Issue 1 (Jan 2019) Pages 3-33** **https://doi.org/10.1177/0095399716667157** **(Database: Sage Journals)**
Title/Author	**Determinants of innovation capability: the roles of transformational leadership, knowledge sharing and perceived organizational support / Le, P.B. and Lei, H.**
Source	***Journal of Knowledge Management*** **Volume 23 (Jan 2019), No. 3 Pages 527-547** **https://doi.org/10.1108/JKM-09-2018-0568** **(Database: Emerald Insight)**
Title/Author	**Innovation and intellectual capital as intermediary variables among transformational leadership, transactional leadership, and organizational performance / Aldin Alrowwad, A. ', & Abualoush, S. H.**
Source	***Journal of Management Development*** **Volume 39 No. 2 (Mac 2020) Pages 196-222** **https://doi.org/10.1108/JMD-02-2019-0062** **(Database: Emerald Insight)**

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Title/Author	**Leadership, creativity and innovation: A meta-analytic review / Lee, A., Legood, A., Hughes, D., Tian, A. W., Newman, A., & Knight, C.**
Source	***European Journal of Work and Organizational Psychology*** **Volume 29 Issue 1 (Sept 2020) Pages 1-35** **https://doi.org/10.1080/1359432X.2019.1661837** **(Database: Taylor & Francis Online)**

Title/Author	**Motivated or demotivated to be creative: the role of self-regulatory focus in transformational and transactional leadership processes / Kark, R., van Dijk, D., & Vashdi, D. R.**
Source	***Applied Psychology*** **Volume 67 Issue 1 (Jan 2018) Pages 186-224** **https://doi.org/10.1111/apps.12122** **(Database: Wiley Online Library)**

Title/Author	**Supply chain leadership and firm performance: A meta-analysis / Chen, L., Jia, F., Li, T., & Zhang, T.**
Source	***International Journal of Production Economics*** **Volume 235 (May 2021) 108082** **https://doi.org/10.1016/J.IJPE.2021.108082** **(Database: ScienceDirect)**

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Title/Author	**Transformational leadership and employee performance: The role of identification, engagement and proactive personality / Buil, I., Martínez, E., & Matute, J.**
Source	***International Journal of Hospitality Management*** **Volume 77 Issue 8 (Jan 2019) Pages 64-75** **https://doi.org/10.1016/j.ijhm.2018.06.014** **(Database: ScienceDirect)**

Title/Author	**Transformational leadership and job performance: the mediating role of work engagement / Lai, F.-Y., Tang, H.-C., Lu, S.-C., Lee, Y.-C., & Lin, C.-C.**
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Abstract

Existing conceptualizations and measures of transformational and transactional leadership have unclear theoretical bases, confound leadership and its effects, and are not necessarily suitable for public organizations. Overcoming these problems is necessary to test how leadership affects performance. Many public administration scholars apply the concepts, emphasizing the need to ensure that the concepts are applicable in both public and private organizations. The article reconceptualizes transformational and transactional leadership and develops and tests revised measures that can be employed on employees and leaders, are robust in terms of repeated use by the same respondents, and are applicable to public and private organizations alike.

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Introduction

Public administration research often suggests that improving leadership in the public sector is a key to increasing organizational performance (Moynihan, Pandey, & Wright, 2012; Rainey, 2014; Van Wart, 2013). Boyne (2003) finds that managerial variables are a stronger source of performance improvement than resources, regulation, market structure, and organization, a finding that is also supported by other studies (Fernandez, 2005; Hassan & Hatmaker, 2015; Moynihan & Ingraham, 2004; Moynihan et al., 2012; Parry & Sinha, 2005; Trottier, Van Wart, & Wang, 2008; Van Wart, 2013). However, to comprehend the full potential of leadership in public organizations, we need to identify relevant leadership strategies for this sector.

There are several indications that transformational and transactional leadership are relevant. First, transformational leadership is the most researched leadership theory in both generic leadership literature (Judge & Piccolo, 2004) and public administration research (Vogel & Masal, 2015). This raises the question whether this great interest also reflects best research practice. Second, the concepts of transformational and transactional leadership strategies have in multiple studies been related to employee well-being and performance (Lowe, Kroeck, & Sivasubramaniam, 1996). Recent public administration studies (e.g., Andersen & Pallesen, 2008; Bellé, 2014) have confirmed that these strategies can indeed increase goal attainment in public organizations, but the extent to which the strategies affect many other relevant outcomes remains unexplored. Third, the proposition that these two leadership strategies should be more effective in private organizations has been challenged (e.g., Wright, Moynihan, & Pandey, 2012, p. 207; Wright & Pandey, 2010). This makes it particularly relevant to revise the conceptualizations and measures of these two leadership strategies with the purpose of applying them in future empirical research in both sectors.

However, generic leadership research has subjected the leadership strategies to a fundamental critique concerning conceptual and methodological problems with the generally applied "full-range leadership theory" and its Multifactor Leadership Questionnaire (MLQ) measure (Van Knippenberg & Sitkin, 2013). To argue for and test these leadership strategies in public administration research and practice, we need to address these fundamental problems by revising their conceptualization and operationalization. While we respond to the problematic issues raised in the generic leadership

literature in relation to the current conceptualization and operationalization of transformational and transactional leadership, we revise the concepts and measures to fit both public and private organizations, allowing for future comparisons between organizations with different degrees of publicness: Do the levels of transformational and transactional leadership differ between public and private organizations, are the effects of the leadership strategies the same, and do the same factors affect the use of leadership in the two types of organizations? The distinction between public and private organizations can be conceptualized as financial publicness, publicness based on the level of political authority, and/or ownership status of the organization (Bozeman, 1987; Rainey & Bozeman, 2000), and the concepts and measures developed in this article should be applicable to all combinations of these important dimensions to allow for future public–private comparisons.

Furthermore, we consider the applicability for different sources (leader and employee ratings), at different points in time/repeated measures and in an intervention study. We focus exclusively on the constructs and measures of transformational and transactional leadership, enabling later contributions to address their relations with outcomes.

After a more detailed discussion of the critiques of transformational and transactional leadership, we present our revised conceptualization and operationalization of these two types of leadership strategies. This is followed by a description of the methods used to test the operationalization, after which we present the results of the test. The article concludes with a discussion of contributions and limitations, including how our revised conceptualization and operationalization meet the critiques.

Unfolding the Conceptualization Critique of Transformational and Transactional Leadership

The discussion of transformational and transactional leadership in the generic leadership literature relies mainly on the work of Burns (1978) and Bass (1985). Transformational leadership refers to directing and inspiring individual efforts by transforming (and motivating) employees. This leadership strategy thus conceptualizes behaviors that seek to satisfy employees' higher order needs to engage them in attaining the organizational goals. Transactional leadership is based on transactions of pecuniary and nonpecuniary character (Antonakis, Avolio, & Sivasubramaniam, 2003; Bass, 1985). This leadership strategy refers to behaviors where the leader rewards employees for high effort and/or good performance or sanction them if their work effort or results are unsatisfactory (Bass, 1985). Thus, incentive structures are used to increase employees' attainment of organizational goals. Together, transactional and

transformational leadership make up the active components of what is referred to as the "full-range leadership theory" (Antonakis, 2012), which also holds a passive component, namely, laissez-faire leadership defined as the absence of active leadership behavior.

The assessment of the full-range theory is widely conducted with the MLQ (Van Knippenberg & Sitkin, 2013), which measures transformational leadership on four dimensions: (a) idealized influence, also known as charisma; (b) inspirational motivation; (c) individualized consideration; and (d) intellectual stimulation. Transactional leadership includes three dimensions: (a) contingent reward, (b) active management-by-exception, and (c) passive management-by-exception. Although other models have been proposed (Carless, Wearing, & Mann, 2000; Conger & Kanungo, 1987; Podsakoff, MacKenzie, Moorman, & Fetter, 1990; Rafferty & Griffin, 2004; Shamir, House, & Arthur, 1993), the full-range theory and its MLQ is the best-known point of reference (Van Knippenberg & Sitkin, 2013).

Critical voices in generic leadership research have expressed concerns about the conceptualization of the full-range theory and its associated measure, MLQ. First, the conceptualization confounds the definitions of the leadership strategies with their effects (Judge & Piccolo, 2004; Van Knippenberg & Sitkin, 2013, Yukl, 1999). Transformational leadership has predominantly been described by its effects, for example, that transformational leaders instill pride and respect, shift motivation from self-interest to collective interest, and inspire and motivate performance beyond expectations (Bass, 1985; Jung & Avolio, 2000). Defining a concept in terms of its effects is not an uncommon flaw, but it has highly undesirable consequences. The most important problem is that it prevents rigorous analysis of the particular leadership strategy and its effects (Van Knippenberg & Sitkin, 2013). For example, if transformational leadership per definition motivates employees, we cannot investigate the association between leadership and employee motivation, because the dependent variable becomes a defining part of the independent variable. Therefore, if no association between leadership and employee motivation is found, the leadership is—per definition—not transformational in this understanding of the concept. Second, the dimensions of transformational and transactional leadership are not exhaustively theorized (Van Knippenberg & Sitkin, 2013). The full-range theory does not answer, for example, why there are four transformational leadership dimensions, how they differ and relate, and what their common unifying factor is. Furthermore, the full-range theory does not distinguish between pecuniary and nonpecuniary transactional rewards, although social psychology research (e.g., Deci, Koestner, & Ryan, 1999) has convincingly demonstrated that these reward types have completely different effects. Third, and following the lack of

distinction between pecuniary and nonpecuniary transactional rewards, the full-range theory does not suggest boundary conditions for its application. We argue that the applicability to both private and public organizations demands that leadership concepts and measures are discussed in relation to Bozeman's (1987) aforementioned synthesis of ownership, funding and control into a dimensional model of publicness. Boyne (2002), for example, identifies five studies that compare the managerial values of leaders in organizations with different publicness (ownership and funding measures), and he concludes that public managers are less materialistic than their private sector counterparts. If future studies should be able to analyze whether this leads to behavioral differences, we must develop leadership measures that are applicable in both types of organizations. In this respect, distinguishing between pecuniary and nonpecuniary rewards could be a big advantage for future public–private comparisons.

These important theoretical and methodological shortcomings emphasize that it is essential to revise the conceptualization and measurement of transformational and transactional leadership. We aim to do so by separating the leadership concepts from their expected outcomes, constructing meaningful dimensions, and ensuring applicability in both private and public organizations. In the "Conclusion" section, we assess our reconceptualization and reoperationalization of transformational and transactional leadership in relation to these three problems in the existing literature.

Transformational Leadership: Working Toward Sharing the Vision

Conceptualizing Transformational Leadership

When conceptualizing transformational leadership, it is import to identify the core behaviors of that particular leadership strategy. The existing multidimensional conceptualization in the full-range theory does not specify such core leadership behaviors, their relevance, and combination to form transformational leadership, and the inclusion and exclusion criteria for dimensions are unclear (see Van Knippenberg & Sitkin, 2013, for an in-depth discussion of this problem): Why should, for example, idealized influence and inspirational motivation be seen as two separate dimensions although they are highly correlated empirically? Conceptual overlap and empirical correlation question the entire multidimensionality of transformational leadership.

We argue that the distinctive theoretical aspect of transformational leadership is the leader's *intent* to activate employees' higher order needs. In this respect, the core ambition of transformational leaders is to induce employees to

transcend their own self-interest for the sake of the organization (Antonakis et al., 2003; Bass, 1990; Podsakoff et al., 1990; Wright et al., 2012; Wright & Pandey, 2010). We therefore argue that the transformational leadership concept should capture leaders' systematic effort to transform employees to share the organizational goals because they are desirable in themselves. Transformational leaders may not succeed in transforming the employees, but transformational leadership behaviors are characterized by an ambition to foster a shared understanding among employees of how the organization should contribute to what is seen as desirable outcomes. Again, this does not imply that employees of transformational leaders necessarily share organizational goals or transcend their self-interest (because these are effects rather than constituent parts of the leadership strategy itself), but it clarifies the theoretical basis for arguing why some leadership behaviors should be grouped together and termed transformational. We argue that three behaviors are relevant: The leader's *attempts* to (a) formulate the organizational goals as a desirable future (a vision), (b) share this understanding with employees, and (c) sustain the vision in the long run. This set of behaviors, that is, behaviors aimed at developing, sharing, and sustaining an organizational vision, is theoretically seen as logical parts of the same latent concept capturing the *efforts* to make employees share organizational goals and transcend their own self-interest. Leaders are expected to see all three behaviors as necessary for employee achievement of organizational goals through self-interest transcendence. Below, we explain in more detail why each behavior should be characterized as transformational.

The first behavioral element concerns the leader's attempt to clarify the organization's vision. It is characterized as transformational behavior, because leaders are expected to see the existence of a clear vision as an important driver of unselfish employee action. Scientific evidence suggests that this can be correct (Latham & Yukl, 1975; Locke & Latham, 2002; Wright, 2007), but the key theoretical argument is still that leaders expect the development of a clear vision for the organization as necessary when they aim to make employees achieve organizational goals for other reasons than self-interest. This is about concretizing the organizational vision, thus trying to create an appealing vision seen as desirable by the employees.

The second behavioral element is attempts to share the vision with those employees who are ultimately supposed to execute it. When trying to share the vision, leaders with a transformational leadership strategy try to establish a clear understanding of the relation between actions and goals reflected in the vision. Again, the key argument is that leaders will see these sharing efforts as necessary for making the employees want to contribute to realizing the vision, and the importance of such sense-giving for informing and constraining employees' actions has been demonstrated in organizational psychology

research (Weick, Sutcliffe, & Obstfeld, 2005). Public administration research has connected awareness of the vision to employee motivation (Paarlberg & Perry, 2007), and vision-sharing behaviors can be seen as attempts to articulate the direction in which the organization is heading and explicate how the day-to-day activities and actions of employees support achievement of goals and vision (Paarlberg & Lavigna, 2010; Paarlberg & Perry, 2007). As such, we classify them as transformational leadership behavior.

The third behavioral element in our conceptualization of transformational leadership is actions intended to sustain a shared vision in the short and long run. Leaders are expected to see such actions as having potential for facilitating enduring acceptance of, and collaboration to achieve, the vision. By continuously emphasizing how employees' work contributes to the organization and its vision, leaders can make an effort to reinforce employees' perceptions of task significance and energy to pursue certain actions in the short as well as the long run (Wright et al., 2012), and this makes it an integral part of the transformational leadership concept.

The generic leadership literature emphasizes vision as a core element of transformational leadership (Van Knippenberg & Sitkin, 2013), and this applies to both public and private organizations. When leaders share the vision, the message is expected to establish a shared sense of purpose and give multiple employees the same understanding of the purpose of work (Carton, Murphy, & Clark, 2014). This shared understanding can potentially alter employee perceptions of goal priorities and encourage them to devote effort toward the vision (Wright et al., 2012, p. 207). All types of leaders can face conditions that make it critical to develop, share, and sustain a vision. Organizations with a high level of political control can have multiple, ambiguous, and potentially conflicting goals, and they often face conflicting expectations and involvement of many different stakeholders. A leadership behavior focused on visions can give this type of organization a coherent direction. If organizations have public ownership, politicians are the ultimate principals, and all societal groups are legitimate stakeholders. This can make it more difficult—but also more important—for public managers to give direction through leadership strategies with focus on the organizational vision. Funding considerations can also make the visionary element of leadership relevant for both public and private organizations. In organizations with high levels of public funding, the leader must be able to align the organizational vision with the demands of the sponsor body, while new market conditions in the private sector can demand strong emphasis on the vision to make organizations adapt to a changed context. The latter scenario can be exemplified by Nokia leader Stephen Elop's burning platform memo where he urged the company to change to be able to compete with the iPhone (Alcacer, Khanna, & Snively,

2014). Based on these arguments, our revised conceptualization of transformational leadership focuses on the leaders' efforts to establish a strong vision, and this conceptualization is relevant for both private and public leaders.

In short, we theoretically define transformational leadership as behaviors that seek to develop, share, and sustain a vision, and the key theoretical reason for categorizing these behaviors as transformational is that we see the intention behind these behaviors as attempts to encourage employees to transcend their own self-interest and achieve organizational goals. Although there are three types of transformational behavior, we argue that they are intertwined in the sense that they all reflect the same latent ambition to transform the employees to share and act on the vision and that the behaviors are only theoretically meaningful if used together.

Operationalizing Transformational Leadership

One of the key criticisms of transformational leadership is, as mentioned, that it conceptually confounds leadership actions and their effects (Van Knippenberg & Sitkin, 2013, p. 43), and this conceptual problem leads to an operationalization problem where leadership effects are measured rather than leadership behavior. Van Knippenberg and Sitkin (2013) thus argue "the definitional problems have their parallels in measurement problems" (p. 40). This threatens the validity of the many effect studies based on these measures. In addressing this issue, we base our operationalization on a review of the literature to identify items that clearly reflect a leader's *actions* to develop, share, and sustain a vision. In generic management literature, we relied on inspiration from Podsakoff et al. (1990); MacKenzie, Podsakoff, and Rich (2001); and House (1998), and in public administration literature, we focused on Moynihan et al. (2012). Seven items were selected and carefully rephrased to focus on leader behaviors to avoid confounding of leadership actions and leadership effects. The wording can be seen in Table 1, whereas Table A-1 in the online appendix explicates the link to existing items from the literature (Visit aas.sagepub.com/supplemental for the online appendix files). In the "Results" section, we assess the psychometric properties of our transformational leadership scale including convergent and discriminant validity. All items were adapted to fit both leader and employee ratings. The items were framed for leaders by stating, "As a leader I . . . ," and for employees, the introductory text was "My leader . . ."

A valid insight from the full-range theory is that it is not enough to conceptualize and measure transformational leadership in isolation. It should, as a minimum, also function in relation to a consistent conceptualization of transactional leadership. This position is supported by existing studies, which

Table 1. Operationalization of Measurement Instrument for Transformational Leadership.

Item No.	Item wording: A. Leader version	Item wording: B. Employee version
	As a leader I . . .	My leader . . .
1.	Concretize a clear vision for the organization's future	Concretizes a clear vision for the organization's future
2.	Communicate my vision of the organization's future	Communicates a clear vision of the organization's future
3.	Make a continuous effort to generate enthusiasm for the organization's vision	Makes a continuous effort to generate enthusiasm for the organization's vision
4.	Have a clear sense of where I believe our organization should be in 5 years	Has a clear sense of where he or she believes our organization should be in 5 years
5.	Seek to make employees accept common goals for the organization	Seeks to make employees accept common goals for the organization
6.	Strive to get the organization to work together in the direction of the vision	Strives to get the organization to work together in the direction of the vision
7.	Strive to clarify for the employees how they can contribute to achieve the organization's goals	Strives to clarify for the employees how they can contribute to achieve the organization's goals

Note. In the questionnaire, organization is replaced by the specific sector organization, for example, "school" for the school sector. Likert-type format: 1 = *strongly disagree*, 2 = *somewhat disagree*, 3 = *neither agree nor disagree*, 4 = *somewhat agree*, 5 = *strongly agree*.

suggest that transformational leadership is important both in its own right and in combination with transactional leadership (Bass et al., 2003; Bass & Riggio, 2006; Hargis, Watt, & Piotrowski, 2011; O'Shea, Foti, Hauenstein, & Bycio, 2009; Rowold, 2011). Below, we discuss the conceptualization of transactional leadership.

Transactional Leadership: Working Toward Aligning Organizational Goals and Employees' Self-Interest

Conceptualizing Transactional Leadership

Transactional leadership has transactions between leader and employees at its conceptual core (Podsakoff, Bommer, Podsakoff, & MacKenzie, 2006),

and we accordingly define it as the use of contingent rewards and sanctions. Although both transactional and transformational leadership are directed toward achieving organizational goals, the key difference is that we see transactional leadership behavior as being intended to create employee self-interest in achieving the goals, while transformational leadership theoretically is based on an intention to encourage employees to transcend their own self-interest. Transactional leadership thus entails the use of contingent rewards and sanctions to make individual employees pursue their own self-interest while contributing to organizational goal attainment. This rests on the assumption that through appropriate incentives, the self-interest of individual employees may align with the interest of the organization. Only contingent rewards and sanctions are relevant: Whenever employees are rewarded or sanctioned, these transactions should relate directly to employees' specific effort or performance. Otherwise, the transactions cannot be expected to be effective.

We agree with the differentiation in the full-range theory between rewards and sanctions, but in line with House (1998), we argue that it is important to refine the differentiation by also distinguishing between pecuniary and nonpecuniary rewards as these have different effects. Perry, Engbers, and Jun (2009) and Weibel, Rost, and Osterloh (2010), for example, demonstrate that the effects of pecuniary rewards in public organizations can be negative. Especially if financial incentives are seen as controlling, they can crowd out intrinsic motivation (Andersen & Pallesen, 2008; Weibel et al., 2010), and this is not the case with nonpecuniary (e.g., verbal) rewards (e.g., Deci et al., 1999). Consequently, we conceptualize transactional leadership as entailing the use of three types of performance- or effort-contingent types of behavior: use of contingent nonpecuniary rewards, contingent pecuniary rewards, and contingent sanctions. Specifically related to the applicability to both private and public organizations, the distinction between different types of rewards is highly warranted. Given that public managers are less materialistic (Boyne, 2002), they likely have a different reward-related behavior compared with private leaders, and it is an empirical question whether they use rewards less compared with private managers or whether they simply substitute material rewards with nonmaterial rewards. The revised conceptualization of transactional leadership will allow future studies to find out not only whether public leaders use rewards less than private leaders but also whether they use different (nonpecuniary) rewards. If valued by the employees, all three behaviors would be theoretically expected to have a potential effort-inducing effect, but the perception of sanctions and the two types of rewards can be disparate (Frey, 1997). Pecuniary rewards can, for example, be bonus pay and perks, whereas nonpecuniary rewards can be praise. The last type of performance/

effort-contingent behavior is sanctions, for example, punishment of errors, negative effort, and performance deviances.

We argue that transactional leadership should be seen as a formative construct, where the use of pecuniary and nonpecuniary rewards and sanctions jointly construe the conceptual and empirical significance of transactional leadership. These three types of behaviors can be—but are not necessarily—alternatives. For example, if a leader uses both contingent pecuniary rewards and contingent sanctions, the leader is rated to have a higher level of transactional leadership, because the leader uses two types of transactions. This means that it is not necessary for the three types of behavior to covary, given that they can be seen as alternative transaction types, that is, different ways to perform transactional leadership, while it would alter the conceptual domain of transactional leadership if one of three types of behavior is excluded (Jarvis, MacKenzie, & Podsakoff, 2003).

Operationalizing Transactional Leadership

Similar to the process applied for our operationalization of transformational leadership, we reviewed the transactional leadership literature for items that reflect our three conceptual elements. Again, we carefully selected and rephrased items for them not to confound leadership with its effects. Table 2 presents the 12 items reflecting the three components of transactional leadership, and Table A-2 in the online appendix shows how they are based on existing literature.

Methods and Validation Procedures

Our validation procedure includes two steps to ensure validity and reliability of the transformational and transactional leadership scales. In the first step, we assess the psychometric properties of a four-factor model, compare it with alternative factor structures, and examine whether the measurement model is consistent across sectors, in repeated surveys, and in an intervention study. The four factors reflect (a) transformational leadership, (b) contingent nonpecuniary rewards, (c) contingent pecuniary rewards, and (d) contingent sanctions. In the second step, we investigate the correlations between the transformational leadership and transactional leadership and test whether the scales discriminate from each other. Although the main results are presented for employee ratings of transformational and transactional leadership, we test whether the measurement model is equally applicable for leaders' self-ratings. Before we discuss each step in greater detail, the sample and data collection are briefly described.

Table 2. Operationalization of Measurement Instrument for Transactional Leadership.

Item No.	Item wording: A. Leader version	Item wording: B. Employee version
	Pecuniary reward—As a leader I . . .	Pecuniary reward—My leader . . .
8.	Reward the employees' performance when they live up to my requirements	Rewards the employees' performance when they live up to the leader's requirements
9.	Reward the employees' dependent on how well they perform their jobs	Rewards the employees' dependent on how well they perform their jobs
10.	Point out what employees will receive if they do what is required	Points out what employees will receive if they do what is required
11.	Let employees' effort determine received rewards	Lets employees' effort determine received rewards
	Nonpecuniary rewards—As a leader I . . .	Nonpecuniary rewards—My leader . . .
12.	Give individual employees positive feedback when they perform well	Gives individual employees positive feedback when they perform well
13.	Actively show my appreciation of employees who do their jobs better than expected	Actively shows his or her appreciation of employees who do their jobs better than expected
14.	Generally do not acknowledge individual employees' even though they perform as required (R)	Generally does not acknowledge individual employees' even though they perform as required (R)
15.	Personally compliment employees when they do outstanding work	Personally compliments employees when they do outstanding work
	Contingent sanctions—As a leader I . . .	Contingent sanctions—My leader . . .
16.	Give negative consequences to the employees if they perform worse than their colleagues	Gives negative consequences to the employees if they perform worse than their colleagues
17.	Make sure that it has consequences for the employees if they do not consistently perform as required	Makes sure that it has consequences for the employees if they do not consistently perform as required
18.	Take steps to deal with poor performers who do not improve	Takes steps to deal with poor performers who do not improve
19.	Give negative consequences to my employees if they do not perform as I require	Gives negative consequences to his or her employees if they do not perform as the leader requires

Note. No pretext was offered for Item 14.

Sample and Data Collection

Our data stem from four independent surveys collected in relation to an experimental test of a leadership training program in Denmark. Surveys were

distributed among leaders and employees before the beginning of the training program (April and August 2014), and follow-up surveys were administered to leaders and their employees after the training program (August 2015). The leadership training program ran from September 2014 to May 2015. Surveys were Internet-based, but paper-based invitations including a link to the online questionnaire were distributed to employees who did not have a valid email account. As discussed in Boye et al. (2015, 2016), we engaged in a number of procedures to obtain high response rates and make sure that respondents prioritized answering the survey carefully. Five different sectors were included in the study: high schools (only public organizations), schools (public and private organizations), day care (public and private organizations), tax offices (only public organizations), and banks (only private organizations). From these sectors, 672 leaders volunteered to participate in the experimental training program and completed the pretreatment survey (i.e., a response rate of 100%). A pretreatment survey was distributed to their 19,552 employees with an overall response rate of 45.3%. The follow-up survey was completed by 451 leaders in August 2015 (corresponding to a response rate of 87%[1]), and 7,538 employees fully or partially completed the posttreatment employee survey (response rate 49.8% of all recipients of the second questionnaire). The survey data represent an unbalanced panel, because they include employees working in the organizations throughout the study, as well as employees leaving and entering the organizations during the study. All surveys included identical items on transformational leadership and transactional leadership (cf. Tables 1 and 2), and this allows us to assess the psychometric properties of a measurement model across time and respondents (employees' other-ratings and leaders' self-ratings of transformational and transactional leadership).

A stratified random sampling method was used to assign the leaders to one of four groups (three treatment groups and a control group). Strata ensure an even distribution of leaders from the different types of organizations in treatment and control groups, and the random assignment prevents selection bias of participants on treatments (Angrist & Pischke, 2009, p. 15). The three separate treatments encompass interventions designed to train the leaders in transformational leadership, transactional leadership, or a combination of the two. Leaders in the control group were not assigned to any of the treatment groups. The leadership training consisted of four full days of instruction and exercises, and was designed to support participants in applying the leadership strategy in their organizations in-between instruction days. Elaborate information on the assignment-to-treatment procedure, learning principles behind the training programs, contents of individual teaching sessions, and design of the experiment can be found in Jacobsen, Bøllingtoft, and Andersen (2015) and Holten, Bøllingtoft, and Wilms (2015).

Psychometric Properties of Leadership Scales

To test the validity of our transformational and transactional leadership measures, we performed confirmatory factor analysis (CFA). CFA formally tests whether a set of indicators converges on latent factors as specified a priori by theory (Acock, 2013). CFA is based on an asymptotic distribution–free estimator to account for the ordinal nature of our data (5-point Likert-type scale items). Consistent with our conceptualizations of transformational leadership and transactional leadership, a four-factor measurement model was specified from our pool of 19 items (cf. Tables 1 and 2) to reflect: (a) transformational leadership, (b) contingent nonpecuniary rewards, (c) contingent pecuniary rewards, and (d) contingent sanctions. The latter three factors can be seen as a formative construct where each factor constitutes unique and noninterchangeable components of the transactional leadership construct. Contingent nonpecuniary rewards, contingent pecuniary rewards, and contingent sanction are modeled as three independent first-order factors because they can have different antecedents and consequences, and existing literature accordingly treats them separately (this is also the case in the full-range theory and its associated measure, MLQ; see, for example, Antonakis et al., 2003). Convergent validity is demonstrated when the average variance extracted for an indicator is above 0.5. To decide on overall fit of the measurement model—that is, its ability to reproduce the observed covariance matrix (Vandenberg & Lance, 2000)—we rely on the chi-square test and three of the most common approximate fit measures: the root mean square of approximation (RMSEA), the comparative fit index (CFI), and the standardized root mean square residual (SRMR). We apply the model fit thresholds proposed by Williams, Vandenberg, and Edwards (2009). To evaluate the robustness of our four-factor model, we compared it with two alternative models with simpler factor structures. We tested our model against (a) a two-factor model in which all three transactional leadership factors were combined into a single factor and (b) a three-factor model in which contingent pecuniary rewards and contingent nonpecuniary rewards were combined into a single factor.

The structure of our data in multiple groups (five sectors, public–private, treatment–control) and time points (baseline–follow-up) allows us to validate our leadership scales across these contexts (Williams et al., 2009). We thereby explore measurement invariance, testing whether the properties of the underlying measurement model are consistent across groups and time. Specifically, we test for "configural" and "metric" invariance. Configural invariance refers to equivalence of our measurement model configuration, that is, the pattern of factors and indicators is the same across groups and time. Metric invariance concerns equivalence of factor loadings (i.e., the relationship between

individual items and factors) across groups and time (Horn & McArdle, 1992; Vandenberg & Lance, 2000). The measurement invariance tests are performed in sequential steps imposing still stricter restrictions on the measurement model. For each step, it is evaluated whether data support the preceding invariance test. We compare the nested models by chi-square statistics (change in the chi-square value, $\Delta\chi^2$, given the change in degrees of freedom between models) and differences in RMSEA (ΔRMSEA), CFI (ΔCFI), and SRMR (ΔSRMR). Following the recommendations of Cheung and Rensvold (2002) and Chen (2007), invariance is demonstrated for a difference of less than 0.015 in RMSEA, 0.01 in CFI, and 0.03 in SRMR.

Interfactor Correlations and Discriminant Validity

Often-voiced criticisms of the MLQ are that transformational and transactional leadership factors correlate highly and discriminate poorly (Van Knippenberg & Sitkin, 2013), and this makes it important to address these issues for our measures. The four factors in our measurement model are therefore allowed to correlate in the CFA, enabling us to investigate the interfactor correlations. A related question is whether factors discriminate. Discriminant validity exists when a latent factor (e.g., the transformational leadership factor in our model) accounts for more variance in the indicators/items related to this factor than in other factors (e.g., the contingent nonpecuniary rewards factor) or measurement error (Farrell & Rudd, 2009). According to Fornell and Larcker (1981), discriminant validity is established when the average variance extracted for any two factors exceeds the shared variance between these factors. The average variance extracted consists of the average of the squared correlations (or factor loadings) between individual indicators and the associated factor. Shared variance between any two factors equals the squared correlation between these factors. Using this approach, we test discriminant validity by comparing all combinations of our four factors: transformational leadership, contingent nonpecuniary rewards, contingent pecuniary rewards, and contingent sanctions.

Results

In this section, we present the results of a series of confirmatory factor analyses to assess the validity and reliability of our transformational and transactional leadership scales. The main results are presented for employee data, but we also test the measurement model using leaders' self-ratings, demonstrating equal applicability across sources (see online appendix).

A Four-Factor Measurement Model: Psychometric Properties

According to the chi-square test of exact fit, $\chi^2(146) = 3{,}567.29$, $p < .001$, and CFI = 0.858 (although acceptable for RMSEA = 0.039 and SRMR = 0.076), our 19-item target model (cf. Tables 1 and 2) did not fit data well. Because our sample includes data from multiple groups (e.g., different sectors), we follow the procedure adopted by Antonakis and House (2014) to reestimate a trimmed model based on a homogeneous subsample of public school participants, which is also the largest subsample in our data. Based on a number of iterations, we inspected the modification indexes and retained items that clearly reflected our conceptualizations, loaded highly on their respective factors, and showed discriminant properties. On the basis, we replicated the test of the trimmed four-factor model with 13 items on the full data. The fit to data on the full sample is good: $\chi^2(59) = 1{,}006.77$, $p < .001$, RMSEA = 0.032, CFI = 0.956, and SRMR = 0.029. Mean standardized factor loadings were high for all factors ($\lambda_{\text{Transformational}} = 0.82$, $\lambda_{\text{Nonpecuniary rewards}} = 0.91$, $\lambda_{\text{Pecuniary rewards}} = 0.85$, $\lambda_{\text{Sanctions}} = 0.85$) with no individual loadings below 0.5, suggesting convergent validity of our model. Next, we compared the model with two alternatives: (a) a two-factor model where all transactional leadership items were constrained to load on the same factor and (b) a three-factor model in which the items affiliated with the contingent reward (i.e., nonpecuniary and pecuniary) factors were constrained to load on the same common factor. Results from CFA on our main model and the alternative model specifications are presented in Table 3. The two-factor and three-factor models failed to fit data well and performed significantly worse than our four-factor model based on difference tests: two-factor model: $\Delta\chi^2(5) = 8{,}914$, $p < .001$; and three-factor model: $\Delta\chi^2(3) = 5{,}047$, $p < .001$. Differences in RMSEA, CFI, and SRMR clearly support this pattern. Thus, the four-factor model was retained for further analyses.

A Four-Factor Measurement Model: Testing Multiple Group and Time Invariance

To assess the psychometric properties of our four-factor model across multiple groups and time, we tested for configural and metric invariance across (a) time, (b) treatment/control group, and (c) sector. Three independent invariance tests were performed, each entailing two sequential steps: First, a model with all parameters constrained to be equal was compared with a model where only the factorial structure and pattern of loadings were constrained to be equal across the grouping variable (i.e., test for configural invariance). Second, the latter model was compared with a model where factor loadings were also required to be equal across the grouping variable (i.e., test for metric invariance). Table 4 presents factor loadings and fit indices for the four-factor model.

Table 3. Employee Ratings: Four-Factor Versus Alternative Measurement Models of Transformational and Transactional Leadership.

	Four-factor model	Two-factor model	Three-factor model
Transformational leadership			
"Concretizes a clear vision for the [ORGANIZATION'S] future"	0.797	0.797	0.799
"Seeks to make employees accept common goals for the [ORGANIZATION]"	0.775	0.775	0.772
"Strives to get the [ORGANIZATION'S] employees to work together in the direction of the vision"	0.871	0.862	0.865
"Strives to clarify for the employees how they can contribute to achieving the [ORGANIZATION'S] goals"	0.854	0.855	0.856
Transactional leadership: Nonpecuniary rewards			
"Gives individual employees positive feedback when they perform well"	0.914	0.882	0.896
"Actively shows his or her appreciation of employees who do their jobs better than expected"	0.899	0.873	0.888
"Personally compliments employees when they do outstanding work"	0.932	0.900	0.914
Transactional leadership: Pecuniary rewards			
"Rewards the employees' performance when they live up to his or her requirements"	0.907	0.837	0.850
"Rewards the employees' dependent on how well they perform their jobs"	0.880	0.802	0.818
"Points out what employees will receive if they do what is required"	0.750	0.668	0.678
Transactional leadership: Sanctions			
"Gives negative consequences to the employees if they perform worse than their colleagues"	0.789	0.573	0.773
"Makes sure that it has consequences for the employees if they do not consistently perform as required"	0.878	0.708	0.877
"Gives negative consequences to employees if they do not perform as he or she requires"	0.875	0.677	0.867
n (employees)	15,971	15,971	15,971
n (organizations)	605	605	605
χ^2	1,006.77	9,920.93	6,053.99
df	59	64	62
RMSEA	0.032	0.098	0.078
CFI	0.956	0.539	0.720
SRMR	0.029	0.332	0.155

Note. CFA with standardized factor loadings. CFA based on asymptotic distribution–free estimator. All standardized factor loadings are statistically significant at the .001 level. RMSEA = root mean square error of approximation; CFI = comparative fit index; SRMR = standardized root mean square residual; CFA = confirmatory factor analysis.

Table 4. Employee Ratings: Measurement Models of Transformational and Transactional Leadership.

	Full sample	Pre	Post	Post (treatment)	Post (control)
Transformational leadership					
"Concretizes a clear vision for the [ORGANIZATION'S] future"	0.797	0.795	0.799	0.793	0.810
"Seeks to make employees accept common goals for the [ORGANIZATION]"	0.775	0.774	0.776	0.776	0.779
"Strives to get the [ORGANIZATION'S] employees to work together in the direction of the vision"	0.871	0.865	0.878	0.881	0.875
"Strives to clarify for the employees how they can contribute to achieving the [ORGANIZATION'S] goals"	0.854	0.855	0.851	0.847	0.860
Transactional leadership: Nonpecuniary rewards					
"Gives individual employees positive feedback when they perform well"	0.914	0.912	0.918	0.918	0.922
"Actively shows his or her appreciation of employees who do their jobs better than expected"	0.899	0.896	0.904	0.903	0.906
"Personally compliments employees when they do outstanding work"	0.932	0.933	0.931	0.931	0.939
Transactional leadership: Pecuniary rewards					
"Rewards the employees' performance when they live up to his or her requirements"	0.907	0.905	0.910	0.907	0.927
"Rewards the employees' dependent on how well they perform their jobs"	0.880	0.889	0.874	0.880	0.868
"Points out what employees will receive if they do what is required"	0.750	0.748	0.753	0.753	0.760
Transactional leadership: Sanctions					
"Gives negative consequences to the employees if they perform worse than their colleagues"	0.789	0.787	0.795	0.799	0.801
"Makes sure that it has consequences for the employees if they do not consistently perform as required"	0.878	0.880	0.877	0.874	0.885
"Gives negative consequences to employees if they do not perform as he or she requires"	0.875	0.872	0.882	0.887	0.872
n (employees)	15,971	9,309	6,662	4,866	1,796
n (organizations)	605	601	460	328	132
χ^2	1,006.77	613.99	468.19	347.06	182.94
df	59	59	59	59	59
RMSEA	0.032	0.032	0.032	0.032	0.034
CFI	0.956	0.957	0.953	0.953	0.951
SRMR	0.029	0.030	0.032	0.033	0.040

Note. CFA with standardized factor loadings. CFA based on asymptotic distribution–free estimator. All standardized factor loadings are statistically significant at the .001 level. RMSEA = root mean square error of approximation; CFI = comparative fit index; SRMR = standardized root mean square residual; CFA = confirmatory factor analysis.

Tables 5 to 7 summarize the results of the invariance tests. The results indicate that our measurement model is invariant across repeated surveys (time). The baseline model in which all parameters were constrained to be equal across time fits data well: $\chi^2(163) = 1{,}211.69$, $p < .001$, RMSEA = 0.028, CFI = 0.951, and SRMR = 0.036. Almost identical results appear for the baseline model in which all parameters are constrained to be equal across treatment and control groups, $\chi^2(163) = 1{,}211.31$, $p < .001$, RMSEA = 0.028, CFI = 0.951, and SRMR = 0.042, indicating not only configural and metric invariance but also equivalence of error variances and intercepts. Results indicate configural and metric invariance across sectors with differences in RMSEA less than 0.015, in CFI less than 0.01, and in SRMR less than 0.030 between Models 2 and 3 (cf. Table 7). Across study sectors, our four-factor measurement model generally seems equally applicable in people-changing (service) and people-processing (administration) organizations. Importantly, it also seems equally applicable to public and private organizations. Factor loadings, model fit indices, and reliability scores for each "sector" subsample split by time are listed in Table A-3 in the online appendix. It should be acknowledged that SRMR is high in our small subsamples (e.g., private lower secondary school, private day care, and banks). Simulation studies show that SRMR is sensitive to sample size with a greater positive bias in small samples (Anderson & Gerbing, 1984). If we compare CFI values, which are not sensitive to sample size, we see that they are practically unchanged between small and large subsamples (e.g., banks vs. tax offices in Table A-3). Moreover, the four-factor model displays acceptable psychometric properties for leader self-rated transformational and transactional leadership (cf. Table A-4 in the online appendix). For the full sample of 982 observations (597 unique leaders with valid answers on the relevant items in at least one survey), all standardized factor loadings are above 0.5 with RMSEA and CFI values of 0.035 and 0.933, respectively. Despite the small number of observations in some of the configurations (e.g., the treatment vs. control group comparison), our measurement model generally performs satisfactorily for leaders' self-ratings.

A Four-Factor Measurement Model: Interfactor Correlations and Discriminant Validity

Table 8 presents (a) interfactor correlations, (b) average variance extracted and shared variance for assessing discriminant validity, and (c) composite reliability scores in terms of Cronbach's alpha and Jöreskog's rho. Correlations between the four factors range between 0.589 and 0.135 and any two model factors thus share less than half of their variance with each other. Our leadership scales also discriminate as the average variance extracted for any two

Table 5. Test for Measurement Invariance Across Multiple Time Periods (2014 and 2015): Employee Ratings.

Model	Comparison	Chi-square (*df*)	ΔChi-square (*df*)	RMSEA	ΔRMSEA	CFI	ΔCFI	SRMR	ΔSRMR
1. Baseline model, equal parameters		1,211.69 (163), $p < .001$		0.028		0.951		0.036	
2. Same form model (configural invariance)	2 versus 1	1,082.19 (118), $p < .001$	129.50 (45), $p < .001$	0.032	0.004	0.955	0.004	0.031	0.005
3. Equal loadings model (metric invariance)	3 versus 2	1,092.44 (127), $p < .001$	10.25 (9), $p > .1$	0.031	0.001	0.955	0.000	0.031	0.000

Note. CFA based on asymptotic distribution–free estimator. Likelihood Ratio Test performed for comparison of models. $N = 15{,}971$. Groups = 2. Values on grouping variable: 0 = Survey 2014, 1 = Survey 2015. RMSEA = root mean square error of approximation; CFI = comparative fit index; SRMR = standardized root mean square residual.

Table 6. Test for Measurement Invariance Across Multiple Groups: Treatment Versus Control Group in Leadership Intervention Study: Employee Ratings.

Model	Comparison	Chi-square (*df*)	ΔChi-square (*df*)	RMSEA	ΔRMSEA	CFI	ΔCFI	SRMR	ΔSRMR
1. Baseline model, equal parameters		1,211.31 (163), $p < .001$		0.028		0.951		0.042	
2. Same form model (configural invariance)	2 versus 1	1,083.56 (118), $p < .001$	127.75 (45), $p < .001$	0.032	0.004	0.955	0.004	0.030	0.012
3. Equal loadings model (metric invariance)	3 versus 2	1,093.35 (127), $p < .001$	9.79 (9), $p > .1$	0.031	0.001	0.955	0.000	0.030	0.000

Note. CFA based on asymptotic distribution–free estimator. $N = 15{,}971$. Groups = 2. Values on grouping variable: 0 = control group, 1 = treatment group. Likelihood Ratio Test performed for comparison of models. RMSEA = root mean square error of approximation; CFI = comparative fit index; SRMR = standardized root mean square residual.

Table 7. Test for Measurement Invariance Across Multiple Groups: Sectors: Employee Ratings.

Model	Comparison	Chi-square (*df*)	ΔChi-square (*df*)	RMSEA	ΔRMSEA	CFI	ΔCFI	SRMR	ΔSRMR
1. Baseline model, equal parameters		7,287.69 (683), $p < .001$		0.065		0.711		0.176	
2. Same form model (configural invariance)	2 versus 1	1,388.79 (413), $p < .001$	5,898.90 (270), $p < .001$	0.032	0.033	0.957	0.246	0.049	0.127
3. Equal loadings model (metric invariance)	3 versus 2	1,550.07 (467), $p < .001$	161.28 (54), $p < .001$	0.032	0.000	0.953	0.004	0.056	0.007

Note. CFA based on asymptotic distribution–free estimator. Likelihood Ratio Test performed for comparison of models. *N* = Confirmatory factor analyses based on maximum likelihood estimator. *N* = 15,971. Groups = 7. Values on grouping variable: 1 = high school, 2 = public school, 3 = private school, 4 = public day care, 5 = private day care, 6 = tax office, 7 = bank branch. RMSEA = root mean square error of approximation; CFI = comparative fit index; SRMR = standardized root mean square residual.

Table 8. Intercorrelations and Estimates for Discriminant Validity and Reliability: Employee Ratings ($N = 15{,}971$).

		1	2	3	4
1.	Transformational leadership	(0.895)/(0.681)	0.347	0.118	0.034
2.	Contingent nonpecuniary rewards	0.589***	(0.937)/(0.837)	0.188	0.019
3.	Contingent pecuniary rewards	0.344***	0.434***	(0.877)/(0.720)	0.079
4.	Contingent sanctions	0.184***	0.137***	0.281***	(0.874)/(0.719)

Note. Subdiagonal entries are correlations between latent constructs. Entries above the diagonal are the squared correlation estimates (shared variance). The first entry on the diagonal is Cronbach's alpha for composite reliability. The second entry in the diagonal is the average variance extracted (average of squared factor loadings) for each latent construct. Jöreskog's rho for reliability is as follows: transformational leadership = 0.895, contingent nonpecuniary rewards = 0.939, contingent pecuniary rewards = 0.884, and contingent sanctions = 0.885.
***$p < .001$.

model factors well exceeds the shared variance between these factors. Finally, composite reliability scores suggest internal consistency among the leadership scales. Cronbach's alpha is well above the recommended lower threshold of 0.7 for all composite constructs, and Jöreskog's rho (which is not sensitive to the number of items) supports this pattern with values far exceeding the 0.6 threshold. Interfactor correlations, evidence of discriminant validity, and reliability scores for leader ratings all support discriminant properties of the four-factor model using leaders' self-ratings and internal consistency among items associated with individual factors (see Table A-5 in the online appendix).

Conclusion

This article aims to contribute to solving three problems of earlier conceptualizations and measurements of transformational and transactional leadership, and the obvious question is how successful our reconceptualization and reoperationalization efforts have been.

Concerning the need to separate the conceptualizations and operationalizations of leadership behavior from their effects, we argue that the conceptualizations do not confound the leadership strategies with their proposed effects, because they focus on behavior (behaviors that seek to develop, share, and sustain a vision and actual use of rewards and sanctions). Correspondingly, the items used in the new operationalizations also ask about behavior (e.g., whether the leaders seek to make employees accept common goals for the organization).

Whether we have succeeded in constructing theoretically and empirically meaningful dimensions is more difficult to assess. Theoretically, we distinguish between sanctions, pecuniary rewards, and nonpecuniary rewards, because the theoretical dynamics are fundamentally different. Existing research also shows that these types of transactions have different consequences. Consistent with our conceptualization of a unidimensional transformational leadership construct and three transactional leadership components (i.e., contingent nonpecuniary, contingent pecuniary, and contingent sanctions), we find empirical support for a 13-item measurement model of transformational leadership and transactional leadership consisting of four first-order factors. This model demonstrates convergent validity, discriminant validity, and measurement invariance across groups such as rating sources, sectors, and time.

Concerning applicability in both private and public organizations, we have presented theoretical arguments for the relevance of the same concepts, and our tests demonstrated that the same items can be used in both types of organizations. We fully acknowledge that some types of leadership behavior need to be conceptualized and measured differently in different types of organizations, but when public and private organizations can be compared using the same concepts and measures, it is a huge advantage. Although we would expect different levels of transformational and transactional leadership in organizations with varying degree of publicness (i.e., different levels of public funding, political control and public ownership), nothing indicates that transformational and transactional leadership cannot be conceptualized and measured similarly for private and public organizations. The conceptualizations and measures of transformational and transactional leadership set forth in this article thus allow future research to continue to make comparisons between public and private organizations, contributing to important questions on the antecedents and consequences of these leadership strategies in both types of organizations. On this basis, our proposed model seems to offer a good point of departure for reconsolidating the field. To further explore the empirical applicability of the proposed measures of transformational and transactional leadership, we encourage scholars to use the scales in other organizational, national, and/or cultural contexts. For example, it would be relevant to assess whether our conceptualization and operationalization can also be used in nonprofit organizations.

Our proposed measures of transformational and transactional leadership are available to the research community, and we invite scholars to apply and use these measures in their future research to help build sound and cumulative knowledge on the effects of transformational and transactional leadership in the private, nonprofit, and public sectors.

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Supplemental Material

Online appendix is available on the *Administration & Society* website at http://journals.sagepub.com/doi/suppl/10.1177/0095399716667157

Note

1. The posttreatment questionnaire was distributed to the 521 leaders who remained part of the experiment throughout the leadership training program. Dropouts were primarily due to job changes.

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Determinants of innovation capability: the roles of transformational leadership, knowledge sharing and perceived organizational support

Phong Ba Le and Hui Lei

Abstract

Purpose – *The study aims to explore the differences in transformational leadership's (TL's) influences on each aspect of innovation capability, namely, product innovation and process innovation. It also deepens understanding of the pathways and conditions to improve specific aspects of innovation capability by assessing the mediating role of knowledge sharing (KS) and moderating mechanism of perceived organizational support (POS).*

Design/methodology/approach – *The paper utilized structural equation modeling and cross-sectional design to test hypotheses in the proposed research model based on using data collected from 394 participants at 88 Chinese firms.*

Findings – *The findings indicate that KS mediates TL's effects on innovation capabilities. In addition, the influences of TL and KS on specific aspects of innovation capability are different and depend on the extent of employees' POS.*

Research limitations/implications – *Future studies should test mediating roles of knowledge management's constituents and/or investigate the moderating roles of firm ownership form to increase the understanding of potential factors or key conditions that may have significant influences on a firm's innovation capability.*

Practical implications – *The paper significantly contributes to increasing the understanding of the link between TL and specific aspects of innovation capability by highlighting the important role of stimulating KS and enhancing POS.*

Originality/value – *The paper provides useful information and valuable initiatives to increase leadership outcomes and firm's capability for innovation.*

Keywords *Innovation, Knowledge sharing, Transformational leadership, Product innovation, Process innovation, Perceived organizational support*

Paper type *Research paper*

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1. Introduction

The increasing changes of technology, customer needs, and global economic integration cause firms to face many difficulties and challenges (Jia *et al.*, 2018; Le and lei, 2018). Organizational innovation is emerging as a hot topic that attracted increasing attention from researchers and practitioners (Khalili, 2016; Prasad and Junni, 2016; Charterina *et al.*, 2017; Le and Lei, 2018; Tian *et al.*, 2018). Organization's innovation capability has been regarded as crucial means of achieving firm's competitive advantage and sustainable success (Colino *et al.*, 2014; Liao *et al.*, 2017; Le and Lei, 2018). Accordingly, many firms attempt to identify appropriate and effective pathways to successfully innovate but they are still imitators and are struggling to become innovators (Song, 2015; Le and Lei, 2018). Given

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this context, the identification of strategic factors that significantly promote firms' innovation capability becomes more and more meaningful and very necessary.

Leadership and knowledge sharing (KS) have widely recognized as the key sources for firms to foster innovation capability and attain organization's effectiveness, survival and sustainable competitive advantage (Choi *et al.*, 2016; Le and Lei, 2017; Ritala *et al.*, 2018). Prior studies supposed that leaders and their leadership behaviors are possibly the most important force of promoting innovation capability (Jung *et al.*, 2008; Jia *et al.*, 2018). Among different leadership styles, transformational leadership (TL) has been considered one of the most effective leadership styles (Le *et al.*, 2018). TL practice might be a decisive pathway to enhance firm's innovation capability (Prasad and Junni, 2016; Zheng *et al.*, 2016; Sattayaraksa and Boon-itt, 2018). TL positively involves firm's innovation capability through intellectual stimulation, encouraging openness among individuals (Vera and Crossan, 2004), inspiring and motivating employee's innovation behavior (Choi *et al.*, 2016). However, knowledge of the direct correlation between TL and innovation capability remains underdeveloped and insufficient. There still exist theoretical and empirical gaps in the TL–innovation relationship, which we need to continue exploring and studying (Choi *et al.*, 2016; Jia *et al.*, 2018), especially the relationship between TL and specific aspects of innovation (Anderson *et al.*, 2014). Consequently, this study is implemented not only to explore the differences in TL's influences on each aspect of innovation capability namely product innovation and process innovation but also to deepen understanding of the pathways and conditions to improve specific aspects of innovation capability by assessing the mediating role of KS and moderating mechanism of perceived organizational support (POS). The research topic is new, interesting and urgent for many reasons.

First, managing innovation and improving innovation capability are becoming one of the most important and interesting issues in the current literature (Breznik and Hisrich, 2014; Leavy, 2015; Prasad and Junni, 2016; Charterina *et al.*, 2017; Tian *et al.*, 2018). Although TL and KS are recognized as the drive of successful innovation (Barczak *et al.*, 2010; Paulsen *et al.*, 2013; Prasad and Junni, 2016), the literature on the relationship between these constructs is still incompetently (Choi *et al.*, 2016; Jia *et al.*, 2018). Moreover, the study by Choi *et al.* (2016) argued that KS is a key determinant in shaping an innovative organization, but the antecedents that encourage or discourage KS are poorly understood and studied. They suggested the need to study the mediating mechanism of KS between TL and innovation behaviors. So, by filling the research gap addressed above, the paper aims to provide deeper knowledge of the mediating role of KS in the relationship between TL and specific aspects of innovation capability.

Second, Anderson *et al.* (2014) emphasized the necessity of identifying the antecedents of specifics facets of innovation by posing a question that:

Q1. What is the relationship between organizational resources and different types of organizational innovation?

Meanwhile, leadership characteristics and KS were regarded as some of the crucial organizational resource (Wang and Noe, 2010). Hence, exploring how different in the influences of TL and KS on each aspects of innovation capability namely product innovation and process innovation will significantly contributes to providing useful solutions or right pathway to attain each specific type of innovation capability.

Finally, according to Choi *et al.* (2016), previous studies did not have a consensus on the TL's positive influence on organizational innovation. They assumed that future research is necessity not only to confirm TL–innovation relationship but also to explore the moderating role of POS between them. Obviously, organizations with differences in their climate and supports may produce various impacts on KS and innovation due to the dissimilarity in providing sources, opportunities and motivations for these activities. Accordingly, these effects can hinder or promote TL's positive influences on KS and innovation capability. To

have more empirical evidence, deeper understanding and an integration view about a pathway led to specific aspect of innovation, the paper will investigate the moderating role of POS in the relationship between TL and KS and between TL and aspects of innovation capability

To fill the theoretical gaps addressed above, this study was done to elucidate some following research questions:

RQ1. How different are the influences of TL and KS on specific aspects of innovation capabilities?

RQ2. Does KS mediate TL's effects on innovation capabilities?

RQ3. Does POS moderate TL's effects on KS and innovation?

To provide answers for above research questions, this study applies structural equations modeling (SEM) to investigate the correlation between the structures in the research model based on the data collected from 394 participants in 88 manufacturing and service firms in China. Our study is expected to provide theoretical initiatives on organizational behavior and knowledge management as well as practical implication to improve innovation capabilities for firms.

2. Literature review and hypotheses development

2.1 The effect of transformational leadership on innovation capability

TL is perceived as one of the most effective leadership styles affected key outcomes of an organization such as: knowledge capital, human capital (Birasnav *et al.*, 2011), managerial performance (Nguyen *et al.*, 2017) and innovation performance (Jia *et al.*, 2018). Bass (1985, 1990) defined TL with four characteristics: idealized influence (ability to provide a vision and perception of mission, instilling pride, gaining respect and trust), intellectual stimulation (ability to promote intelligence, rationality and attentive problem-solving), inspirational motivation (interested in communicating high expectations, using symbols to focus efforts, expressing important purposes in simple ways) and individualized consideration (interested in personal attention, treating each employee individually, coaching and advising). The theory of TL has attracted much observation from scholars and emerged as one of the most powerful leadership theories (Mhatre and Riggio, 2014; Le and Lei, 2017). For that reason, investigating the relationship between TL and specifics forms of innovation will have valuable contributions in the field of leadership and innovation management.

Innovation is a principal driver of economic development and plays a pivotal role in competition at both the national and firm levels (Hogan and Coote, 2014). Drucker (2014) defined innovation as the capabilities of creating new products, services, work processes, and management procedures to gain an organizational competitive advantage. Innovation capability is classified into various categories (Liao *et al.*, 2007; Podrug *et al.*, 2017) among which product innovation and process innovation are recognized as two fundamental types (Tsai *et al.*, 2001) or two critical capabilities of innovation in complex and rapidly changing business environments (Tsai *et al.*, 2001; Lee *et al.*, 2013). As a result, this study focuses on investigating the influences of related variables on these two aspects of innovation. According to Tsai *et al.* (2001), product innovation refers to an organization's capability of providing differentiated or new products/services in the market to acquire customers' satisfaction. While, process innovation refers to organization's capability of providing a better process than current operation to get better performance.

Based on literature review, the authors argued that transformational leaders' characteristics are the main forces that directly or indirectly affect innovation capability, specifically:

- by means of idealized influence, TL will be able to persuade and motivate employees about the need for implement change and innovation. This also ensures that employee will support and have positive reaction to innovation efforts stemmed from their transformational leaders (Prasad and Junni, 2016);
- by transmitting inspirational motivation, transformational leaders foster employees' enthusiasm to fulfill their duties and organizational goals beyond the expectation (Bass, 1999; Prasad and Junni, 2016; Le *et al.*, 2018).

Thus, by emphasizing the necessity of improving innovation capability as an organization's strategic goal, TL can motivate employees to be more proactive and creative to enhance and develop new ideas and solutions related to firm's product and process. Third, by focusing on intellectual stimulation, transformational leaders increase employees' motivation and ability to think out of the box (Wilson-Evered *et al.*, 2004) which brings a high degree of vision to the organization, and employees become more ready to commit in accomplishing the vision effectively (Felfe and Goihl, 2002; Choi *et al.*, 2016). Thus, TL can encourage and challenge employees to innovate and improve current products, processes, and organizational structures to meet goals and organizational vision. Finally, through individualized consideration, transformational leaders facilitate to develop employees' capabilities (Bass *et al.*, 2003), and bring them learning opportunities that is the main sources of building employee's creative thinking (Prasad and Junni, 2016). Moreover, by handling employees' personal needs, TL cultivates the supportive climate for innovative behaviors such as self-efficacy, experiment and be creative (Gumusluoglu and Ilsev, 2009; Prasad and Junni, 2016).

Transformational leaders play a dominant role in generating innovation by creating and shaping a positive climate for encouraging the abilities and practices to promote innovation capability. Indeed, many works in the growing literature on TL have appointed out a positive relationship between TL and innovation (Jung *et al.*, 2003; García-Morales *et al.*, 2012; Trung *et al.*, 2014; Choi *et al.*, 2016; Prasad and Junni, 2016). For example, according to Jung *et al.* (2003), TL is positively associated with innovation capability based on encouraging employees freely in discussing and trying out innovative ideas and approaches. García-Morales *et al.* (2012) pointed out that TL's behavior directly or indirectly influence firm's innovation capability through improving learning capability of a firm. Trung *et al.* (2014) showed that TL plays an important role in generating a climate in the organization that favors experimentation and the introduction of new ideas, processes, procedures or structures. The works by Choi *et al.* (2016), and Prasad and Junni (2016) showed the evidence that, TL is positive associated with employees' innovative behaviors and organizational innovation. Recently, Jia *et al.* (2018) also reported that TL directly or indirectly influences organizational innovation performance via openness of innovation.

Above arguments support positive correlation between TL and innovation capability, however empirical evidence on the relationship between TL and two specifics aspects of innovation capabilities namely product innovation and process innovation is still limited. To investigate clearer the relationship among these constructs, we proposed following hypothesis:

H1a. TL is positively related to product innovation.

H1b. TL is positively related to process innovation.

2.2 Knowledge sharing mediates the relationship between transformational leadership and innovation capability

Knowledge and knowledge management capability are crucial premise for success in most organizations (Carneiro, 2000; Lee *et al.*, 2016; Le and lei, 2017). Accordingly, strengthening firm's abilities to identify, collect, share, apply knowledge and turn such

knowledge capital into reality in firms' outcomes is very important. KS plays a decisive role in the process of knowledge management (Pee and Min, 2017; Wu and Lee, 2017; Le *et al.*, 2018). The successful extent of initiatives of knowledge management mainly depends on the effectiveness of KS activities in an organization (Le and lei, 2017). KS helps to maximize a firm's ability to manage knowledge and allows individuals in organization to work and achieve goals more efficiently (Le and Lei, 2017). KS is defined as the process of interchanging knowledge and experience among individuals that helps individuals to equip and complement new and valuable knowledge/skills for each other to achieve both personal and organizational goals (Van den Hooff and De Ridder, 2004; Liao *et al.*, 2007; Lin, 2008).

Leadership behaviors and characteristics have considerable influences on promoting or restricting employees' KS behaviors. The supports of leadership are essential for creating and maintaining a positive KS climate among employees in an organization (Lin and Lee, 2004). Numerous studies demonstrated that TL creates a supportive working climate and provides sufficient resources that facilitate KS activities among employees (Bass, 1999; Bass and Avolio, 2000; Birasnav *et al.*, 2011; Choi *et al.*, 2016; Masa'deh *et al.*, 2016; Xiao *et al.*, 2017; Le *et al.*, 2018). For example, Bass (1999), and Bass and Avolio (2000) supposed that transformational leaders' features (such as charisma, inspirational motivation, and intellectual stimulation) positively encourage employees communicating and sharing knowledge with each other. In a similar vein, Xiao *et al.*, 2017) argued that the TL's dimensions (charisma, intellectual stimulation and individualized consideration) are very suitable for managing knowledge. Under the organizational climate created by TL, employees become more creative and willing to share their personal knowledge capital with colleagues. The research by Birasnav *et al.* (2011) indicated that TL pays much attention on building a knowledgeable and supportive culture to shape and encourage employees' positive behavior toward KS. According to Masa'deh *et al.* (2016), by focusing on promoting employees' intellectual capital, providing vision and a sense of mission, and obtaining followers' respect and trust, TL practice is a key to create a positive atmosphere for KS. Le and Lei (2017) highlighted that TL directly and indirectly affects employees' behaviors toward KS through its positive impact on justice and employee trust in leadership. Recently Le *et al.* (2018) claimed that TL is one of the most appropriate leadership styles that encourage employees to participate in KS process.

Following the above-mentioned discussion, we hypothesize:

H2. TL significantly correlates KS.

With regard to the relationship between KS and innovation capability, it is clearly that, capability in transforming and applying knowledge determines a firm's degree of innovation, for instance, faster problem-solving and quick response to the changes of business environment. The significance and value of KS in supporting and enhancing innovation capabilities are also emphasized by previous research. Jantunen (2005) contended that KS behaviors among employees may help firms to have superior innovation capability. Liao *et al.* (2007) showed in their empirical study that KS has significant positive influences on both product innovation and process innovation in Taiwan's knowledge-intensive industries. Wang and Wang (2012) supposed that innovation initiatives mostly arise from the process of sharing knowledge, experience, and skill and firm's capability to transform and apply knowledge may decide its level of innovation capability. Sáenz *et al.* (2012) demonstrated that the employees' KS mechanisms (such as communities of practice, coaching and/or mentoring, and employee functional rotation) are the key means of increasing and exerting a positive influence on innovation capability in Spanish and Colombian high-tech firms. Lee *et al.*'s (2013) research from 162 manufacturing firms in Malaysia provided empirical evidence that KS is positively and significantly related to product and process innovation. According to Choi *et al.* (2016), by sharing task-related skills and expertise with colleagues, employee's KS process will create a lot of opportunities

to generate new ideas and enhance firm's innovation capabilities. Wang *et al.*'s (2017) research on the relationship between KS and individual innovation behaviour has also indicated that by sharing knowledge, employees can learn and combine again all kinds of knowledge, accordingly they may be more capable in translating new ideas into innovations. Recently, Le and Lei (2018) pointed out that by means of KS in organizational learning application, Chinese firms can benefit from collective knowledge and significantly affect innovation capabilities (such as innovation speed and innovation quality) and competitive advantage.

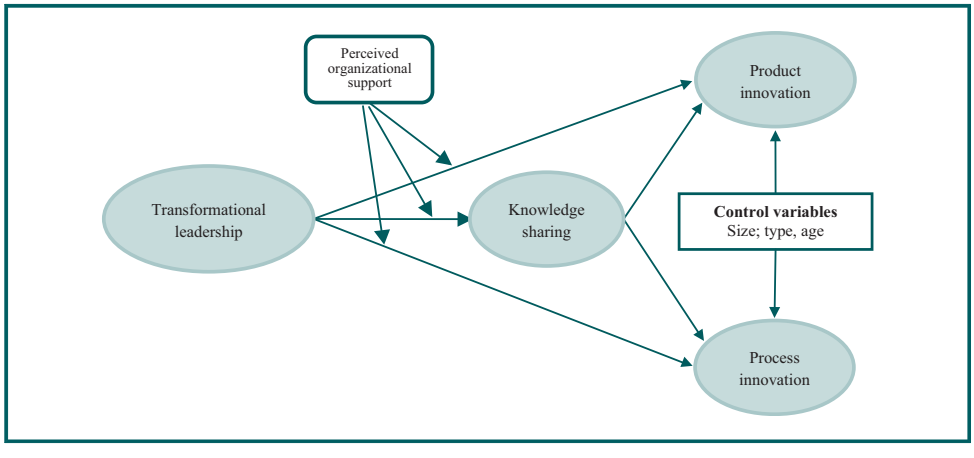
Although positive correlation between KS and innovation capability is verified, empirical studies on how KS connects with different aspects of innovation are still poorly (Anderson *et al.*, 2014; Le and Lei, 2018). The following hypothesis is therefore proposed to examine KS's impacts on product innovation and process innovation:

H3a. KS will be positively related to product innovation.

H3b. KS will be positively related to process innovation.

The current literature provides the evidence that TL is the important antecedents to foster individuals sharing their key knowledge (Choi *et al.*, 2016; Xiao *et al.*, 2017; Le *et al.*, 2018), which is the source and basic driver of improving firm's innovation capability (Wu *et al.*, 2016; Wang *et al.*, 2017; Le and lei, 2017). In addition, Choi *et al.* (2016) indicated that firm's ability to acquire and apply knowledge plays mediating role in the relationship between TL and innovation behavior. There is the fact that, the success of KS is depended on the individuals' willingness to share knowledge, but employees often delay or hesitate to share their key knowledge owing to fear of losing of knowledge ownership (Kankanhalli *et al.*, 2005; Alsharo *et al.*, 2017). To overcome and address these challenges, TL has a decisive role. Transformational leaders can create an openness, collaboration and atmosphere of trust among employee which, in turn, positively stimulate employees to share more key information, knowledge, and resources which are the important basis and prerequisite for increasing firms' innovation capabilities (Donate and Guadamillas, 2011; Le and Lei, 2018; Yang *et al.*, 2018). However, empirical evidence and the mechanism of how KS mediates the relationship between TL and innovation capabilities are not sufficient (Donate and Guadamillas, 2011; Anderson *et al.*, 2014; Choi *et al.*, 2016). Thus, investigating the mediating role of KS between TL and specific aspects of innovation is very needful in increasing the understanding and effective pathway to stimulate each aspects of innovation capability. Therefore following hypotheses are posed (see Figure 1):

Figure 1 Research framework



H4a. KS acts as a mediator between TL and product innovation.

H4b. KS acts as a mediator between TL and process innovation.

2.3 Perceived organizational support moderates transformational leadership's effects on knowledge sharing and innovation

Rhoades and Eisenberger (2002) considered POS as the organization's contribution to a positive reciprocity with employees, as they tend to act better to pay back the organization's positive effects. According to Eisenberger *et al.* (1986), when employees perceived that they are valued and supported by their organization, they will believe in organization values and attempt their best for organization's success. Choi *et al.* (2016) argued that if employees perceived to be treated fairly, they will reciprocate with high job performance and positive attitudes toward job and organization. Based on above argument, we define that POS reflects employees' best efforts in performing personal duties and organizational goals as a positive response that originates from their belief of being valued, being cared for well-being and having significant supports of organization.

POS is regarded as a crucial factor to generate a supportive climate or/and provide sufficient and necessary resources for KS activities (Mary MacNeil, 2004; Lin, 2007; Raab *et al.*, 2014), and for innovation activities (Zhou and George, 2001; Appu and Kumar Sia, 2015; Choi *et al.*, 2016; Suifan *et al.*, 2018). Regarding the impact of POS on KS, Mary MacNeil (2004) underlined the importance of the leader and organization's support to KS atmosphere in an organization. In line with this point of view, Lin (2007) indicated that management support positively affects employee willingness to share knowledge and skill with colleagues. Raab *et al.* (2014) suggested that purposeful and significant supports of leadership will encourage the value of social integration and trust on the KS process of employees.

Previous studies have shown POS is significance in moderating and mediating organizational relationships (Mahmoud, 2008; Choi *et al.*, 2016; Cheng and Yi, 2018). According to Mahmoud (2008), POS has significant influences on the relationship between TL and KS. In addition, employees tend to be reluctant to share their key knowledge with others because they dreaded of losing their distinctiveness compared with colleagues (Wang and Noe, 2010), especially in case of without awareness of integrity and fairness of organization. Thus, if employees have high trust of support, integrity and fairness in their organization, they will have greater motivation and commitment to actively participate in the activities of KS. It is clearly that KS activities under different POS may create dissimilar influences that can promote or hinder the correlation between TL and KS effectiveness (Donate and Guadamillas, 2011; Raab *et al.*, 2014). Therefore, investigating the potential moderating role of POS is very meaningful in increasing the understanding on the relationships between TL and KS. So following hypothesis is posed:

H5a. POS positively moderates the relationship between TL and KS.

In case of relationship between POS and innovation capability, some prior research showed that POS plays an important role in employees' creativity, because it arouses and increases the creative likelihood (Zhou and George, 2001) and employees' interest in their work (Appu and Kumar Sia, 2015). The work by Suifan *et al.* (2018) indicated that POS will generate a sense of duty of employees in caring about the organization's benefit and strive to achieve its goals in the most creative way. Choi *et al.* (2016) argued that POS stimulates employees to participate in innovation and decision-making process related to innovation through its supportive mechanism. These scholars emphasized that POS can facilitate transformational leaders to unite and motivate employees to perform the organizational vision through innovation. It also ensures that employees are highly committed to the work of the organization which causes the high motivation to share more knowledge to innovate and solve firm's existing issues. Consequently POS will positively moderate the effects of TL on

KS and innovation capability. Overall, Firms with high degree of POS will strengthen the positive effect of TL on innovation capability based on developing intrinsic and extrinsic motivation among the employees for innovation. In other words, the degree of employees' POS can stimulate or inhibit the relationship between TL and the success of KS. For given reason addressed above, to deepen understanding the mechanism of POS's influence on relationship between TL and each specific aspects of innovation capability, we propose following hypotheses:

H5b. POS positively moderates the relationship between TL and product innovation.

H5c. POS positively moderate the relationship between TL and process innovation.

3. Research methodology

3.1 Sample and data collection

The paper used the survey method based on using questionnaire to collect data. To select participants, we examined a total of 150 Chinese firms randomly selected from *Wind Info's 2015 list* of approximately 16,500 enterprises in Hunan Province. To meet research needs, the respondents in our research need to be key employees who are team leaders or leaders at departments of administration, R&D, accounting, operation, marketing and sales to ensure the necessary understanding of their firm as well as frequently exchanging strategic information in the organization. In summer 2017, we connected with representatives of 150 firms by phone and/or made personal visits to explain the motivation of the work and ask for their assistance in collecting the questionnaires. Among of which, 88 firms are willing for support. In the formal data collection, 690 questionnaires were issued to participants, and 465 responses were received. Of the responses, 394 were valid, corresponding to a validity rate of 57.1 per cent.

3.2 Variable measurement

To ensure the validity and reliability of the study, the variables were measured using items developed and used in previous studies. All constructs were measured using multiple items, and all items were measured via five-point Likert-type scales ranging from "1" (strongly disagree) to "5" (strongly agree) or from "1" (strongly unwilling to) to 5 (strongly willing to).

TL. Based on the strategic literature on investigations that measures and evaluates TL (Masa'deh *et al.*, 2016; Le *et al.*, 2018), we acknowledged participants' perceptions of their leader about TL behaviour with eight items adapted from Dai *et al.* (2013). Sample items are, "Our leader encourages me to think about problems from a new perspective"; "Our leader encourages us to make efforts towards fulfilling the company vision"; and "Our leader can understand my situation and give me encouragement and assistance".

KS. We used 10 items adapted from the research of Cheng and Li (2001) to measure the activities of KS among employees. Sample items are: "I am usually willing to share my knowledge and experience with others", and "When my colleagues are in need, I do my best to offer them needed information and documents".

Innovation capability. This study used 11 items adapted from the research of Tsai *et al.* (2001) and Liao *et al.* (2007) to measure two specific types of innovation. Among these, five items used to measure process innovation, an example is "Our firm can develop more efficient manufacturing process or operation procedure", and six items used to measure product innovation, an example is "Our firm often develops new products and services well accepted by the market".

POS. This study used eight items developed by Eisenberger *et al.* (1986) to determine the level of employees' perceptions of organizational support. These items were also adopted in the studies of Akgunduz *et al.* (2018). Sample items include "Our firm really cares about employees' well-being", and "Our firm strongly considers employees' goals and values".

Control variables. Firm characteristics of industry type, firm age and firm size were used as control variables to account for differences among firms that have potential impacts on innovation capabilities. It is consistent with previous research (Birasnav *et al.*, 2013).

3.3 Common method bias

Scholars argue about the effects of common method bias (CMB) in self-reporting variables (Conway and Lance, 2010). Prior literature has indicated several statistical methods to identify and control for any possible CMB (Chang *et al.*, 2010). This study used Harman's single-factor test to check for CMB. The result shows the overall variance is less than the 50 per cent threshold for substantive common method variance. This indicated that CMB was not a concern.

3.4 Data analysis methods

Analysis of Moment Structures (AMOS) was used for measurement validation and to examine the structural model based on the data gathered from the 394 respondents in 88 manufacturing and service firms. Data analysis was conducted using SPSS and AMOS version 21. Confirmatory factor analysis (CFA) was implemented to examine the validity and reliability of the constructs.

4. Data analysis and results

4.1 Measurement model

We first tested the reliability of the measures of the constructs by examining the individual Cronbach's alpha ($C\alpha$) coefficients, which ranged from 0.93 to 0.96 and were all higher than the recommended level of 0.7 (Nunnally and Bernstein, 1994). We then performed CFA to assess the convergent and discriminant validity of the overall measurement model.

We evaluate the convergent validity as recommended by Hair *et al.* (2006). The results in table I show the model met the Hair *et al.*'s (2006) convergent validity criteria because:

- all factor loadings range from 0.80 to 0.94 (*all larger than 0.6;* $p < 0.001$);
- CR values range from 0.94 to 0.96 (*all higher than 0.7*); and
- the AVE values range from 0.73 to 0.79 (*all greater than 0.5*).

Discriminant validity is the degree to which factors that are supposed to measure a specific construct do not predict conceptually unrelated criteria (Fornell and Larcker, 1981). This study used Fornell and Larcker's (1981) measure of AVE to assess discriminant validity. The discriminant validity of the research instrument was assessed by comparing the square root of the AVE with the correlations among the latent variables. Table II shows that the square root of AVE for each construct (diagonal elements in bold) is greater than the correlations among constructs in the model. It, therefore, provided strong support for the construct reliability, as well as for the convergent and discriminant validity of the scales.

Regarding the satisfactory of measurement model, Table III shows that all fit indices of the measurement model were satisfactory; thus, the model fit the data.

4.2 Structural model

This section presents the main results of the hypothesis testing of the structural relationships among the latent variables.

4.2.1 Direct effects analysis. Multiple regression analyses were performed separately with the results shown in Table IV. Findings show that all the path coefficients of direct effects are found to be significant and in line with the stated hypothesis. Specifically:

Table I Standardize loadings and reliabilities for measurement model

Construct	*Item*	*Loading*	*AVE*	*CR*	*Cα*
TL	TL1	0.86***	0.73	0.96	0.96
	TL2	0.91***			
	TL3	0.89***			
	TL4	0.80***			
	TL5	0.89***			
	TL6	0.91***			
	TL7	0.87***			
	TL8	0.89***			
POS	POS1	0.87***	0.77	0.96	0.96
	POS2	0.90***			
	POS3	0.80***			
	POS4	0.89***			
	POS5	0.92***			
	POS6	0.89***			
	POS7	0.89***			
	POS8	0.85***			
KS	KS1	0.89***	0.77	0.97	0.97
	KS2	0.82***			
	KS3	0.84***			
	KS4	0.88***			
	KS5	0.87***			
	KS6	0.86***			
	KS7	0.87***			
	KS8	0.86***			
	KS9	0.85***			
	KS10	0.84***			
Process innovation (PCI)	PCI1	0.90***	0.75	0.94	0.94
	PCI2	0.85***			
	PCI3	0.86***			
	PCI4	0.82***			
	PCI5	0.91***			
Product innovation (PDI)	PDI1	0.85***	0.79	0.96	0.96
	PDI2	0.86***			
	PDI3	0.94***			
	PDI4	0.83***			
	PDI5	0.92***			
	PDI6	0.93***			

Notes: $C\alpha \geq 0.7$; composite reliability ≥ 0.7; average variances extracted ≥ 0.5; *** Significant at $p < 0.001$

Table II Descriptive statistics and average variance extracted from constructs

Construct	*Mean*	*SD*	*TL*	*POS*	*KS*	*PCI*	*PDI*
TL	3,43	0.59	*0.86*				
POS	3.51	0.64	0.58	*0.88*			
KS	3.61	0.58	0.64	0.67	*0.88*		
Process innovation (PCI)	3.78	0.59	0.68	0.68	0.70	*0.87*	
Product innovation (PDI)	3.74	0.63	0.71	0.67	0.69	0.67	*0.89*

Notes: $C\alpha \geq 0.7$; CR ≥ 0.7; AVE ≥ 0.5; SD: standard deviation. Diagonal elements (in italic) are the square root of the AVE; Off-diagonal elements are the correlations among constructs

Model 1 shows that TL is positively related to KS ($\beta = 0.595$; $p < 0.001$). Thus, *H1* is supported.

Models 2 and 3 indicate that TL is positively associated with process innovation ($\beta = 0.625$; $p < 0.001$) and product innovation ($\beta = 0.591$; $p < 0.001$). Thus, *H2a* and *H2b* are

Table III Overall fit index of the CFA model

Fit index	*Scores*	*Recommended threshold value*
Absolute fit measures		
CMIN/df	2.211	≤2[a]; ≤5[b]
GFI	0.847	≥0.90[a]; ≥0.80[b]
RMSEA	0.056	≤0.08[a]; ≤0.10[b]
Incremental fit measures		
NFI	0.924	≥0.90[a];
AGFI	0.825	≥0.90[a]; ≥0.80[b]
CFI	0.957	≥0.90[a];

Notes: [a]Acceptability: acceptable; [b]acceptability: marginal; RMSEA: root mean square error of approximation; GFI: goodness of fit index; CFI: comparative fit index; NFI: normed fit index; AGFI: adjusted goodness of fit index

Table IV The effects of interpersonal trust on KS and innovation capabilities

			Innovation capability		
Variable	*KS Model 1*	*PCI Model 2*	*PDI Model 3*	*PCI Model 4*	*PDI Model 5*
Control variable					
Firm size	0.172**	0.163**	0.232***	0.089*	0.170**
Firm age	–0.006	0.022	0.142**	0.079	0.200**
Industry type	–0.022	0.027	–0.026	0.022	–0.033
Independent variable					
TL	0.595***	0.625***	0.591***		
KS				0.650***	0.577***
R^2	0.429	0.491	0.605	0.515	0.586
Adjusted R^2	0.423	0.485	0.600	0.510	0.581
F	73.06***	93.81***	148.9***	103.2***	137.6***

Notes: ***$p < 0.001$; **$p < 0.05$; $N = 394$; PCI: process innovation; PDI: product innovation

supported. The findings also show that TL's influence on process innovation is more significant than its influence on product innovation (0.625 > 0.591).

Models 4 and 5 show that KS's effect on process innovation ($\beta = 0.650$; $p < 0.001$) is larger than its effect on product innovation ($\beta = 0.577$; $p < 0.001$). Thus, *H3a* and *H3b* are supported.

We examine the control role of firm age, firm size and industry type for innovation capabilities over 4 (Models 2-5). The results indicate that only the effect of firm size and on aspects of innovation is significant at *p*-value less than 0.01. It implies that firms with greater size will have greater potential to innovate their products and process.

4.2.2 Test of the mediating effect. Models 6 and 7 in Table V show that after KS has been added as a mediator between TL and process innovation (Model 6) and between TL and product innovation (Model 7), KS's effects on process innovation ($\beta = 0.429$; $p < 0.001$) and product innovation ($\beta = 0.348$; $p < 0.001$) are significant. However, for TL's effects, as compared with models 2 and 3, the direct effect of TL on process innovation decreases from 0.625 ($p < 0.001$) to 0.374 ($p < 0.001$) and its effects on product innovation decreases from 0.591 ($p < 0.001$) to 0.391 ($p < 0.001$); thus, KS partially mediates the effects of TL on two aspects of innovation capabilities (process innovation and product innovation).

Moreover, to provide evidence on the mediating roles of KS between TL and aspects of innovation capabilities, the paper implements further analyses to verify the magnitude and

Table V Test of mediating and moderating effects

Variable	Mediating effect: PCI Model 6	Mediating effect: PDI Model 7	KS: Model 8	KS: Model 9	Moderating effect: Process innovation Model 10	Moderating effect: Process innovation Model 11	Product innovation Model 12	Product innovation Model 13
Control variable								
Firm size	0.092*	0.176***	0.106*	0.092*	0.102*	0.089	0.182***	0.171***
Firm age	0.032	0.152**	−0.042	−0.027	0.05	0.018	0.128**	0.140**
Industry type	0.030	−0.024	0.005	0.010	0.037	0.041	−0.017	−0.073
Independent variable								
TL	0.374***	0.391***	0.362***	−0.234	0.411***	−0.135	0.416***	−0.82
Mediators								
KS	0.429***	0.348***						
Moderators								
POS			0.441***	−0.157	0.407***	−0.142	0.332***	−0.162
Interaction variable								
TL*POS				0.174***		0.157***		0.140***
R^2	0.591	0.665	0.552	0.537	0.596	0.583	0.674	0.664
Adjusted R^2	0.585	0.660	0.546	0.531	0.590	0.576	0.669	0.658
F	112.1***	154.0***	95.61***	90.00***	114.5***	90.17***	160.4***	127.5***

Notes: ***$p < 0.001$; **$p < 0.05$; *$p < 0.1$; N = 394; PCI: process innovation; PDI: product innovation

the statistical significance of the indirect effects. For statistical inferences as the suggestion of Preacher and Hayes (2008), we used the bootstrap confidence intervals method with 5,000 iterations to test the significance of indirect effects (see Table VI).

The results in Table VI indicated that the indirect effects of TL on process innovation (β = 0.275; $p < 0.001$) and product innovation (β = 0.223; $p < 0.001$) are significant within the range of confidence intervals. Thus, *H4a* and *H4b* are supported. In general, these findings are the first to confirm the mediating role of KS in the relationship between TL and innovation capabilities.

4.2.3 Test of the moderating effect. Models 8 and 9 are the test results on the moderating effect of POS between TL and KS. The results show that direct effect of POS on KS is significant (β = 0.441; $p < 0.001$). Especially, TL*POS has a significant effect on KS, with β = 0.174 ($p < 0.001$); therefore, *H5a* is verified (Figure. 2).

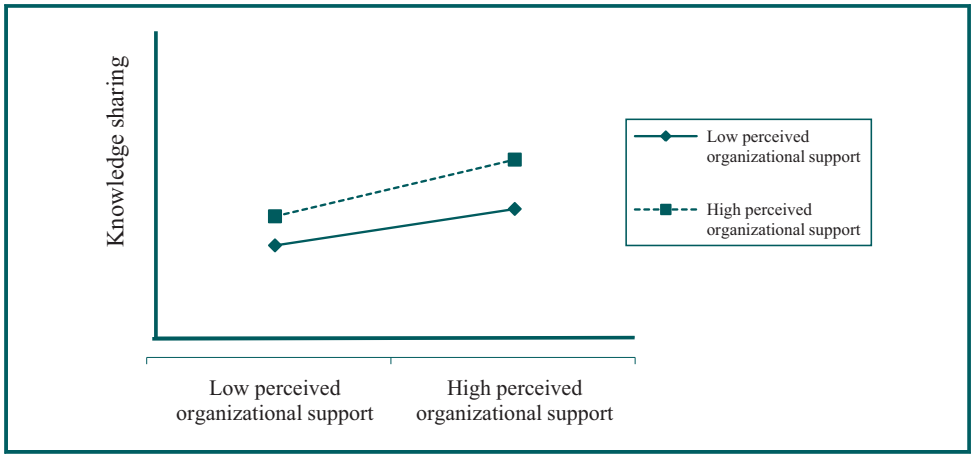
Models 10-13 are the test results on the moderating effect of POS between TL and aspects of innovation capability. The results show that direct effect of POS on process innovation (β = 0.407; $p < 0.001$) and product innovation (β = 0.332; $p < 0.001$) are significant. Moreover, TL*POS has significant effects on process innovation (β = 0.157; $p < 0.001$) and product innovation (β = 0.140; $p < 0.001$); therefore, *H5b* and *H5c* are

Table VI Confidence intervals of the indirect effects

Path	Direct effects	Indirect effects	Total effects	Bias-corrected confidence intervals: Lower confidence level	Bias-corrected confidence intervals: Upper confidence level
TL→KS→PCI	0.374***	0.275***	0.649***	0.221	0.334
TL→KS→PDI	0.391***	0.223***	0.614***	0.177	0.277

Notes: ***$p < 0.001$; TL: Transformational leadership; KS: knowledge sharing; PCI: process innovation; PDI: product innovation

Figure 2 The moderation effect of POS on the relationship between TL and KS



also confirmed. These results show that POS plays a positive moderating role between TL and innovation capabilities (Figures 3 and 4).

5. Discussions

Strengthening innovation capability has considered a key to open a door to firm's success. The current study reveals that TL has a positive influence on KS and thus significantly enhances firm's innovation capabilities. The assessment of the hypotheses developed in this paper significantly contributes to the theoretical and practical initiatives in the fields of innovation and knowledge management.

5.1 Theoretical contributions

Our study makes significantly contributions to theories of innovation and knowledge management in the following ways.

Figure 3 The moderation effect of POS on the relationship between TL and process innovation

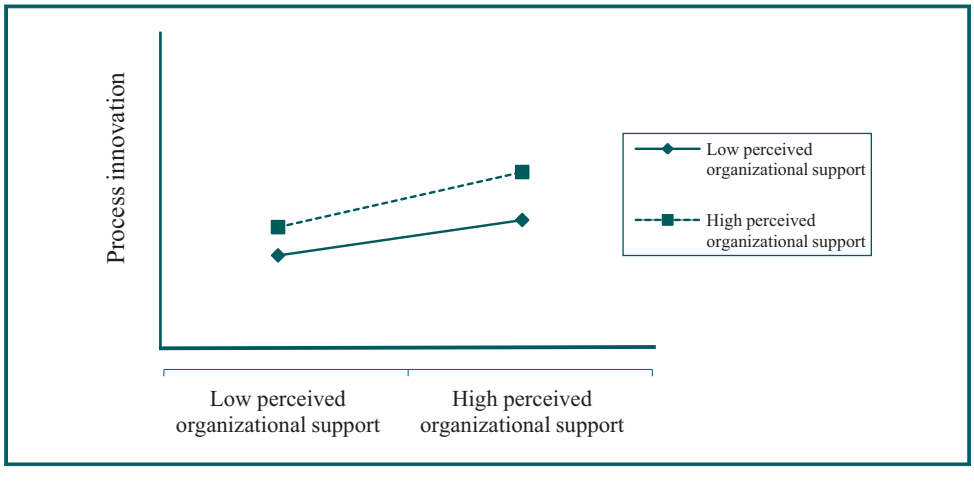
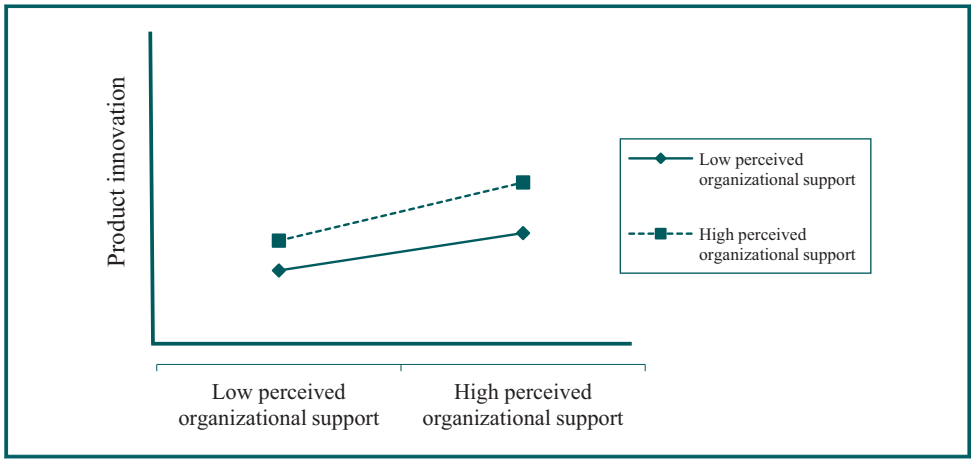


Figure 4 The moderation effect of POS on the relationship between TL and product innovation



First, although TL is regarded as one of the most effective leadership styles, TL-KS and TL-innovation relationships have received little research attention (Wang and Noe, 2010; Choi *et al.*, 2016; Le and Lei, 2017; Jia *et al.*, 2018). To fill the research gaps, this study proposes a research model to link TL with KS and two aspects of innovation capability. The empirical findings verify the significant influences of TL on KS and innovation capabilities. The findings imply that the TL practice might provide firms not only an appropriate climate to stimulate KS among employees, but also an effective pathway to positively foster firm's product innovation and process innovation.

Second, Anderson *et al.* (2014) supposed that knowledge is an essential ingredient for creativity but empirical studies on how this factor affects activities of creativity and innovation in the workplace are still scarce and limited. Choi *et al.* (2016) also called for exploring the KS's mediating mechanism between TL and innovation behaviors. To respond to calls of Anderson *et al.* (2014) and Choi *et al.* (2016), the paper has connected TL and two aspects of innovation capability based on mediating role of KS. The empirical findings verify that, KS that is an organization's strategic and invisible resource has positive and significant influences on two specific aspects of innovation capability (product innovation and process innovation). KS also serves as an effective mediator between TL and two specific aspects of innovation capability. These findings have also provided a clear answer to the Anderson *et al.*'s (2014) question: "What is the relationship between organizational resources and different types of organizational innovation?" In general, this study extends the integrative theory of the relationship of TL with innovation capabilities via the mediating role of KS and highlights the significant direct or indirect effects of TL on product innovation and process innovation through its positive effect on KS. The results revealed that TL motivates employees to share more knowledge, skill and expertise which result in improving innovation capability. Shared knowledge helps TL and employees respond to new information and external environment rapidly, fulfill the task in efficient manner, and solve existing problems, resulting in enhanced innovative capacity of employees (Choi *et al.*, 2016).

Finally, to respond to scholars for identifying clearer mechanisms of POS in moderating the organizational relationships, especially the relationship between TL and innovation activities (Choi *et al.*, 2016; Cheng and Yi, 2018), this study investigates the influence of POS on the effects of TL on product innovation and

process innovation. The empirical findings provide the evidence that POS positively moderates the relationship between TL and innovation capabilities. The findings significantly contribute to putting leadership and innovation literatures forward by introducing POS as the situational variable that interacts with TL to positively influence innovation capability. The findings reveal that TL's influences on KS and innovation capability may have differences in the effectiveness and results depended on the extent of employee's POS. More specifically, this finding implies that if leaders pay much attention on encouraging and providing the necessary help and resources for employees to share knowledge, and if employees perceive that the success in their goal and career are closely related to the success of KS, they will actively participate in process of sharing their expertise and knowledge, consequently increases firm innovation capability.

5.2 Practical contributions

Based on its theoretical contributions and the empirical analyses, this study provides a better understanding of the causal correlations among TL, KS and innovation capabilities. This study therefore has value to directors/managers in Chinese firms as a reference for practicing organizational supports, fostering KS activities and improving innovation capabilities in their firms. Specific managerial implications include the following.

First, the findings show that TL practice is the key solution to stimulate KS activities which in turn lead to innovation. TL practice might be the best way to build truth among employee (Le and Lei, 2017) which help to reduce the vulnerability and risk inherent in interpersonal ties at the workplace (Bligh, 2017). This will help to foster KS for innovation (Anderson *et al.*, 2014; Bligh, 2017). The paper has provided directors/managers a significant implication, practical guidance, and clear pathway leading to each aspect of innovation. More specifically, the findings indicate that both TL and KS are more significantly associated with process innovation compared with product innovation. The main reason may be that TL practice encourages employees freely in discussing and trying out innovative ideas, processes, procedures or structures (Jung *et al.*, 2003; Trung *et al.*, 2014); while KS among employees helps firms to develop more efficient manufacturing process or operation procedure (Maurer, 2010; Birasnav *et al.*, 2013; Alsharo *et al.*, 2017). Thus, focusing on TL practice will help directors/managers to build a culture of trust, to arouse and stimulate KS among employees for increasing innovation capabilities especially for process innovation.

Second, the empirical findings show that POS is very necessary to stimulate employees' willingness to share knowledge and innovation capabilities. The high degree of POS can increase the effects of TL on KS and innovation. Prior analysis has shown that external factors can enhance the level of KS and innovative behavior among employees (Chen, 2002; Choi *et al.*, 2016). Our findings complement previous research by revealing how POS strengths the effect of TL on KS and innovation capability. The findings are in line with the idea that employee's behaviors in KS and innovation is long-term work and needs external support to make it effective (Spreitzer, 1995). In this sense, employees might need significant financial or non-financial support, and POS can help in this juncture. We understand that POS provides critical conditions to encourage employees to share knowledge and to proactively renew firm's product and process.

Third, according to Griese *et al.* (2012), knowledge generation activities within an organization can produce to strategic resources and competences which permit firms to perform better than others and to achieve higher favorable outcome such as innovation performance. The findings stressed that KS is a driving force of innovation, and employees play a dominant role in the process of sharing knowledge. Thus, directors/managers should concentrate in finding the effective pathway and

appropriate method to create motivation that stimulates employees to positively and actively participate in KS process for innovation. For example: directors/managers can design a well-structured reward strategy to support employees to collect, share, and apply knowledge. The contents related to the employees' involvement in the knowledge management process should be integrated in the performance appraisal process (Birasnav *et al.*, 2013). Consequently, once employees apprehend that the success in their goal and career is closely related to the involvement in KS activities, they will actively share their key knowledge and expertise to turn personal knowledge into organizational or collective knowledge and positively contribute firm's innovation capabilities. Finally, by examining the influences of the control variables such as firm size, firm age, and firm type, we found that firm size is significantly correlated with firm's innovation capability. This implies that firms with greater capital and resources can have more opportunities and capabilities to renew their product and process. In line with this result, the research by Laursen and Salter (2004) noted that larger firms tend to spend huge amount of resources to perform research with universities and more time to train their employees to urge activities for innovation.

5.3 Limitations and directions for future research

Although the paper contributes significant understanding and values to the literature, it also has certain limitations. First, the cross-sectional design does not eliminate the possibility that causal correlation may emerge in the long term due to changes in the psychology and trust of individuals over time. A longitudinal study would overcome this limitation and consolidate the results. Second, knowledge is widely accepted as core and lasting resources enabling firms to innovate and sustain competitive advantage (Chen and Hou, 2016). This study has only focused on investigating the mediating role of KS (which is a key component in process of knowledge management) between TL and innovation capability. To have full understanding of important role of knowledge capital toward innovation capability of organizations, future works should test mediating mechanism of knowledge management process and its constituents (knowledge acquisition, KS, and knowledge application) between TL and specific aspects of innovation capability. Finally, the collectivistic essence of Chinese culture (Ma *et al.*, 2008) creates a challenge to the understanding of characteristics in KS between state firms and non-state firms and affecting innovation capabilities. To help directors/managers to have more understanding of factors, process, and mechanism affecting innovation, future studies should explore more deeply the relationship between latent variables by assessing the moderating roles of firm ownership forms which might influence the transformation of KS into better innovation.

6. Conclusions

The paper's findings provide significant theoretical and practical implications for literature on leadership, knowledge management, and innovation that can be used to analyze the relationships among TL, KS, and innovation capabilities. The findings verify the hypotheses that TL and KS have positive and significant roles in promoting product innovation and process innovation. The findings also provide the empirical evidences on mediating mechanism of KS between TL and innovation capabilities, as well as the moderating role of POS in the effects of TL on KS and innovation. Overall, the findings of this study differs from previous work and deepens understanding of the pathways and conditions to improve specific aspects of innovation capability namely product and process innovation by examining the mediating role of KS and moderating mechanism of POS. The paper highlights the important role of practicing TL style together with operating the appropriate, necessary and timely supports in

long time to help directors/manages to create a positive environment that facilitates KS activities and significantly contribute to enhancing innovation capabilities for their firms.

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Innovation and intellectual capital as intermediary variables among transformational leadership, transactional leadership, and organizational performance

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Abstract

Purpose – The purpose of this paper is to examine the mediating effect of intellectual capital and innovation on the relationship between transformational and transactional leadership and organizational performance in Jordanian banks located in Irbid city.

Design/methodology/approach – A questionnaire that targeted 350 respondents resulted in 298 usable ones with a response rate of 85.14 percent. To test the research hypotheses, a structural equation model was conducted, in addition to descriptive statistics that provided background on the respondents.

Findings – The findings indicate that transformational and transactional leadership relate positively to organizational performance. The results also support the argument that intellectual capital and innovation played mediating roles in transformational and transactional leadership and organizational performance.

Practical implications – The present study provides managers with empirical proof that possessing strong intellectual capital in its three dimensions seems to help the banking sector in Jordan to reinforce their ability to generate both radical and incremental innovation. Also, applying an effective leadership style will motivate and lead to superior performance.

Originality/value – Although papers have shown that leadership style is an important factor influencing employees' performance and outcomes, this is one of the few studies that investigates the interrelationships between leadership styles, intellectual capital, and innovation on organization performance. Furthermore, it is the first to test the model on the banking sector in Jordan.

Keywords Transformational leadership, Transactional leadership, Intellectual capital, Innovation, Organizational performance, Jordan

Paper type Research paper

1. Introduction

Due to changes, today's global economy has become multifaceted, dynamic, and competitive. These changes have caused the existence of discrepancies between the modern approach to value creation and the traditional method of monitoring operations. Furthermore, speedy changes in technology, progressively complex customers, as well as the prominence of innovation, have shifted the foundation of competition for many businesses from the conventional physical and financial resources to intellectual assets (Kamukama *et al.*, 2010). For most institutions, there is awareness that a viable resolution to a competitive

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environment is through the establishment of more efficient and strong institutions with the capacity to cultivate strategic assets that are firm specific (Kamukama and Sulait, 2017). Smriti and Das (2018) argued that a firm's resource-based view emphasizes sustaining competitive strategies by utilizing the resources present within an organization. Resources must possess certain characteristics including that they should be unique, inimitable, and irreplaceable and can be observed in the form of employees' skills and experiences gained over time and the organizational process. Such internal resources have the capability to generating wealth and are perceived as intangible assets or intellectual capital (IC) which entails that a strategic resource has been widely recognized as an essential force that pushes the expansion of business (Chahal and Bakshi, 2015). In organizations, IC has been found to influence their means for survival; IC has been reported to affect economic growth (Chahal and Bakshi, 2016), competitiveness, value creation, business performance, job performance, as well as sustainability (Obeidat *et al.*, 2017a; Alshurideh *et al.*, 2012; Abualoush *et al.*, 2018a). Innovation is essential for the survival of business. In fact, it is increasingly known to drive competition in today's business environments that are marked by uncertainties. As reported in past findings (Varadarajan, 2018; Wikhamn *et al.*, 2018), innovation contributes to superior performance and better problem resolution, in addition to being an added value to the organizations. Organizations should, therefore, embrace the notion of 'innovation' not only in their daily tasks but also in their management mechanisms (Obeidat *et al.*, 2017b). Notably, in today's free market economy, innovation is a matter of survival. For this reason, the generation of something novel-innovation is not a choice that organizations can choose not to make. Rather, for all organizations, innovation is a must. In this regard, organizations need to figure out ways of sustaining the obligatory level of renewal and generate competencies in being more creative and innovative. Innovation is now a great priority to all organizations (Buenechea-Elberdin, 2017). Subsequently, in an attempt to identify the drivers of innovation, numerous approaches have been proposed. These proposed drivers include the knowledge base of the organization, especially with regards to the IC which appears to be an exceptional resource for innovative performance. For many organizations, IC increases the organization's capacity of innovation, performance, as well as economic growth. As such, employees need to know IC usage to enable the enhancement of their innovation competence and organizational performance (Sivalogathasan and Wu, 2015).

Leadership is among the major functions of management of any organization considering that strong leadership can assist organizations in increasing their competitiveness. Leadership assists in aligning the people, timing, and resources to achieve the established organizational goals. Leadership refers to the relation formed between a leader and his followers (Keskes *et al.*, 2018). Leaders direct the behavior of their followers (Keskes *et al.*, 2018), and this is factored by the fact that top managers, who are the leaders, are in a central position. For this reason, the behaviors of leadership can influence the organizational innovation in a number of ways (Jia *et al.*, 2018). There are several types of leaders including transformational leaders and transactional leaders. Several attributes have been linked to transformational leaders. Among these include charisma, inspirational stimulation, and individualized concern. Arguably, the aforementioned attributes could impact the performance of the organization in a number of ways, which, contributes to better effectiveness as well as outcomes (Brandt *et al.*, 2016). On the other hand, transactional leadership takes into account the context that is agreed, accepted, or adhered by followers for the sake of praise, rewards, and resources or the avoidance of disciplinary actions. Arguably transformational and transactional leadership greatly contribute to innovation (Jia *et al.*, 2018).

An organization needs to supersede their rivals in terms of performance and to achieve this competitive advantage needs to be attained. Indeed, there are various methods for achieving the desirable competitive advantage and superior performance (Abdallah *et al.*,

2014). In order to improve performance, organizations need to establish and implement effective business strategies which allow the capturing of opportunities present within the marketplace while also capitalizing on the accessible resources and competencies (Obeidat, 2016). In this regard, due to the diversity of organizational resources, both tangible and intangible, organizations vary in terms of their performance. For this reason, organizations must have the awareness of the factors to be considered in pursuit to achieve superior performance (Masa'deh *et al.*, 2018). As such, the improvement of organizational performance is factored by the effective usage of both tangible and intangible resources (Mills and Smith, 2011).

However, while notable research has investigated the link between leadership, innovation, and IC on organization performance independently, yet past researchers infrequently integrated them. Moreover, previously mentioned interfaces were not tested in the Jordanian context. Thus, our objective is increasing the variables in the Jordanian banking sector. Indeed, the present study explores the impact of transformational and transactional leadership on IC, innovation, and organizational performance among banks operating in Jordan. In addition, this study also examines the impact of IC on organizational performance. The mediating effect of IC and innovation on the association between leaders and transactional leadership and organizational performance is scrutinized as well in this study. So far, there are yet empirical works that look into the aforementioned relationships in the Jordanian context. Moreover, the study derives its importance of being conducted in the banking sector in Jordan. For this reason, all potential opportunities need to be captured and exploited to achieve better organizational performance.

2. Literature review

2.1 Leadership, transactional leadership, and transformational leaders

In any organization today, leaders are the utmost prominent part. This is because leaders are the ones who establish the clear vision while strongly coaxing the followers to realize that set vision (Birasnav *et al.*, 2011). The leadership role is indeed significant in both the organization's success and failure. Accordingly, successful leaders can create well-being to all of the organization's interest groups, most notably to those who own the organization (Li *et al.*, 2018a). Leadership can be viewed as the interpersonal effect that is manifested by an individual within a circumstance, and directed by way of process of communication for achieving a quantified goal or goals. In this regard, the behavior or characteristics possessed by leaders are manifested by how they realize the goals and increase organizational performance. Among the styles of leadership highlighted in the literature, which are also particularly relevant to the context of this study, are transactional and transformational leadership styles (Van Dierendonck and Patterson, 2015; Keskes *et al.*, 2018).

Transactional leadership indicates a relationship between leaders and followers by responding to their own interests, the style of leadership in transactions is highlighted through the exchange between leaders and followers. This exchange depends on the leader who discusses and defines required tasks and duties and specifies the conditions and rewards attained by the followers upon completion of these tasks and duties, transaction leaders identify what to do, and the rewards for satisfactory completion of tasks (Bass and Avolio, 1994). It is also pointed out that the principal of transactions (in its simplest definition) is the exchange of reward for work (the psychological or material rewards granted by the president to his followers) which can be strengthened through the threat of punishment. This leadership style is developed with the idea that effective leadership must promote the behaviors of desired followers and eliminate unwanted behaviors by giving or preventing rewards and physical and psychological penalties (Bass and Bass, 2008). As mentioned by Bass (1996), transactional leadership encompasses three types: contingent reward, active

management-by-exception, and passive management-by-exception. In specific, contingent reward, which is a primary factor of motivation, encompasses the capacity and steadfastness of leader in clearly specifying his/her expectations to the followers in addition to clarifying the associated outcomes and benefits (Raziq *et al.*, 2018). In this regard, a project manager who guarantees reward to those who demonstrate extraordinary work can expect higher performance from the project team members (Raziq *et al.*, 2018). On the other hand, management-by-exception (active) encompasses managing quality. Here, the leader will attempt to preserve the organization's status quo. Inversely, in the context of management-by exception (passive), actions will only be taken following the emergence of problems (Mekpor and Dartey-Baah, 2017).

The concept of transformational leadership was popularized in the 1970s by the political sociologist Burns (1978), who sees transformational leaders as people who inspire their employees or followers to achieve a common vision or goal. He indicates, "This leadership occurs when one or more people interact in a way that makes leaders and followers motivate each other to achieve higher levels of motivation and morals." The style of this leadership depends on the ability of the leader to inspire followers to become more efficient and more ethical (Burns, 1978). Also, transformational leaders are seen to have characteristics that distinguish them from others. They are sophisticated, intellectually motivated, and always inspire their employees, who transcend their interests to achieve the vision of their organization. They are able to demonstrate the abilities of their followers and inspire them to pursue a better future (Bass, 1985). Typically, transformational leadership emerges in times of change and distress, a pattern of transformational leadership emerges when leaders are increasingly interested in their staff, creating awareness of duties and missions for teams or groups, and providing incentives to staff to prioritize work over personal interests. This has been achieved through several methods: intellectual staff motivation, creation of innovative and logical solutions to their problems, and emphasizing that difficulties can be turned into problems that can be solved, in addition to the provision of a vision and gaining trust and respect, which allows transformational leaders to meet the emotional needs of their employees. Despite the differences between them (Bass, 1990), Bass (1985) has adopted the term "transformative" and studied how it affects motivation and performance for both staff and followers. Thus, the capacity of transformational leader is measured by his influence on his followers. By offering an inspirational vision to the followers, it provides them with the feeling that they are motivated and excited to work. Avolio *et al.* (2009) presented four primary dimensions of transformational leaders as follows: idealized influence, inspirational motivation, intellectual motivation, and individual consideration. In detail, the dimension of idealized influence (charisma) is associated with leaders who behave like a role model, exhibit an impression of power and confidence, make very powerful decisions, show high morality, and act based on deep values and beliefs (Khalili, 2016). The dimension of inspirational motivation was explained by Brandt *et al.* (2016) as comprising leaders who eagerly and confidently construct a vision for the future and kindle the exact feelings among followers. The dimension of intellectual stimulation was elaborated by Yao *et al.* (2014)that it encompasses leaders who encourage followers to increase their innovativeness and creativity through the scrutiny of assumptions and application of a number of approaches for problem resolution. Lastly, the dimension of individualized consideration is linked to the sensitivity of leaders toward the competencies of followers in identifying what these followers require for future development while accounting for the individual difference of these followers (You-De, 2013; Yao, 2014).

2.2 Intellectual capital

As can be seen in many past relevant studies, the concept of IC is regarded as an invisible but valuable asset, and the most potent competitive weapon impacting the performance of

organization (Abualoush *et al.*, 2018b). The establishment of IC is majorly underpinned by the knowledge, creativity, expertise, and valuable skills possessed by humans. It is a common knowledge that IC is a significant part of the knowledge-based economy. In fact, considering that it plays a prominent role in all aspects of administration increasing the importance and effectiveness of management, IC is now regarded as core to the administrative process (Sivalogathasan and Wu, 2015; Cabrilo and Dahms, 2018).

According to Stewart (1997), intellectual capital is a concept that is associated with the accrual of all knowledge, skills, and expertise possessed by employees, which greatly contribute to the attainment of competitive advantages. Edvinsson and Sullivan (1996) perceive IC as the knowledge assets which are convertible into value. In another study, IC is viewed as comprising the overall knowledge resources both in and out of the organization (Hsu and Sabherwal, 2011). Smriti and Das (2017) specify IC is regarded as comprising the knowledge, proficiency, and commitment exhibited by the staff of an organization.

To fully exploit the material resources of the organization and achieve the set goals, it is important to manage IC. According to Kim *et al.* (2011), IC comprises non-financial assets which will ultimately bring future benefits. IC equally comprises all intangible assets, and knowledge efficiently utilized in creating value and economic performance, and in achieving competitive advantage (Youndt *et al.*, 2004). These assets and knowledge include databases, information, expertise, professional skills, customer relationships, and organizational structures (Cisneros and Hernandez-Perlines, 2018).

In the work by Bontis (1998), IC was classified into three components as follows: Human Capital (HC), Structural Capital (SC), and Relational Capital (RC). HC comprises the knowledge that employees bring home with them after their work shift is over. HC includes experience, competencies of innovation, expertise, team effort, tolerance, satisfaction, employee flexibility, motivation, learning ability, education, loyalty, and formal training (Obeidat *et al.*, 2018; Zawaideh *et al.*, 2018). SC comprises the knowledge which stays with the company after the employees leave, and generally, it encompasses all company knowledge which is not taken by employees. SC includes corporate culture, organizational routines, procedures, databases, systems (Bontis and Serenko, 2009), information technology, innovation, product innovation, process optimization, as well as explicit knowledge (Kamukama and Sulait, 2017). It also comprises the non-human store rooms containing the organization's intangible value. SC is also associated with the established knowledge and classified experience stored in databases, patents, manuals, structures, systems, and processes (Abualoush *et al.*, 2018b). RC encompasses the relations between the organization and the external stakeholders which include partners, clients, and suppliers (Han and Li, 2015). Similar to SC, RC is also an intangible asset, and RC is grounded upon the construction, maintenance, and the promotion of high quality relations with any organization, individuals, or groups that are known to impact the organization's business (Kamukama and Sulait, 2017).

2.3 Innovation

Innovation greatly impacts survival, competitiveness, and growth of organizations, and the desired effect of innovation on customer satisfaction, employee productivity, service quality, market value, and share of the firm, as well as on customer retention. Innovation also has the potential to generate economic value for the organization, thereby increasing their profits and enhancing and improving their performance (Martínez-Pérez *et al.*, 2016). Schumpeter (1934) described innovation as "the creation of new possibilities for additional value added, taking into account not only the typical product/process innovation of manufacturing but also market, organizational, and resource input innovation," innovations are functions of "creative destruction" (Schumpeter, 1934, p. 2483), which challenges market equilibriums and provides new opportunities for

exploration and revitalization by existing and new firms (Wikhamn *et al.*, 2018). Innovation is defined as "the initiation, adoption and implementation of ideas or activities that are new to the adopting organization" (Nelson and Winter, 1977). Innovation can also be defined as the generation and creation of new knowledge and ideas to facilitate new business outcomes, aimed at strengthening business processes and internal structures, and developing competitive market products and services (Masa'deh *et al.*, 2017). Specifically, innovation is a process that identifies opportunities for producing new services or products. Innovation is the adoption of new ideas and knowledge to develop and improve new products. The quality of innovation is used to maintain survival, growth, and a competitive position; therefore, knowledge resources are required to produce innovation in order to achieve superior performance (Subramaniam and Youndt, 2005). On the other hand, innovation is a new idea being achieved in a new product, process, or service, resulting in increased job opportunities as well as creating value for the innovative business organization (Cheng and Chen, 2013; Martínez-Pérez *et al.*, 2016). Afuah (1998) defined innovation as the generation of new knowledge into integrated products, processes, and services. Innovations are viewed according to technological, logistic, and administrative/organizational characteristics. The organizational structure provides the internal configuration that includes communication flows and resources needed for innovation to happen. Thus, organizational capacity provides enterprises with the inputs required for innovation, which in turn can provide the organization with superior performance. For any organization, innovation is deemed as key in the attainment of sustained success and economic growth (Jia *et al.*, 2018). Innovation is new knowledge that is integrated in products, processes, and services. In the context of organization, innovation comprises a technology, strategy, or practice of management employed for the first time, irrespective of whether it has been used before by the organizations or users, or as an important restructuring or improvement within a given process (Varadarajan, 2018). Innovation is also a production of a novel idea alongside its application on a new product, process, or service, which contributes to the economic expansion, increased employment, and profit generation (Afuah, 1998). Furthermore, innovations are classified as incremental and radical (Afuah, 1998). These types of innovation are discussed next.

Incremental innovation offers novel features, benefits, or enhancements in an existing technology (Alonso and Bressan, 2016). It can also be described as an adaptation, fine-tuning, or improvement of an already available product in the markets. Similarly, this type of innovation comprises small tweak in technology, simple product improvements, or line extensions that enhance the present performance but only very slightly (Alonso and Bressan, 2016). In other words, incremental innovation denotes gradual enhancements in the characteristics of products and processes that are already in the market (Moreno-Luzon *et al.*, 2013; Varadarajan, 2018).

Radical innovation relates to a new product that includes a significantly distinct basic technology and offers considerably greater customer benefits as opposed to past products (Varadarajan, 2018). This type of innovation is associated with products or processes that are completely new. Hence, for these products and processes, new knowledge is needed to enable organizations to satisfy fresh customers or developing markets (Moreno-Luzon *et al.*, 2013). Radical innovations comprise a blend of knowledge which is totally new without linkage to the present technologies, processes, and practices. As opposed to incremental innovations, radical innovations are rare as well as more difficult to occur. Still, the impact imparted by radical innovations is stronger on the long-term success of the organization and on the expansion of markets and industries. For this reason, radical innovation is regarded as high-risk and high-return (Ritala *et al.*, 2018). In the context of organization, radical innovation denotes move from the current practices to the new ones, whereas incremental

innovation implies small betterments or amendments from the existing products or practices (Green and Cluley, 2014).

2.4 Organizational performance

The notion of organizational performance can be simply explained as a cumulative output of all the organization's performed activities. It also entails an accrual of multidimensional constructs which are impacted by various organizational strategies and activities. Superior performance is reliant on the "fit" quality between the strategic orientation of the organization and the resources that it possesses (Masa'deh *et al.*, 2016). It is also reliant on the capacity of the organization in being good at innovation, in safeguarding its intangible knowledge assets, as well as in using these assets (Luxmi, 2014). Organizational performance is viewed as the organization's capacity in accessing and handling a variety of organizational resources for the attainment of its goals and objectives (Smriti and Das, 2018).

Scholars generally agree that a system of performance measurement is necessary for organizations since it makes available to the organization the information regarding their operation quality, assists in the strategic plans development, and assesses the fulfillment of organizational goals (Obeidat and Otibi, 2015). Accordingly in this study, the Balance Scorecard (BSC) approach has been chosen for measuring the banking performance. BSC has been chosen for the purpose because it includes both financial measures which entail measurement according to financial metrics and non-financial measures which measure the customers, internal process, and perspectives of learning and growth. As detailed by Kaplan and Norton (1992), with respect to these non-financial measures, measure of customers measures what really matters to the customers, measure of internal process measures the vital internal processes that organizations must achieve in order to implement their strategy, and measure of learning and growth perspectives concerns with the establishment of consistent improvement in products and processes and the generation of long-term growth (Wu and Lu, 2012; Mohammad *et al.*, 2013; Mehralian *et al.*, 2018).

3. Framework and research hypotheses

3.1 Research framework

Based on the literature review above, the research model was developed and its framework is depicted in Figure 1. The framework includes the impact of two types of leadership, IC on innovation, and in turn on organization performance.

3.1.1 Leadership and intellectual capital. Effective leaders are those with the awareness regarding the value of staff development that is required for enabling change. In order to assure viable IC growth, a lot of organizations invest in employee development (Mekpor and Dartey-Baah, 2017). Leadership strongly affects intangible assets. For this reason, in any organization, leadership is regarded as a crucial element. Primarily, leadership holds the human capital enterprises. Somehow, when construed as a procedure for leadership improvement, leadership becomes an IC constituent. As such, leadership directs the attention of a person toward human interaction alongside their behavior and capital. Leadership also denotes the positive link between leadership and IC. Here, leadership enhances an organization's IC and this brings to profit creation as it safeguards the organization's competitive edge over its rivals in the market (Kumari *et al.*, 2015). In several studies (Bass, 1996; Ilies *et al.*, 2007), leadership is viewed as the capacity in leading, motivating, inspiring, intelligently boosting, endorsing, articulating goals clearly, and showing desirable experiences of followers. Effective leaders may make sure that the values embraced by employees are in alignment with those practiced within the organization. These leaders also provide productive feedback while also easing the retention of important people.

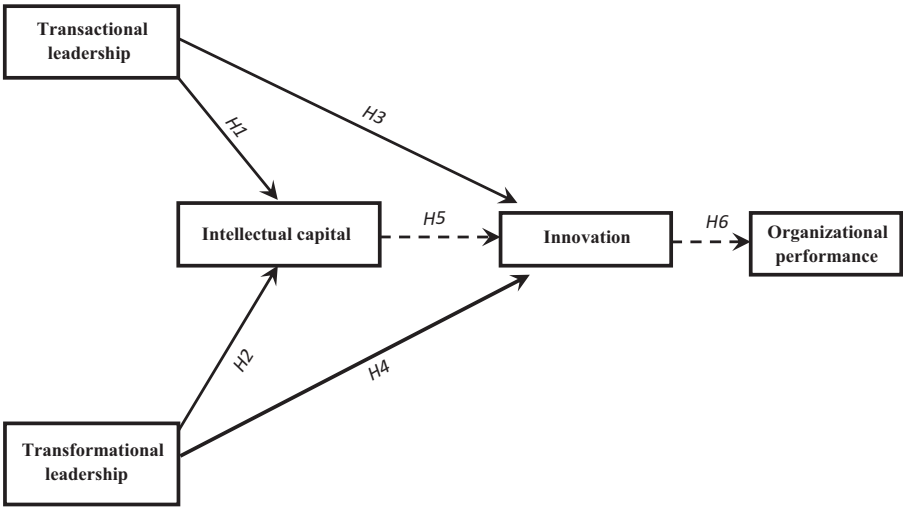

Figure 1.
Research model

Hence, Hadijah *et al.* (2015) stated that such leaders would generally be able to use the needed cultural changes in facilitating the alignment of value in the organizations, it is important that leaders make available the feedback on diverse performance aspects of the followers, particularly those that may impact their self-efficacy, improve job satisfaction, and recognize the areas of improvement. In addition, feedback could enhance job performance, organizational attitudes, autonomy, self-awareness, commitment, self-esteem, potential of learning, growth, and human capital (Kumari *et al.*, 2015).

As mentioned by Nemanich and Keller (2007), inspirationally motivating leaders would adjust the ability of employees in attaining the set goal or in attaining job performance for achieving the established organizational vision. Meanwhile, transformational leaders stimulate the individual and team spirit among employees through the display of enthusiasm and optimism towards employees by way of training, support, and encouragement. This results in improved performance among employees. Such leaders also generate high return on leadership and human capital. According to Megheirkouni (2017), intellectually motivating leaders would encourage employees to resolve task-oriented problems using innovative and different methods. Hence, leaders of this type would motivate their employees to contest the beliefs and values embraced by the organization. Petrović *et al.* (2017) mentioned that such leaders would promote the competencies of the employees in analyzing and resolving the problems in the organization. As such, leaders boost the professional growth of employees which in turn facilitates the achievement of human capital benefits (Birasnav *et al.*, 2011). Based on these arguments, it is hypothesized that:

H1. There is a positive effect of transactional leader on intellectual capital.

H2. There is a positive effect of transformational leadership on intellectual capital.

3.1.2 Leadership and innovation. In preserving competitiveness and sustainability in the cutthroat and turbulent business environment today, organizations are compelled to invest in creativity and innovation. For this reason, organizations also need to pay attention to the perception of their employees towards the leadership, practices, and policies of the organization which could boost or impede creativity and innovation in the organization. In this regard, employees become the enablers of creative and innovative outputs.

For organizations, creativity and innovation appear to be the most crucial ability for organizations in developing their competitive advantage (Khalili, 2016). The leadership style exhibited by a manager is a primary element of success to any organization. Hence, the use of apt styles of leadership by the manager can improve the productivity and innovation of employees (Li *et al.*, 2018b).

A persuasive and effective leader appears to be the one with the capacity to design, establish, and commercialize the human and social capital (Makri and Scandura, 2010). In fact, this type of leader could stimulate and exploit the talents residing within the organizations and universities for the purpose of nurturing creativity and innovation. Somehow, it is rare to find such leaders (attain high performance using better strategic styles of leadership) (Vargas, 2015). The innovation process of followers can be directly and indirectly impacted by their leaders via motivation and needs of higher level. In particular, these leaders indirectly make available conducive environment to enable the employees to exercise their creativity without worrying about negative outcomes (Makri and Scandura, 2010).

Transformational leadership is significantly and positively linked to organizational innovation, while the climate of the organization has been used as a mediating variable which lends support to knowledge creation and innovation (Makri and Scandura, 2010). Leaders who embrace transactional leadership attempt to exchange interests with employees, implying that better performance on the side of the employees would result in them receiving conventional rewards, while low standard of performance would result in punishments or less amount of returns (Yahaya and Ebrahim, 2016). Both transactional or transformational styles of leadership, as well as the combination of both, can significantly impact creativity and innovation (Vargas, 2015). From the theoretical and empirical viewpoint, the transactional style of leadership stimulates innovation, learning process, high performance, and competitiveness of the organization (Makri and Scandura, 2010). A leader understands his position when he can have the impact and power on the followers. A leader utilizes his power to effectively attain the goals set by the organization. In this regard, it is termed as leadership management. As stated, leaders do things that are perceived as right while managers do things in the manner that is correct. Accordingly, the important qualities of a leader include the following: communication, creativity, determination, boosting changes, adaptability, initiative, innovation, and vision. It is important that leaders could lead and adapt their approach to the followers so that they could achieve the set goals and the sought after outcomes. The task entrusted to the leader is to execute change in the organization (Kara *et al.*, 2018). Based on that, we propose the following hypothesis:

H3. There is a positive effect of transactional leadership on innovation.

H4. There is a positive effect of transformational leadership on innovation.

3.1.3 Intellectual capital and innovation. To have better innovation, organizations need to pay attention to the way they handle the intangible resources including how they manage their IC. IC is regarded as an organization's crucial resource for performance as well as for its capacity in innovating, generating, and maintaining competitive advantage (Cabrilo; Dahms, 2018). In an organization, there are three capitals that ease its innovation; namely human capital, structural capital, and relational capital (Chahal and Bakshi, 2015). Accordingly, innovation encompasses the knowledge outcome which allows an organization to cultivate competitively valuable competencies. Furthermore, in today's environment, organizations that desire to constantly improve their IC can maintain their competitive advantage. In addition, the development of IC speeds up innovation, and this will consequently increase the learning ability of organization members.

Innovation may require knowledge, skills, and capabilities of human capital (Subramaniam and Youndt, 2005). Human capital has explicit and implicit knowledge

through interactions between other employees, leaders, technological, material and other resources of the organization, these individuals keep to gain and increase their knowledge through interaction and learning experiences by performing their tasks, and social networking with various individuals within and outside the organization. Knowledge, skills, abilities, and experiences are the components of human capital that constitute new ideas and effective knowledge of the results of innovation (Han and Li, 2015). In addition, human capital is one of the unique and distinguished assets that make the organization gain competitive distinction because of their specialized knowledge, which contributes to the development of new ideas, products and services, which are difficult to replicate and imitate by other organizations (Obeidat *et al.*, 2016). The diversity of human capital expertise, skills, ideas, and experiences is a great source of innovation, and therefore the inability to employ experienced and skilled staff can deprive the organization of subsequent innovations, well-trained staff with distinctive skills, talent, and experience in support of the development of new products and services. Human capital with good skills is essential, so management support with well-trained human capital helps the organization develop procedures for developing and implementing new ideas and innovations (Varadarajan, 2018). Innovation depends on any change in products, services, or processes, and therefore depends on the knowledge spread throughout the organization (Sivalogathasan and Wu, 2015). Knowledge of the company plays an important role in innovation, where knowledge is present in many sites and is widespread within the company and is available in information systems, databases, and patents. This knowledge of the organization is known as the structural capital of the organization (Obeidat *et al.*, 2017). Structural capital is the structural elements that refer to processes, learning elements, and practices that demonstrate the organization's ability to acquire, share, and exploit external knowledge. If the organization wants to achieve its objectives and strategy (Mohammad *et al.*, 2013), it cannot separate human capital from structural capital (Bontis, 1998); this is because structural capital combines knowledge gained by employees. Thus, allowing the transformation of ideas into innovations. Structural capital forms the organizational infrastructure through which human capital can create innovation. Relational capital refers to the establishment and development of relations with external parties or partners associated with the organization. Thus, it includes diverse factors, cooperation with external partners, and marketing capacity (Mohammad *et al.*, 2013). Efficiency of the exchange of information, and the process of combining producers and customers depends on the skills and expertise of team members in the process of innovation, this means that a company with strong human capital is better able to collect and store market information through relationships with customers and external parties. In view of more direct human capital, contact with customers for research and development is very important for innovation. In addition, the capacities of organizations are changing and being exploited (such as customers, suppliers, and competitors) to generate new knowledge and creative ideas (Kumari *et al.*, 2015). Improved communication processes lead to information and knowledge exchange in organizations to scan their environment for innovative new technologies to promote innovation, which is enhanced with customers and suppliers to overcome risks related to innovation development (Mention and Bontis, 2013). Therefore, the following hypothesis is formulated:

H5. There is a positive effect of intellectual capital on innovation.

3.1.4 Innovation and organizational performance. Organizations in pursuance of manufacturing flexibility need to have innovation competencies to improve their organizational performance (Ho, 2011). Also, process innovation imparts bigger impact on conflict resolution among employees. Nonetheless, product innovation appears to impart bigger effect on organizational performance (OP). Meanwhile, knowledge sharing improves the capacity of innovation, and this eventually facilitates organizations in their effort to

achieve their goals. A correlation between innovation and organizational performance is therefore proven (Green and Cluley, 2014). Philipson (2016) noted that there is acknowledgment that radical innovation could lead to better business performance and competitive advantage. Comparatively, incremental innovation provides only slight upgrades to the already available product. In general, incremental innovation strengthens the control of established organizations (Yunus, 2018). Incremental innovation could be compelled by scarcity of resource, but it could also happen as can be expected in organizations that embrace a culture that strives for excellence. Products that are always improved appear to be a factor that enables an organization to lead the market for a long time. Incremental innovation is distinct from radical innovation in a sense that it does not call for a major change in the technology used in the organization. Furthermore, incremental innovation allows organizations to preserve their principal concepts and even strengthen their existing competencies to initiate or implement incremental innovation (Yunus, 2018). Therefore, the hypothesis is developed as follows:

H6. There is a positive effect of innovation on organizational performance.

4. Research methodology

4.1 Population and sampling

A survey questionnaire was used to gather the data in the study. Prior to the survey execution, five lecturers were invited to review the instrument (questionnaire). Three of these lecturers were from the Management Information Systems department at Irbid National University while the other two were lecturers in knowledge management and IC. The review allowed for the identification of problems particularly in terms of language use, content, and question ambiguity. Several augmentations were made following the review. These changes were in accordance with the suggestions made by these lecturers. Then, in a pilot study, a total of eight sets of revised questionnaires were distributed to eight banking employees in Irbid city, Jordan. Several more changes were made, particularly to the items in the questionnaire, based on the feedback obtained from the pilot study.

A total of 350 banking employees were chosen as sample in this study. The amount chosen is based on the size of the target population which comprises 982 employees employed in banks in Irbid city as reported in the Association of Banks in Jordan (2018, www.abj.org.Jo).

The questionnaire was distributed to the sample of the employees in the banks operating in Irbid city. It was distributed in a limited geographical area and one service sector, the banking sector. This was for several reasons; the most important was that most of the related literature in the context of the research focused on the sample of the study or the distribution of questionnaires at the headquarters of companies without taking into account the other branches that expanded in the other geographical areas in Jordan. The researcher wanted to explore the views of the study sample in the areas outside the headquarters of the organization, whether the branches get as much attention as they get in the headquarters, and whether leadership is involved in the development of IC in these branches, thereby, providing innovative services that have better performance. On the other hand, the study sample was selected for several reasons related to the nature of the data collection. The time taken in the distribution of questionnaires to the sample of study is significantly shorter because the study population is very large, especially if it is distributed in all branches of banks in all regions of Jordan. In addition, the speed of implementation of the study and more accurate result acquiring, and uniformity of the study sample are required so the sample can be representative of the study. According to Sekaran and Bougie (2016), the size of the sample depends on the size of the study population. Therefore, the number of questionnaires distributed to the sample of the study represents the whole and real sample of the study. It is

worth mentioning that the questionnaire was distributed in a simple random sampling method. Nonetheless, the aim of this research was to distribute 350 sets of questionnaires to 25 banks in Irbid city. Out of the distributed sets of questionnaires, 298 usable ones were received, while the remaining 52 could not be processed. Hence, the achieved rate of response was 85.14 percent (298/350). Accordingly, the information regarding the number of Jordanian bank's employees is exhibited in the table below.

The sample size of this study was determined based on the rules of thumb for using SEM within AMOS 21 in order to obtain reliable and valid results. Kline (2010) suggested that a sample of 200 or larger is suitable for a complicated path model. After eliminating the incomplete surveys, our sample size was 298 employees which met the recommended guidelines of Kline (2010), Krejcie and Morgan (1970), and Pallant (2005). The demographic data of the respondents are reported in Table I.

As indicated in Table I, the demographic profile of the respondents for this study shows that, the ratio of males is more than females. Most respondents hold a Bachelor and Master's degree (93.3 percent; 6.4 percent) respectively, 65.8 percent considered as low level management, and 23.2 percent of them have experience between 10 and 15 years.

4.2 Measures

As indicated earlier, this study primarily employed a survey questionnaire as data collection tool. There are two parts to the questionnaire as follows: part one covers the items on the demographics of the respondents which comprise of the respondent's gender, education level, position, and years of experience; part two contains items that measure the variables highlighted in this study, namely, leadership style (transformational and transactional leadership); intellectual capital (human capital, structural capital, relational capital); and innovation (radical and incremental); and organization performance.

With respect to part two of the questionnaire: the construct of leadership is measured using 10 items which denote two dimensions namely transformational and transactional leadership. A five-point Likert scale (1—strongly disagree, 5—strongly agree) was used to measure each item. The five items measuring transformational leadership were adapted from (Masa'deh *et al.*, 2016, 2018), while the five items measuring transactional leadership were adapted from (You-De *et al.*, 2013; Masa'deh *et al.*, 2016). The construct of intellectual capital,

Category	Category	Frequency	Percentage (%)
Gender	Male	175	58.7
	Female	123	41.3
	Total	298	100
Education level	Bachelor	278	93.3
	Master	19	6.4
	Doctorate	1	0.3
	Total	298	100
Management level	Top	12	4.0
	Middle	90	30.2
	–	196	65.8
	Total	298	100
Experience	Less than 5 years	65	21.8
	5 to less than 10 years	133	44.6
	10 to less than 15 years	69	23.2
	15 years and above	31	10.4
	Total	298	100

Table I.
Demographic data for respondents

which is represented by three dimensions namely human capital, structural capital, and relational capital, was measured using 15 items. A five-point Likert scale (1—strongly disagree, 5—strongly agree) was used to measure each item. The five items measuring human capital were adapted from (Bontis, 1998; Abualoush *et al.*, 2018a), while the five items measuring structural capital were adapted from Hussinki *et al.* (2017) and Kamukama and Sulait (2017), whereas the five items measuring relational capital were adapted from Hussinki *et al.* (2017) and Kamukama *et al.* (2010). Further, the construct of innovation, which is represented by two dimensions namely incremental innovation and radical innovation, is measured using 6 items. A five-point Likert scale (1—strongly disagree, 5—strongly agree) was used to measure each item. The three items measuring incremental innovation were adopted from Wang and Chen (2013), whereas the three items measuring radical innovation were adapted from Agostini and Nosella (2017). The construct of organizational performance is also measured in this study. Accordingly, this construct is measured using 12 items that signify four dimensions. The BSC approach is used in this study in measuring banking performance. A five-point Likert scale (1—strongly disagree, 5—strongly agree) was used to measure each items. The items were based on Wu and Lu (2012) and Mohammad *et al.* (2013).

5. Data analysis and results

In order to explore the associations among employees' Transformational Leader, Transactional Leader, Human Capital, Structure Capital, Relational Capital, Radical Innovation, Incremental Innovation, Financial Perspective, Customer Perspective, Internal Process Perspective, and Learning and Growth Perspective, in which these variables have been measured using 5-points Likert scale that varies between strongly disagree = 1 and strongly agree = 5; reliability and validity analyses were conducted, descriptive analysis was used to describe the characteristic of sample and the respondent to the questionnaires besides the independent and dependent variables. Also, SEM analysis was employed to test the research hypotheses. Table II shows the measured constructs and the items measuring each construct.

5.1 Descriptive analysis

In order to describe the responses and thus the attitude of the respondents toward each question, they were asked in the survey how the mean and the standard deviation were estimated. While the mean shows the central tendency of the data, the standard deviation measures the dispersion which offers an index of the spread or variability in the data (Pallant, 2005; Sekaran and Bougie, 2013). The level of each item was determined by the following formula: (highest point in Likert scale lowest point in Likert scale) / the number of the levels used = (5−1) / 5 = 0.80, where 1–1.80 reflected by "very low", 1.81–2.60 reflected by "low", 2.61–3.40 reflected by "moderate", 3.41–4.20 reflected by "high", and 4.21–5 reflected by "very high". Then the items were being ordered based on their means. Tables III and IV show the results.

5.2 Measurement model

A Confirmatory Factor Analysis (CFA) was conducted to check the properties of the instrument items. The measurement model indicates how latent variables or hypothetical constructs are assessed in terms of observed variables and embodies the validity and reliability of the observed variables' responses for the latent variables (Bagozzi and Yi, 1988; Hair *et al.*, 2006). Table V shows different types of Goodness-of-Fit indices in assessing this study's initially specified model. The results of the model CFA indicated that the chi-square (χ^2) value of the model was 1289.091, with 675 degrees of freedom ($p < 0.05$), which implies

Construct	Measurement items
Transformational leader (TL)	TL1: My manager encourages me to take challenges
	TL2: My manager encourages me to think about problems from a new perspective
	TL3: My manager displays a sense of power and confidence
	TL4: My manager helps me to strengthen my abilities
	TL5: My manager spends time coaching and teaching me
Transactional leader (TC)	TC1: When I am unable to complete my work, my manager reprimands me
	TC2: My manager precisely records any of my mistakes
	TC3: My manager gives me what I want to exchange for my hard work
	TC4: My manager tells me that I can get special rewards when I show
Human capital (HC)	HC1: Our company employees are highly skilled
	HC2: Our company employees are creative and bright
	HC3: The employees of our company have the ability to develop new ideas and knowledge
	HC4: The company's employees have high experience in their jobs
Structure capital (SC)	SC1: Our company has efficient and relevant information systems to support business operations
	SC2: Our company has tools and facilities to support cooperation between employees
	SC3: Our company has a great deal of useful knowledge in documents and databases
	SC4: Our company invests a high proportion of its money in patent maintenance
Relational capital (RC)	RC1: Our company and its external stakeholders—such as customers, suppliers, and partners—understand each other well
	RC2: Our company is interested in achieving the satisfaction and loyalty of customers and maintains good relations with them
	RC3: Our company and its external stakeholders frequently collaborate to solve problems
	RC4: Cooperation between our company and its external stakeholders runs smoothly
Radical innovation (RI)	RI1: Our company has introduced new product generations
	RI2: Our company has used new distribution channels
	RI3: Our company has opened new markets
Incremental innovation (II)	II1: Our company has the capability of innovations that make the prevailing product/service lines obsolete
	II2: Our company has the capability of innovations that fundamentally change the prevailing products/services
	II3: Our company has the capability of innovations that make the existing expertise in prevailing products/services obsolete
Financial perspective (FP)	FP1: Increase sales growth rate
	FP2: Increase net profit margin
	FP3: Reduce total cost of the company
	FP4: Increase return on assets
Customer perspective (CP)	CP1: Satisfy needs of various types of customers
	CP2: Increase customer intention to purchase
	CP3: Increase customer satisfaction
	CP4: Increase market share
Internal process perspective (IP)	IP1: Increase operating efficiency
	IP2: Reduce customer complaint
	IP3: Improve the ability to retain old customers
	IP4: Improve the ability to confirm target customers
Learning and growth perspective (LP)	LP1: Improve employee's problem-solving ability
	LP2: Improve employee's service quality
	LP3: Improve employee's intention to learn
	LP4: Effectively promote corporate culture

Table II.
Constructs and measurement items

Type of variable	Variables	Mean	Standard deviation	Level	Order
Independent variables	Transformational leader	3.40	0.90	Moderate	1
	Transactional leader	3.31	0.83	Moderate	2
Mediating variables	1. Intellectual capital	3.58	0.53	High	
	Intellectual capital: Human capital	3.64	0.68	High	2
	Intellectual capital: Structure capital	3.39	0.61	Moderate	3
	Intellectual capital: Relational capital	3.71	0.66	High	1
	2. Innovation	3.67	0.51	High	
	Innovation: Radical innovation	3.72	0.58	High	1
	Innovation: Incremental innovation	3.62	0.59	High	2
Dependent variable	Organizational performance	4.01	0.35	High	
	Financial perspective	3.72	0.65	High	4
	Customer perspective	3.85	0.59	High	2
	Internal process perspective	3.81	0.56	High	3
	Learning and growth perspective	4.66	0.26	Very high	1

Table III.
Overall mean and standard deviation of the study's variables

that the measurement did fit the data well. The other model fit indices used for this study were the χ^2/df (1289.091/675 = 1.909; threshold less 3 for a serious viewpoint or less 5 for acceptable criteria), the Incremental Fit Index (IFI) of 0.91, Tucker-Lewis Index (TLI) of 0.87, Comparative Fit Index (CFI) of 0.90, the Goodness-of-Fit Index (GFI) of 0.88, the Adjusted Goodness-of-Fit Index (AGFI) of 0.91, the Normed Fit Index (NFI) of 0.92, the Root Mean Square Error of Approximation (RMSEA) of 0.063, and the Standardized Root Mean Square Residual (SRMR) of 0.051. Based on these fit indices, the measurement model appeared to fit the sample data well (Newkirk and Lederer, 2006; Hair *et al.*, 2010; Kline, 2010).

Table VI, shows the factor loadings, Cronbach's alpha, composite reliability, and Average Variance Extracted (AVE) for the variables. All of the indicators of the factor loadings exceeded 0.50, thus constituted evidence of convergent validity (Bagozzi and Yi, 1988; Creswell, 2009). While the measurement reached convergent validity at the item level, because all of the factor loadings went above 0.50, all of the composite reliability values exceeded 0.60, demonstrating a high level of internal consistency for the latent variables. In addition, since each value of AVE exceeded 0.50 (Bagozzi and Yi, 1988; Hair *et al.*, 2006), the convergent validity was proved.

Also, as noticed from Table VII, all of the intercorrelations between pairs of constructs were less than the square root of the AVE estimates of the two constructs, providing discriminant validity (Hair *et al.*, 2006). Consequently, the measurement results indicate that this study had adequate levels of convergent and discriminant validity.

5.3 Structural model

Structural equation modeling using Amos 20 was performed to test the study hypotheses (see Table VIII). The structural model was tested with covert variables. The results show that of the direct effects that transformational leadership is positively and significantly related to IC ($\beta = 0.367, p < 0.000$); therefore, hypothesis H1 is supported. Also, transactional leadership is positively and significantly related to IC ($\beta = 0.115, p < 0.000$), so hypothesis H2 is also supported. The direct effect of Transformational and Transactional Leadership on Innovation are also positive and significant ($\beta = 0.153, p < 0.000, \beta = 0.072, p < 0.000$), therefore hypothesis H3 and H4 are supported. The direct effect of IC on innovation is also

	Mean	SD	Level	Order
Transformational leader (TL)				
TL1	3.66	1.100	High	2
TL2	3.02	1.434	Moderate	4
TL3	2.96	1.142	Moderate	5
TL4	3.36	1.032	Moderate	3
TL5	4.05	0.655	High	1
Transactional leader (TC)				
TC1	3.87	0.864	High	1
TC2	3.40	1.157	Moderate	3
TC3	2.49	0.975	Low	4
TC4	3.48	1.274	High	2
Human capital (HC)				
HC1	3.46	1.336	High	4
HC2	3.60	0.835	High	3
HC3	3.63	0.886	High	2
HC4	3.86	0.975	High	1
Structure capital (SC)				
SC1	3.61	0.819	High	2
SC2	3.69	1.041	High	1
SC3	2.89	0.943	High	3
SC4	3.39	0.919	Moderate	4
Relational capital (RC)				
RC1	3.60	1.008	High	4
RC2	3.65	0.824	High	3
RC3	3.70	0.812	High	2
RC4	3.88	0.745	High	1
Radical innovation (RI)				
RI1	3.78	0.616	High	2
RI2	3.93	0.803	High	1
RI3	3.46	0.778	High	3
Incremental innovation (II)				
II1	4.04	0.712	High	1
II2	3.44	0.517	High	2
II3	3.36	0.915	Moderate	3
Financial perspective (FP)				
FP1	3.47	0.825	High	4
FP2	3.54	1.155	High	3
FP3	3.85	0.757	High	2
FP4	4.03	0.492	High	1
Customer perspective (CP)				
CP1	4.02	0.422	High	1
CP2	3.82	0.676	High	2
CP3	3.72	0.816	High	3
CP4	3.82	0.797	High	2

(*continued*)

Table IV.
Mean and standard deviation of the study's variables

	Mean	SD	Level	Order
Internal process perspective (IP)				
IP1	3.98	0.839	High	1
IP2	3.62	0.791	High	4
IP3	3.74	0.633	High	3
IP4	3.88	0.583	High	2
Learning and growth perspective (LP)				
LP1	4.07	0.641	High	4
LP2	4.87	0.522	Very high	2
LP3	4.88	0.532	Very high	1
LP4	4.81	0.517	Very high	3

Table IV.

Model	χ^2	df	p	χ^2/df	IFI	TLI	CFI	GFI	AGFI	RMSEA
Final model	1289.091	675	0.000	1.909	0.91	0.87	0.90	0.88	0.91	0.063

Table V.
Measurement model fit indices

positive and significant ($\beta = 0.361$, $p < 0.05$); therefore, hypothesis H5 is supported. Innovation is positively and significantly related to Organization Performance ($\beta = 0.174$, $p < 0.000$). Hypothesis H6 is also supported. Also, the coefficient of determination (R^2) for the research endogenous variables for IC, innovation and organizational performance were 0.449, 0.393 and 0.253 respectively, which indicates that the model does moderately account for the variation of the proposed model. Table VIII below provides summary of the tested hypotheses.

6. Scientific discussion and practical implications

6.1 Scientific discussion

The manner in which different leadership styles impact the overall IC and innovation also affect IC on innovation, and effect innovation on performance of organization in the business setting in Jordan was explored in this paper. As shown by the results, both transformational and transactional leadership affect intellectual capital, and this finding is in agreement with past studies (Kumari *et al.*, 2015; Kara *et al.*, 2018). Leadership can become the main driver to the generation and development of intellectual capital for organizations, in order to attain long-term success. Indeed, intellectual capital encompasses the understanding and skills possessed by employees of organizations. In the eyes of strategic leaders, employees are precious resources because through them, basic competencies are established while competitive benefits are effectively exploited. In order to achieve full competitive edge from the human capital, organizations need to really invest. This will assist in the organization's intellectual capital development (Hadijah *et al.*, 2015). In order to enable employees to broaden their scope of knowledge, they are encouraged to grab new opportunities of continuous growth and involvement with society. Furthermore, organizations should continuously invest in achieving an innovative and well-educated workforce (Kara *et al.*, 2018). Relevantly, leaders who intellectually inspire employees to resolve the task-oriented problems using novel and unique ways are likely those who encourage the employees to contest the beliefs and values held by the organization. Such leader would also encourage the employees in analyzing and resolving organizational

Constructs and indicators	Factor loadings	Std. error	Square multiple correlation	Error variance	Cronbach alpha	Compo-site reliabil-ity*	AVE**
Transformational leader (TL)					0.879	0.95	0.79
TL1	0.802	***	0.243	0.167			
TL2	0.718	0.103	0.215	0.148			
TL3	0.702	0.105	0.293	0.149			
TL4	0.851	0.101	0.224	0.196			
TL5	0.793	0.109	0.229	0.125			
Transactional leader (TC)					0.775	0.92	0.75
TC1	0.745	***	0.356	0.198			
TC2	0.715	0.114	0.312	0.160			
TC3	0.528	0.115	0.179	0.143			
TC4	0.764	0.119	0.384	0.114			
Human capital (HC)					0.677	0.93	0.76
HC1	0.739	***	0.346	0.120			
HC2	0.765	0.111	0.385	0.194			
HC3	0.741	0.116	0.348	0.193			
HC4	0.660	0.117	0.236	0.155			
Structure capital (SC)					0.671	0.94	0.79
SC1	0.762	***	0.380	0.101			
SC2	0.679	0.109	0.261	0.149			
SC3	0.551	0.106	0.204	0.115			
SC4	0.671	0.103	0.251	0.116			
Relational capital (RC)					0.780	0.94	0.80
RC1	0.738	***	0.245	0.115			
RC2	0.762	0.104	0.381	0.121			
RC3	0.711	0.102	0.306	0.115			
RC4	0.755	0.103	0.370	0.191			
Radical innovation (RI)					0.700	0.93	0.82
RI1	0.831	***	0.391	0.101			
RI2	0.810	0.104	0.357	0.131			
RI3	0.748	0.106	0.359	0.173			
Incremental innovation (II)					0.719	0.93	0.81
II1	0.871	***	0.259	0.114			
II2	0.818	0.105	0.369	0.179			
II3	0.729	0.108	0.332	0.164			
Financial perspective (FP)					0.774	0.95	0.81
FP1	0.768	***	0.390	0.171			
FP2	0.736	0.104	0.341	0.141			
FP3	0.855	0.107	0.331	0.131			
FP4	0.905	0.109	0.318	0.182			
Customer perspective (CP)					0.869	0.95	0.82
CP1	0.947	***	0.297	0.199			
CP2	0.891	0.101	0.294	0.209			
CP3	0.840	0.103	0.205	0.116			
CP4	0.855	0.109	0.231	0.179			
Internal process perspective (IP)					0.779	0.95	0.84
IP1	0.856	***	0.239	0.138			
IP2	0.799	0.106	0.339	0.136			
IP3	0.898	0.103	0.207	0.157			
IP4	0.905	0.102	0.219	0.151			

(*continued*)

Table VI.
Properties of the final measurement model

Constructs and indicators	Factor loadings	Std. error	Square multiple correlation	Error variance	Cronbach alpha	Compo-site reliabil-ity*	AVE**
Learning and growth perspective (LP)					0.791	0.94	0.81
LP1	0.885	***	0.284	0.190			
LP2	0.901	0.101	0.221	0.181			
LP3	0.872	0.107	0.297	0.172			
LP4	0.867	0.105	0.281	0.169			

Note: * Employing Fornell and Larcker's (1981) formula, the composite reliability calculation is expressed by the following equation:
Composite Reliability $= (\sum \mathrm{Li})^2 / ((\sum \mathrm{Li})^2 + \sum \mathrm{Var(Ei)})$,

where Li is the standardized factor loadings for each indicator, and Var (Ei) is the error variance associated with the individual indicator variables.
** The formula for the variance extracted is:
Average Variance Extracted Composite Reliability $= (\sum \mathrm{Li})^2 / ((\sum \mathrm{Li})^2 + \sum \mathrm{Var(Ei)})$,

where Li is the standardized factor loadings for each indicator, and Var (Ei) is the error variance associated with the individual indicator variables

Table VI.

Constructs	TL	TC	HC	SC	RC	RI	II	FP	CP	IP	LP
TL	0.79										
TC	0.52	0.75									
HC	0.51	0.51	0.76								
SC	0.52	0.50	0.37	0.79							
RC	0.53	0.38	0.39	0.51	0.80						
RI	0.51	0.41	0.42	0.45	0.44	0.82					
II	0.56	0.42	0.45	0.47	0.38	0.33	0.81				
FP	0.57	0.47	0.43	0.42	0.39	0.36	0.38	0.81			
CP	0.43	0.32	0.41	0.41	0.32	0.37	0.36	0.46	0.82		
IP	0.44	0.35	0.36	0.37	0.31	0.27	0.31	0.43	0.32	0.84	
LP	0.46	0.37	0.32	0.34	0.32	0.29	0.31	0.34	0.30	0.30	0.81

Note: Diagonal elements are the average variance extracted for each of the four constructs. Off-diagonal elements are the squared correlations between constructs

Table VII.
AVE and square of correlations between constructs

Hypothesis	Path	Standardized effect	*t*-value	Result
H1	TC → IC	0.367***	14.744	Supported
H2	TS → IC	0.115***	4.998	Supported
H3	TC → IN	0.153***	4.650	Supported
H4	TS → IN	0.072**	2.975	Supported
H5	IC → IN	0.361***	6.173	Supported
H6	IN → OP	0.174***	4.089	Supported

Notes: ***$p < 0.001$; **$p < 0.01$; TC: Transactional Leader, TS: Transformational Leader, IC: Intellectual Capital, IN: Innovation, OP: Organizational Performance

Table VIII.
Summary of results

problems. Hence, leaders encourage professional growth of employees as a way to achieve the benefits of human capital (Birasnav *et al.*, 2011).

This study finds that transformational leadership has positive impact on innovation, and this is also affirmed by several past studies (Makri and Scandura, 2010; Megheirkouni, 2017).

As mentioned by Yahaya and Ebrahim (2016), leader's ability in applying transformational leadership increases the empowerment of followers and the effectiveness of the team. Followers of transformational leaders appear to be highly innovative, engage in efficient communication with their colleagues, and attain high performance and goal accomplishment. In addition, transformational leadership provokes innovation by way of enabling, visioning, challenging, modeling, and rewarding; all of these are valuable to organizational performance. Innovations and creation of knowledge have been linked to fast developing technologies and, therefore with the intricacy of the environment; this benefits a transformational leader. Transformational leadership impacts the absorptive capability via the enhancement of individual absorption, organizational structure design, as well as increased R&D investment (Brandt *et al.*, 2016).

On the other hand, transactional leadership appears to have significant linkage to the innovation dimensions. This finding is not supported by past studies (Bart, 2004; You-De *et al.*, 2013). Transactional leadership causes the development of innovative and creative skills of employees to be restricted. It also impedes the personal and organizational growth. For this reason, the adoption of this type of leadership among managers can decrease the job satisfaction and organizational commitment of employees. This can subsequently lead to poor customer service as well as the decline to the overall performance (You-De *et al.*, 2013).

Another finding of this study is the positive impact of intellectual capital on innovation, which is also in support of past findings (Zerenler *et al.*, 2008; Allameh *et al.*, 2018). As mentioned, intellectual capital denotes the total intangible assets dubbed as knowledge assets. Meanwhile, innovation is core to the generation of products and services which offer customers added value. For this reason, the application of the organization's intellectual capital is turned into a leverage and requirement for innovation (Zerenler *et al.*, 2008). Aptly, an organization with high amount of intellectual capital would have more distinctive competence, and this situation is favored as well. High level of distinctive competence can also improve innovation performance. Moreover, an organization's distinctive competence is deemed as the outcome of the organization's intellectual capital. As such, having more intellectual capital would increase innovation performance. In other words, when a company has more intellectual capital, its innovative competence would increase, and this would translate into new product development performance (Zerenler *et al.*, 2008).

From the outcomes, intellectual capital has positive impact on performance, and this finding is in line with past findings (Hussinki *et al.*, 2017; Cisneros and Hernandez-Perlines, 2018; Smriti and Das, 2018). For this reason, intellectual capital entails resources and competencies that are valued, rare, unsuccessfully imitable, and non-substitutable, and this presents a durable competitive advantage and superior performance to the organization (Kamukama and Sulait, 2017). The internal resource base of organization, especially its intellectual capital, is a determinant of competitive performance in organizations of medium and small size. Most significantly, competitive advantage is attained by organizations that could mobilize their intellectual assets in the shape of knowledge, technological skills, experience as well as strategic competencies (Kamukama and Sulait, 2017).

This study also found that innovation is not a significant mediator to the relationship between intellectual capital and performance. The relationship between intellectual capital and innovation has been explored, and it appears that human capital, relational capital, and structural capital are important in the improvement of features of present products and services. Somehow, using innovation as a mediating variable, intellectual capital appears to be crucial in the achievement of competitive advantage which subsequently leads to business performance. Innovation allows organizations to develop novel technologies and structures in the shape of enhanced structural capital. This eventually assists an organization in creating value and in maintaining better position (Chahal and Bakshi, 2015; Abualoush *et al.*, 2017).

6.2 Implications

This research examined the relations between leadership, intellectual capital, innovation and organizational performance, and in doing so, a theoretical model was proposed. A sample of 350 employees of banks in Irbid city, Jordan, was selected. The data provided by the sample was used in the empirical testing. The study finds that in the context of banking in Jordan, leadership and intellectual capital are crucial elements to innovation. Also, the significant impact of intellectual capital on organizational performance as well as the significant impact of innovation on organizational performance is evidenced by the findings.

The present study adds to the existent knowledge through its highlights on the primary role of innovation in stimulating organizational performance and in positively mediating the relation between intellectual capital and organizational performance. Additionally, the present study can be regarded as a valuable addition to past researches on the same domain in the context of Jordan. In this regard, the past works were looking at the linkage between leadership and innovation, intellectual capital and innovation, the effect of leadership on organizational performance, or the effect of intellectual capital on organizational performance. Contrariwise, this study presents a combined theoretical framework which explores the linkage between all variables. In particular, the present study examined the intermediate role of intellectual capital, which enhances the linkage between leadership, innovation, and organizational performance.

As evidenced by the findings, with the presence of intellectual capital, transformational, and transactional leadership appear to be powerful, which implies that intellectual capital is the boost of effectiveness of both leadership styles. Intellectual capital also seems to be a prerequisite for innovation. Having high level of intellectual capital allows innovation to increase the performance of organizations. These outcomes are in support to past works on the importance of leadership for innovation, as well as to those that explored the importance of IC for innovation (Birasnav *et al.*, 2011; Khalili, 2016; Hussinki *et al.*, 2017; Allameh, 2018) in promoting innovation and OP.

The results of our study are important management implications that can help organizations in their effort for innovation and to improve their organizational performance. The organization's leadership style is a vital and effective part of innovation, both transformational and transactional leadership support innovation within organizations by setting short- and long-term strategic objectives, internal and external incentives, and by enabling the intellectual capital of the organization and attention and supervision. In addition, organizations should bear in mind that the efficiency and effectiveness of leadership patterns (transformation and transactions) in the organization vary according to the external environment in which it operates. Transformational leadership is successful in a dynamic work environment, as it drives their human capital to be more flexible, and to think differently. In turn, the leadership of transactions can be more conducive to innovation in a more stable business environment, and can drive organizations to innovate when their objectives and activities are more stable.

Organizations must practice the transformational leader's behavior in order to improve and encourage innovation for their followers and employees. Therefore, transformational leadership is a way to improve the creative skills of their staff and thereby develop effective solutions to their problems. Staff innovation can be facilitated and encouraged by creating and improving the organizational climate, by saving time, provision of adequate resources, incentives and rewards for creativity and innovation.

The intellectual capital of organizations must be invested in heavily by knowing the skills and expertise of their employees, improving the skills and work experiences of organizations and maintaining them, and establishing relations between the organization and external parties. It is also possible to invest in intellectual capital through more attention to human resource strategies that help in the development of human capital, which attracts the skilled,

experienced and qualified employees and encourages them to contribute significantly to the innovation of the organization. Providing of leadership materials to support human capital in the organization is the basis for the development of innovation, the development and implementation of new ideas, as well as the adoption of methods that help human capital in the organization and have comprehensive programs for the development of human capital talent through the provision of full training and education, in order to develop knowledge and professional skills of employees. Among these methods, training programs are an important tool for developing staff skills. Confirming the exchanges between the organization's staff and strengthening communication between the organization and its external partners can provide many opportunities for knowledge acquisition, participation and greater innovation.

6.3 Limitations and future research

It is worth mentioning that there are several limitations to this study. Firstly, this study only explored one sector in Jordan namely the banking sector. For this reason, it may not be judicious to generalize its outcomes to all other sectors in Jordan. As such, other sectors (e.g., construction, telecommunication, pharmaceutical, education) should be individually explored as well. In terms of respondents, it is possible that they have exaggerated the positive aspect of leadership, IC, and innovation in their respective workplace (i.e., organization). In addition, this study finds some respondents who were reluctant to respond to items relating to their organization. Somehow, this problem was professionally addressed, following the guideline from Sekaran and Bougie (2013). Another limitation to this study is that it was confined to employees of banks in Irbid city only. Hence, the outcomes cannot be generalized to the entire banking sector. As a solution, this study recommends the examination of the same constructs in bank branches all over Jordan allowing the entire population to be more effectively presented. The design of sampling employed in this study is also a limitation. In particular, this study employed the quick and efficient quota sampling. The issue with this type of sampling is that it has the lowest level of reliability in terms of generalized ability. Hence, to obtain more useful and generalizable findings, future studies should consider employing better sampling designs such as stratified random sampling.

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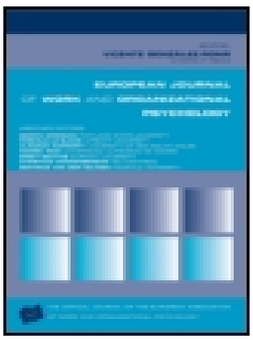

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Leadership, creativity and innovation: a meta-analytic review

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ABSTRACT

This paper reports the most comprehensive meta-analytic examination of the relationship between leadership and both followers' creative and innovative performance. Specifically, we examined 13 leadership variables (transformational, transactional, ethical, humble, leader-member exchange, benevolent, authoritarian, entrepreneurial, authentic, servant, empowering, supportive, and destructive) using data from 266 studies. In addition to providing robustly estimated correlations, we explore two theoretically and pragmatically important issues: the relative importance of the different leadership constructs and moderators of the relationship between leadership and employee creativity and innovation. Regrading creative performance, authentic, empowering, and entrepreneurial leadership demonstrated the strongest relationships. For innovative performance, both transactional (contingent reward) and supportive leadership appear particularly relevant. The current study synthesizes an important, burgeoning, diverse body of research, and in doing so, generates nuanced evidence that can be used to guide theoretical advancements, improved research designs, and up-to-date policy recommendations regarding leading for creativity, and innovation.

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Organizational growth depends on the ability to generate novel ideas and to select and implement the most promising of those novel ideas. In short, creativity (idea generation) and innovation (idea implementation) are essential for organizational survival and success (Anderson, Potocnik, & Zhou, 2014). Accordingly, organizational research has focussed on identifying antecedents of workplace creativity and innovation (Zhou & Hoever, 2014) in order to develop theoretical models and evidence-based guidance for enhancing workplace creativity and innovation. Leadership is posited as a crucial antecedent because leaders shape the working environment, resource allocation, the nature of work tasks (e.g., Liden, Sparrowe, & Wayne, 1997), and influence employee behaviour by leveraging existing employee assets (e.g., motivation) or developing new ones (e.g., learning: Fischer, Dietz, & Antonakis, 2017).

Numerous studies have explored the relationship between leadership and employee creativity and innovation (see Hughes, Lee, Tian, Newman, & Legood, 2018 for a review), however, the number of highly intercorrelated leader variables studied has produced a complex literature that hinders understanding and the development of evidence-based practical recommendations (Derue, Nahrgang, Wellman, & Humphrey, 2011; Hughes et al., 2018). Studying multiple leader variables concurrently should allow us to begin to identify which are most strongly associated with workplace creativity and which are most strongly associated with innovation. Further, the boundary conditions of these relationships are not well understood (Hughes et al., 2018). A lack of clarity regarding these issues means three major questions currently undermine the utility of research in this field:

(1) Which (if any) leadership variable(s) is the strongest predictor of creativity and innovation?
(2) What is the relative importance of different leadership variables with creativity and innovation?
(3) What are the boundary conditions influencing the relationship between a given leadership variable and creativity and innovation?

The goal of this meta-analysis is to provide a quantitative review of the current literature in relation to these three questions. Previous reviews have examined leadership and creativity, but have tended to be narrative in design (e.g., Anderson et al., 2014; Hughes et al., 2018; Mainemelis, Kark, & Epitropaki, 2015; Rank, Pace, & Frese, 2004; Reiter-Palmon & Illies, 2004; Zhou & Shalley, 2003) or provided theoretical overviews and identified "gaps" in the literature (Klijn & Tomic, 2010; Shalley & Gilson, 2004). In contrast, we seek to examine the relative importance of 13 leadership variables for individual-level creativity and innovation and investigate several methodologically and theoretically derived moderators of the relationship between leadership and creativity and innovation.

Literature review and research question development

Creativity and innovation

We define creativity and innovation according to a recent systematic and critical review of existing definitions:

> "*Workplace creativity concerns the cognitive and behavioral processes applied when attempting to generate novel ideas. Workplace innovation concerns the processes applied when attempting to implement new ideas*" (Hughes et al., 2018, p. 3).

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Evident from this definition, creativity and innovation are distinct but related constructs. Creativity is largely an intrapersonal activity concerned with the generation of truly novel ideas, whereas innovation is a largely interpersonal activity concerned with introducing new ideas (which can come from anyone/anywhere) that fit the context, garnering support from others, and ultimately implementing the new ideas (Hughes et al., 2018). Typically, the leaders' role is to facilitate employees by providing them with the appropriate resources and environment. However, because creativity and innovation are fundamentally different (see Hughes et al., 2018, Table 2), and are driven by different antecedents (e.g., Axtell et al., 2000; Hughes et al., 2018; Magadley & Birdi, 2012), it would be surprising if a single leadership style were appropriate for both (Hughes et al., 2018; Perry-Smith & Mannucci, 2017). Indeed, recent conceptual frameworks suggest that when creating, employees require psychologically safe and motivating spaces that enable them to engage in cognitively flexible thought (Perry-Smith & Mannucci, 2017). In contrast, when innovating, employees need social influence and legitimacy which can be provided through leader support and endorsement (Perry-Smith & Mannucci, 2017). Creative ideas rarely lead to innovation unless shared with relevant and/or influential organizational members. It is possible, then, that certain leader variables will be of differential importance to creativity and innovation.

Despite the conceptual and empirical uniqueness of creativity and innovation, previous meta-analyses have tended to combine them into a single variable (e.g., Kim, Beehr, & Prewett, 2018; Lee, Lyubovnikova, Tian, & Knight, 2019; Lee, Willis, & Tian, 2018). However, we follow contemporary theoretical and empirical arguments and consider creativity and innovation separately (Anderson et al., 2014; Hughes et al., 2018), enabling the exploration of differential associations with the leader styles examined.

Leadership, creativity and innovation

Previous meta-analyses examining leadership variables have often ignored creativity and innovation as outcomes (e.g., Banks, Gooty, Ross, Williams, & Harrington, 2018; Hoch, Bommer, Dulebohn, & Wu, 2018; Martin, Guillaume, Thomas, Lee, & Epitropaki, 2016), focused on a limited range of leadership predictors, or have combined creative and innovative performance into a single variable (Banks, McCauley, Gardner, & Guler, 2016; Hammond, Neff, Farr, Schwall, & Zhao, 2011; Lee et al., 2019, 2018; Rosing, Frese, & Bausch, 2011; Wang, Oh, Courtright, & Colbert, 2011). Here, we extend these findings by examining and comparing the correlations between 13 leadership variables and individual-level employee creativity and innovation, separately. In doing so, we seek to address three pertinent issues regarding the main effects of leadership and employee creativity and innovation.

First, there is notable variation in the magnitude and even direction of reported effect sizes (Hughes et al., 2018), rendering interpretation difficult, especially when they are derived from moderately sized samples. Meta-analytic investigations, such as this, provide a much more robust estimate of population effects. Second, the increased power provided by meta-analytic investigations allows for robust estimation of moderating effects that are not possible within individual studies. Therefore, we also address the call made by Hughes and colleagues (2018) to explore possible moderating variables in the categories of study design, broad context (e.g., industry type), and local context (e.g., follower gender). Third, it is unclear whether the many contemporary leadership variables in the literature (e.g., ethical, benevolent) account for unique variance in creative and innovative behaviour when considered alongside other leadership variables.

Our review identified 13 leadership variables which have been repeatedly found to be associated with creativity and/or innovation. It is well established that certain leadership styles draw upon common theoretical arguments when explaining how their effects are transmitted (e.g., Lemoine, Hartnell, & Leroy, 2019). Accordingly, we grouped the 13 leadership variables into five theoretically homogenous categories – the full-range model, moral leadership, motivational leadership, relational leadership, and negative leadership – and discuss how they are expected to relate to creative and innovative performance, below.

Full-range leadership model

The full-range leadership model (Avolio & Bass, 1991), comprises transformational, transactional, and laissez-faire leadership. The model stems from Bass's (1985) argument that theories of the time focused only on basic exchanges with followers (transactional) and failed to explain how leaders influence followers to transcend self-interest for the greater good of the organization (transformational). In response, Bass proposed a model encompassing four transformational and two transactional leadership factors.

Transformational leadership (Bass, 1985) consists of four dimensions: idealized influence (i.e., leader behaviour that is admirable and charismatic), inspirational motivation (i.e., articulating an appealing and inspiring vision), intellectual stimulation (i.e., challenging follower assumptions and listening to their ideas), and individualized consideration (i.e., mentoring and coaching according to follower's unique needs). In relation to creativity and innovation, transformational leadership is said to be beneficial for two main reasons. Firstly, transformational leaders tend to inspire and motivate through expressing an energizing vision which in turn "motivate[s] people to do their best" (Avolio & Bass, 1988, p. 33). Second, the intellectual stimulation element encourages followers to think divergently, question assumptions, and take risks (Bass, 1985). Such actions tend to promote an open and explorative mindset (Keller, 2006) and empower followers to experiment with ideas and undertake active problem solving (e.g., Jung, Chow, & Wu, 2003; Shin & Zhou, 2003).

Transactional leadership is focussed on achievement-related exchanges: Contingent reward describes the provision of incentives following successful performance, whereas management by exception describes the degree to which leaders take corrective action either in an active or passive manner (Bass, 1985; Yukl, 1999). As such, transactional leaders achieve influence by clarifying goals, the use of rewards and incentives, and intervening only when necessary (Bass, 1985). Although the rewarding of goal-attainment may foster extrinsic motivation, transactional leadership is unlikely to instil intrinsic motivation, unlike transformational leadership, which actively encourages experimentation.

Thus, it is often suggested that transformational leadership will be more strongly associated with creative and innovative behaviour than transactional leadership (Hughes et al., 2018). Further, the transactional component may be perceived as controlling and demotivating, thus dampening innovation further (Deci & Ryan, 1987). Despite this, the contingent reward component may be effective in promoting creativity and innovation when the rewards are contingent on employee creativity (Rickards, Chen, & Moger, 2001).

The other two dimensions of transactional leadership are grouped under the term management by exception. The management-by-exception category includes monitoring employee performance and taking corrective action when problems arise. Active management by exception refers to the extent to which leaders strive to identify, and then redress, poor performance or errors. Passive management by exception describes leaders who avoid involvement until these shortfalls or errors arise. Followers of leaders who employ management-by-exception tend to be dissatisfied and demotivated and, as such, this style is unlikely to foster creativity or innovation (Kim & Lee, 2011).

Transformational and transactional aspects of the full-range model are argued to be unique and additive such that transformational leadership augments the effect of transactional leadership (Bass & Avolio, 1993). Evidence of the relative importance of transformational over transactional leadership is mixed. For instance, a meta-analysis examining the relative importance of the full-range leadership model demonstrated that transformational leadership explained more variance in group performance, perceptions of leader effectiveness, and satisfaction with leader, whereas contingent rewards were most strongly associated with follower job satisfaction (Derue et al., 2011). Similarly, Piccolo et al. (2012) concluded, based on primary data, that transformational leadership and contingent reward leadership are highly correlated but empirically distinct factors that explain significant incremental variance in outcomes. Studies exploring the relative effects of the components of the full-range model on creativity and innovation are rare (e.g., Kim & Lee, 2011), but what evidence there is, suggests that transformational leadership has stronger effects on both follower creativity (Kark, Van Dijk, & Vashdi, 2018) and innovation (e.g., Lee, 2008).

Moral leadership: authentic, servant, ethical, and humble

Authentic, servant, and ethical leadership represent three morally based forms of positive leadership (Hoch et al., 2018) which are often grouped together (Lemoine et al., 2019). We also consider humble leadership, a new addition to the field, within this category. Ethical Leadership (Brown, Trevino, & Harrison, 2005) focuses on the demonstration of normatively appropriate conduct through personal actions and interpersonal relationships (i.e., modelling behavioural standards for followers). Authentic leaders (Walumbwa, Avolio, Gardner, Wernsing, & Peterson, 2008) are said to have a relatively heightened level of self-awareness, an internalized moral perspective, process information in a balanced and ethical manner, and deal with followers in a transparent and fair way (i.e., relational transparency). Servant leadership (e.g., Ehrhart, 2004) emphasizes personal integrity in life, work, family, and community (Ehrhart, 2004). Humble leadership concerns a willingness to be self-aware in social interactions, an appreciation for others' strengths and contributions, and teachability (Owens & Hekman, 2016). Humility is an important trait for an ethical leader to possess (de Vries, 2012), and thus, humble leadership also reflects an ethical/moral style. When explaining the effects of moral leadership styles, most studies draw upon social learning theory or social exchange theory (Lemoine et al., 2019).

In line with social learning theory (Bandura, 1986), ethical and humble leaders model behaviours such as acknowledging their personal limits and mistakes, and being open to inputs from others, that when emulated by followers are believed to foster creativity and innovation (Lemoine et al., 2019; Owens & Hekman, 2016). Similarly, authentic and servant leadership utilize social learning explanations. For instance, the self-awareness at the heart of authentic leadership allows leaders to exhibit openness in their behaviour and "lead by example" (Walumbwa et al., 2008), which, when emulated by followers, is believed to stimulate followers to engage creatively with their work (Seibert, Kraimer, & Liden, 2001).

Social exchange theory is also frequently evoked. For example, Ilies, Morgeson, and Nahrgang (2005) argue that authentic leaders demonstrate unbiased processing of self-relevant information, personal integrity, and authentic relations that contribute to positive social exchanges with followers (i.e., positive emotions, trust and respect), which in turn fosters a degree of emotional and psychological safety that empowers employees to propose unconventional ideas (Avolio, Gardner, Walumbwa, Luthans, & May, 2004; Edmondson, 1999; Prati, Douglas, Ferris, Ammeter, & Buckley, 2003; Rego, Sousa, Cunha, Correia, & Saur-Amaral, 2007).

Although servant, authentic, ethical, and humble leadership have conceptual similarities, each is argued to have unique qualities or at least unique emphases. For instance, Lemoine et al. (2019) note that servant leadership emphasizes a focus on benefiting multiple stakeholders and the wider community, authentic leadership emphasizes self-awareness and internal consistency, and ethical leadership emphasizes normative standards. Typically, moral styles explain unique variance in outcomes when modelled alongside transformational leadership (e.g., Banks et al., 2016; Hoch et al., 2018; Lee et al., 2019; Ng & Feldman, 2015).

Motivating leadership: empowering and entrepreneurial

Empowering leadership involves highlighting the significance of followers' work and communicating confidence in their ability by delegating authority, encouraging self-directed and autonomous decision-making, coaching, sharing information, and asking for input (e.g., Kirkman & Rosen, 1999). Such leadership behaviours are conceptually relevant to both creativity and innovation through the development of self-determination and intrinsic motivation (e.g., Zhang & Bartol, 2010). For instance, participation in decision-making and perceptions of autonomy are vital preconditions for creative outcomes (e.g., Amabile, 1996) because they encourage autonomous exploration of different approaches and problem solutions (Li & Zhang, 2016). Intrinsically motivated followers are also more likely to be prepared to leveraging their existing knowledge (Parker, Wall, &

Jackson, 1997), which leads to increased performance on tasks requiring creativity (e.g., cognitive flexibility, conceptual understanding; Kehr, 2004) and exhibit greater persistence in face of obstacles that arise when innovating (Deci & Ryan, 2000).

Entrepreneurial leadership encourages followers to identify and exploit entrepreneurial opportunities for value creation (Renko, 2018), and thus aims to motivate employees to contribute to creative activities (Cai, Lysova, Khapova, & Bossink, 2019; Chen, 2007). Further, entrepreneurial leaders provide creative support, for example, by designing and adjusting achievable goals aimed to rouse follower perseverance and by working with employees to generate different perspectives. Thus, in line with social cognitive/learning theory, entrepreneurial leaders foster employees' creativity and innovation through three main pathways: role modelling entrepreneurial behaviours (vicarious learning), encouraging and directing followers to engage in entrepreneurial activity (subjective persuasion and enhanced affective states), and providing opportunities for followers to be entrepreneurial (mastery experiences) (Newman, Tse, Schwarz, & Nielsen, 2018; Renko, Tarabishy, Carsrud, & Brännback, 2015).

Empowering and entrepreneurial leadership styles overlap because both encourage followers to go beyond the status quo and to do things differently. However, although empowering leaders involve followers in the processes of problem-solving and decision-making (Miao, Newman, Schwarz, & Xu, 2013), they do not necessarily provide specific role-modelling and guidance aimed at encouraging creative or innovative behaviour. In contrast, entrepreneurial leaders demonstrate entrepreneurial behaviours to followers and thus directly encourage the implementation of creative ideas at work (Newman et al., 2018).

Relational leadership: LMX, supportive, benevolent

LMX, benevolent, and supportive leadership, which we categorize as relational variables, focus on building positive relationships by demonstrating care and concern for followers. LMX is inherently relational and defined as the quality of exchange between leader and employee (Graen & Cashman, 1975). Recent studies suggest that because followers with a high-quality LMX relationship are likely to feel obliged to reciprocate the positive exchanges with their leader (Blau, 1964; Gouldner, 1960), they are more likely to engage in discretionary processes such creative (e.g., Meng, Tan, & Li, 2017) and/or innovative behaviour (Pan, Sun, & Chow, 2012; Turunc, Celik, Tabak, & Kabak, 2010). According to the social exchange theory, followers will work hard, undertake creative activities and exhibit high creativity in exchange for support, trust and other resources from leaders (Xu, Huang, Lam, & Miao, 2012). It is also argued that in a high-quality LMX relationship the follower should have more autonomy and decision-making latitude (Graen & Uhl-Bien, 1995), which are positively related to creativity and innovation.

Supportive leadership describes a cluster of leader behaviours that aim to provide access to resources, assistance, and encouragement in the face of difficulties. Supportive leaders' encouragement may enhance followers' creative self-efficacy, an important antecedent of creativity and innovation (Tierney & Farmer, 2002), that is malleable and can be reinforced by social support (e.g., Bandura, 1997). Further, supportive leaders should also increase creative behaviour by increasing employee's interest at work (Oldham & Cummings, 1996). Thus, supportive leadership should be positively related to both creativity and innovation.

Benevolent leadership is characterized by exhibitions of individualized and holistic concern and care for followers (Farh & Cheng, 2000). In line with social exchange theory (Blau, 1964), the positive treatment provided by the benevolent leader to followers leads them to reciprocate by engaging in behaviours they feel are desired (Lin, Ma, Zhang, Li, & Jiang, 2018). Although some studies have argued that this may result in less creativity and innovation as subordinates follow their leaders orders without questioning them (Wang, Xue, & Su, 2010), researchers have generally argued for a positive relationship between benevolent leadership and both creativity and innovation because leaders generally state that they are valued (Dedahanov, Lee, Rhee, & Yoon, 2016; Lin et al., 2018). The relationship aspect of benevolent leadership overlaps with LMX and supervisor support, but the involvement in followers' personal lives and treatment of followers "as family" distinguishes benevolence from these variables (e.g., Hiller, Sin, Ponnapalli, & Novelli, 2019).

Negative leadership: destructive and authoritarian

Typically, leadership research has focused on finding the most effective leadership methods and has focused on positive forms of leadership (Schyns & Schilling, 2013), perhaps to the detriment of our understanding of ineffective or negative leadership. In the category of negative leadership, we focus on two leadership styles: authoritarian and destructive. An authoritarian leader '"asserts absolute authority and control over subordinates and demands unquestionable obedience" (Cheng, Chou, Wu, Huang, & Farh, 2004, p. 91). Authoritarian leaders exert control over followers by initiating structure, issuing rules, promising rewards for compliance, and threatening punishment for disobedience (Aryee, Chen, Sun, & Debrah, 2007). Authoritarian leaders" demand absolute obedience from followers and, produce a climate of fear and caution (Pellegrini & Scandura, 2008), meaning that followers are less likely to show initiative and proactivity to generate novel approaches to perform their tasks. Therefore, authoritarian leadership decreases the expression of personal ideas or participation in problem-solving, thereby inhibiting employee creativity and innovation.

Destructive leadership refers to voluntary acts committed towards followers that most people would perceive as harmful, such as, mocking, belittlement, rudeness, and breaking promises (Tepper, 2000). The experience of abusive supervision typically evokes negative emotions, such as fear (e.g., Kiewitz, Restubog, Shoss, Garcia, & Tang, 2016), and promotes avoidance and self-protection in followers (Kiewitz et al., 2016). Because followers are required to invest large amounts of psychological resources to cope with the stress resulting from abusive supervision, they are more likely to experience emotional exhaustion (Wu & Hu, 2009) and reduce their emotional and psychological investment in their jobs (Chi & Liang, 2013). As a result, followers of abusive leaders are less likely to create useful and novel ideas, thereby decreasing their creativity (Gu, Song, & Wu, 2016). This is supported by meta-analytic research showing that negative,

activating moods with an avoidance motivation and a prevention focus (fear, anxiety) were associated with lower levels of creativity (Baas, De Dreu, & Nijstad, 2008). A related form of destructive leadership is despotic leadership (e.g., Naseer, Raja, Syed, Donia, & Darr, 2016). Despotic leaders are self-interested, morally corrupt, have low ethical standards (De Hoogh & Den Hartog, 2008), and egoistic motives designed to manipulate and exploit followers for personal gain (Naseer et al., 2016). Followers of despotic leaders are argued to indirectly retaliate by reduced engagement in desired behaviours. Therefore, followers are likely to withhold creative behaviours to thwart a despotic leader. Reduced creative performance may also result from the notion that when a leader's ethical character is dubious, they are less able to persuade followers to achieve individual and/or organizational objectives (Kanungo, 2001). Studies investigating the effects of destructive leaders have focused on the effects on creativity rather than innovation (e.g., Gu et al., 2016; Naseer et al., 2016).

Authoritarian and destructive leadership are viewed as negative leadership variables because of their association with an array of socially and organizationally undesirable effects (Kiazad, Restubog, Zagenczyk, Kiewitz, & Tang, 2010). Although authoritarian and destructive leadership are clearly conceptually distinct from positive leadership styles, such as transformational leadership, there is little empirical work that compares the relative effects of authoritarian and destructive leadership to each other or positive leadership styles. Looking at meta-analytic correlations (without directly testing the relative importance), Schyns and Schilling (2013) reported that most correlations with follower outcomes are higher for positive (e.g., transformational leadership) rather than negative leadership styles.

Leadership and creativity summary

As discussed, numerous leadership variables are theorized and have been shown to correlate with followers' creative and innovative behaviour. A key aim of the current meta-analysis is to summarize this vast literature and to better understand the relationships these leadership styles have with both outcomes. Relatedly, we seek to determine which variable(s), has the strongest relationship with creativity and innovation.

Research question 1: Which leadership style(s) is most strongly associated with creativity and innovation

The relative importance of leadership style on creativity and innovation

The second aim of this meta-analysis is to explore the relative importance of different leadership variables on creativity and innovation. This is important because it is currently unclear whether the many leadership variables are redundant or have unique effects, and which variable(s), if any, is most strongly related to creativity and innovation (Hughes et al., 2018). This is reflective of wider concerns in the leadership literature regarding construct proliferation and construct redundancy (Derue et al., 2011; Shaffer, DeGeest, & Li, 2016). Put simply, many ostensibly distinct leadership variables share considerable conceptual and empirical overlap, often correlating between .7- .9 (e.g., Banks et al., 2018; Lemoine et al., 2019; Shaffer et al., 2016). In response, there have been several studies attempting to identify if various leadership styles are distinct and in which circumstances the distinct elements are important. For instance, five recent meta-analyses have examined whether authentic (Banks et al., 2016), ethical (Ng & Feldman, 2015), servant (Lee et al., 2019) and empowering (Lee et al., 2018) leadership explain incremental variance over and above established variables such as transformational leadership (see also Hoch et al., 2018) on various employee outcomes. These studies found that different leadership styles are relatively more important than transformational leadership for some outcomes but not others.

Extending this work, we meta-analytically compare the relative effects of 13 leadership variables on creativity and innovation. In doing so, we answer recent calls for comparative examinations of different leadership styles (e.g., Piccolo et al., 2012) in a comprehensive examination of leadership, creativity and innovation. Because typical study designs examine just a single leader variable (see Hunter, Bedell-Avers, & Mumford, 2007; Piccolo et al., 2012), too few primary studies exist for us to examine the relative contribution of all 13 leadership variables in one model. Instead, we explore their relative importance in two steps. First, we examine the relative variance explained by each variable over and above that explained by the full-range leadership model (transformational and transactional leadership). The full-range model represents a broad model that is also the most studied. Second, we examine the relative predictive validity of leadership variables within the different leadership categories. For example, we compare the effects of ethical, servant, authentic and humble leadership within the moral leadership category.

Research question 2: Which leadership variable(s) have the largest relative association with creativity and innovation above transformational and transactional leadership?

Research question 3: Which moral leadership variable(s) have the largest relative association with creativity and innovation.

Research question 4: Which relational leadership variable(s) have the largest relative association with creativity and innovation.

Research question 5: Which motivational leadership variable(s) have the largest relative association with creativity and innovation.

Research question 6: Which negative leadership variable(s) have the largest relative association with creativity and innovation.

Leadership and creativity: moderation

In their recent review, Hughes and colleagues noted that "the magnitude of the relationship between leadership and creativity and innovation is hugely variable … In some cases from near-zero to large, and in others, ranging from moderately negative to moderately positive." (p. 554). To illustrate, some studies find large associations between transformational leadership and creativity (e.g., Rickards et al., 2001) and innovation (e.g., Slatten, 2014), whereas other find non-significant associations

(e.g., Cai et al., 2019; Chen, Farh, Campbell-Bush, Wu, & Wu, 2013). This pattern is common across leadership variables and Hughes and colleagues (2018) note three likely reasons for the variability. First, the use of sub-standard and variable study designs (e.g., cross-sectional vs. longitudinal) and varied assessments of creativity and innovation (e.g., employee self-rating, leader rating, "objective" metric). Second, Hughes et al. (2018, p. 554) argue that "the variation might represent the fact that the very nature of creativity and innovation differs across organizational sectors and roles". Third, they argue that the variation might reflect the presence of moderating variables within the organizational context (e.g., dynamics of specific leader–follower relationships). The current meta-analysis provides a unique opportunity to explore a small number of variables from each of these three potential causes of variation. We chose moderators that are largely exogenous (e.g., sex, industry) in nature and thus are relatively free from endogeneity biases (i.e., common method, missing variable, reciprocal effects). As a result, any moderating effects can be interpreted as relatively reliable (see Antonakis, Bendahan, Jacquart, & Lalive, 2010, 2014; Hughes et al., 2018).

Methodological moderators

From this category, we explore whether leadership-creativity /innovation correlations are moderated by the use of common-source (i.e., self-rated creativity or innovation) versus non-common source (i.e., other-rated or objective measures) data and cross-sectional (i.e., leadership and creativity/innovation are measured concurrently) versus time-separated (i.e., creativity or innovation is measured at a later time point than leadership) designs. The use of time-separated designs and/or non-common source data represents two methods frequently employed to try and reduce endogeneity biases arising from the use of common methods (see Podsakoff, MacKenzie, & Podsakoff, 2012).

Industrial context

Hughes et al. (2018) suggest that creativity and innovation might look somewhat different across industrial contexts and note that "no papers have empirically examined cross-industry effects, thus, direct comparisons across industry boundaries would be an interesting avenue for future research." (p. 554). Accordingly, we explore knowledge intensity as an industrial-level moderator. Work within high knowledge-intensive industries uses a body of complex knowledge (Von Nordenflycht, 2010) to "produce qualified objects and/or services by utilizing the knowledge of the personnel as the major resource" (Alvesson, 2000, p. 1101). Examples of knowledge-intensive industries include high-tech service (e.g., telecommunication, computer design), professional service (e.g., law and accounting, banking and insurance, consultancy, education, information service industries), and high-tech manufacturing (e.g., pharmaceuticals, aerospace, biotechnology) (Alvesson, 2000; Liao, Fei, & Chen, 2007).

We argue that it is possible that knowledge-intensive organizations require different leadership styles than traditional labour-intensive (e.g., hospitality) or capital-intensive industries (e.g., low-tech manufacturing) (Terpstra & Rozell, 1993). In knowledge-intensive work contexts, leadership focusing on fostering employees' feeling of intrinsic motivation, trust, and empowerment, is likely to be more effective at encouraging knowledge sharing and creativity/innovation (Donate & de Pablo, 2015). For example, supportive and empowering leadership should be more effective in enhancing employee creativity and innovation, than authoritarian leadership, in high knowledge-intensive industries (Chuang, Jackson, & Jiang, 2016; Srivastava, Bartol, & Locke, 2006).

National culture – power distance

As an additional contextual variable, we explore the possible moderating role of culture because what is expected of leaders varies due to cultural expectations (House, Javidan, Hanges, & Dorfman, 2002) meaning that national culture can influence the effectiveness of different leadership styles (e.g., Dorfman, Sully de Luque, Hanges, & Javidan, 2010; Hofstede, 2001; House & Aditya, 1997; Sully de Luque, Javidan, Hanges, & Dorfman, 2011). Here, we use the Hofstede cultural dimensions to examine national cultural based on the geographic locations where studies were drawn (Hofstede, 2001). We focus on power distance, which refers to beliefs about status, authority, and power in organizations and therefore has a stronger theoretical link to followers' reactions to different leadership styles than many other cultural values (Kirkman, Chen, Farh, Chen, & Lowe, 2009; Ng, Koh, Ang, Kennedy, & Chan, 2011). Societies with a high-power distance orientation expect more and are more receptive to top-down direction from their leaders (Javidan, House, Dorfman, Hanges, & De Luque, 2006). For instance, Den Hartog et al. (1999) suggest that in high-power distance societies there should exist a less negative attitude towards authoritarian leadership. By contrast, in low power-distance cultures, people are argued to be less respectful of authority and more likely to view leaders as equal in status to others (Rockstuhl, Dulebohn, Ang, & Shore, 2012). Thus, the norms of low power-distance cultures should be more compatible with leadership styles that promote equality and delegation between leaders and followers (Hale & Fields, 2007).

Follower gender

Finally, we consider follower gender as a possible within-context moderator. Typically, compared to females, males are more likely to attain creative eminence across various domains in the arts and sciences (Abra & Valentine-French, 1991; Cole & Zuckerman, 1987; Piirto, 1991). There are many potential reasons for this effect (see Abraham, 2016; Baer & Kaufman, 2008) but the most promising explanations seem to revolve around what has been entitled a "male hubris-female humility" bias (Furnham, Fong, & Martin, 1999). That is, males typically rate themselves better at most things than women including having greater creative self-efficacy, especially within scientific and competitive contexts (Hughes, Furnham, & Batey, 2013; Kaufman, 2006). Because "self-assessments of our abilities influence what we attempt to do and how much effort we expend … [they] are important not just to self-perception but also to performance" (Hughes, Furnham, & Batey, 2013, p. 76). Similarly, males' creative efforts are typically more resilient to the nature of feedback and rewards. For example, studies of creative writing have demonstrated that introducing reward-based extrinsic motivators or performance evaluations had no discernible effect on the males' creative

output but negatively affected female performance (Baer, 1998). Thus, it is possible that by working to increase the confidence of their employees and motivating in the "appropriate" way, leaders might have a relatively more important role to play for female followers. In other words, male creative hubris perhaps acts as a buffer, regardless of how a leader behaves.

Moderation summary

To summarize, meta-analytic studies provide a unique opportunity to explore moderators that are difficult to test in single studies. To that end, the current research seeks to explore boundary conditions that might help to explain some of the variation in effect sizes found across primary studies (Hughes et al., 2018).

Research question 7: To what extent do study design features, national culture, industrial context and follower gender impact the strength of the relationship between different leadership styles and creativity/innovation?

Method

Literature search and study inclusion

A thorough search was conducted in order to identify published and unpublished samples that examined the relationship between leadership variables with creativity or innovation. To ensure completeness, we used electronic databases, EBSCOHost, Emerald, ProQuest, PsycINFO, and ScienceDirect, which collectively include a wide range of management and applied psychology journals. We included the search terms: *lead*, creativity, creative behave*, innovate*, innovative behav*, idea generation, idea implementation, idea promotion*. This process yielded a total of 10,043 results including journal articles, dissertations, books, conference papers and proceedings, and working papers. In addition, we examined the reference lists from any relevant review articles and most recent papers (Hughes et al., 2018; Mainemelis et al., 2015; Reiter-Palmon & Illies, 2004; Wang et al., 2011; Watts, Steele, & Den Hartog, 2019). Finally, we searched for possible unpublished and in-press studies by sending email solicitations to members of the Academy of Management OB listserv.

A study had to meet several criteria to be included in our final analysis. First, it had to include a zero-order correlation between a leadership variable and either creativity or innovation at the individual-level. Individual creativity was assessed with "objective" measures (e.g., creativity bonuses: Liao, Liu, & Loi, 2010) or leader-, peer-, customer- and self-ratings of commonly used creative behaviour scales (e.g., Zhou & George, 2001). Innovation was assessed with leader-, customer- and self-ratings of commonly used innovative behaviour scales (e.g., Janssen, 2000; Scott & Bruce, 1994). We only included studies that used follower ratings of leadership variables. While a handful of studies in the search used leader-rating of their own style (e.g., Van Dyne, Jehn, & Cummings, 2002), the overwhelming majority used follower-rating and thus we chose to focus only on these studies. The second inclusion criteria for our analyses was that the study included the sample size used to arrive at the correlation. Third, the sample had to be independent from other studies; if a sample overlapped with another study, it was only included once. After coding these papers, we looked for the most common leadership variables examined. Like other researchers (e.g., Cole, Walter, Bedeian, & O'Boyle, 2012; Hoch et al., 2018), we made an *a priori* decision that we would include a leadership variable if it was included in four or more samples with either creativity or innovation. This criterion ruled out several leadership variables that were represented by fewer than four studies, including inclusive (2), ambidextrous (2) or empathetic (1) leadership. Our final sample included studies related to transformational, transactional, LMX, empowering/participative, servant, ethical/moral, authentic, humble, supportive, benevolent, entrepreneurial, authoritarian, and destructive leadership. In total, 255 publications and 266 independent samples (several publications reported multiple samples) met these criteria. Appendix C(Table C1) provides details of the studies included for every meta-correlation produced in our analyses.

In addition to exploring the correlations between the leadership variables, creativity and innovation, the current study is also concerned with the relative effects of different leadership variables and moderators. For moderation analysesk, we coded pertinent information from the studies, such as the national culture in which each study was conducted, the percentage of leaders and/or followers that were males, and the average age of followers. In order to determine the relative effects of the different leadership variables, we required meta-analytic correlations between leadership variables. For some of these relationships, we were able to rely on recently published meta-analytic papers to get the required correlation. For example, recent studies provided meta-analytic correlations between leadership styles such as ethical and empowering leadership and transformational leadership (e.g., Hoch et al., 2018; Lee et al., 2018). For other leadership variables, no previous meta-analyses were available and thus we conducted a separate search to find correlations between styles. Appendix A (Table A1) highlights the source of all these meta-analytic correlations.

Meta-analysis procedure

The meta-analysis utilized the Hunter and Schmidt (2015) approach. This method produces a sample weighted mean correlation (r) and a mean correlation corrected for unreliability in both independent and dependent variables, henceforth referred to as the corrected population correlation (ρ). Missing values (i.e., reliability of either predictor or criterion) were estimated by adding the average value across the studies in which information was provided (Hunter & Schmidt, 2015). If a study included multiple operationalizations of either creativity or innovation, we averaged the correlation to create a single correlation. For example, a study by Harris and colleagues (2014) included both supervisor and co-worker ratings of employee creativity (Study 2), which was averaged. The 95% confidence intervals (95% CI) of the sample-weighted mean correlation and the 80% credibility intervals (80% CV) of the corrected population correlation were also reported. Confidence intervals estimate variability in the sample-weighted mean correlation that is due to sampling error; credibility intervals estimate variability in the individual correlations across studies that is due to moderating variables (Whitener, 1990). If the 95% confidence interval does not include zero, we can be confident that the sample-weighted mean correlation differs from zero. Confidence intervals can also be used

to determine whether two estimates differ from each other; two estimates are considered different when their confidence intervals are non-overlapping.

If the 80% credibility interval of the corrected population correlation is large it is indicative of the fact that there is considerable variation across studies, and moderators are likely to be operated. We also estimated the percentage of variance accounted for in the corrected population correlation by sampling and measurement error (% VE, Hunter & Schmidt, 1990). Typically, moderators are likely to be present when sampling and measurement error accounts for less than 75% of the variance (Hunter & Schmidt, 1990). To explore moderators between the different leadership variables and creativity and/or innovation we ran random effects meta-regression. Meta-regression explores whether there is a significant difference between studies according to different levels of either continuous or categorical moderators (Borenstein, Hedges, Higgins, & Rothstein, 2011). We conducted these moderator analyses using the meta-analytic software, Comprehensive Meta-Analysis (version 2.2.064, 2011, Biostat, Englewood, NJ). We first tested several methodological moderators, including: rater (whether creativity/innovation was self- or other-rated/objective); time (whether the creativity/innovation was measured at the same time or later than the leadership variable); and whether the studies were published or unpublished (to test for any publication bias). After testing these methodological moderators, we then explored theoretical moderators, including the national culture in which the studies were conducted, the industry context, and the gender of the followers. For national culture, each study was given a score for power-distance, ranging from 1 (representing very low power-distance) to 100 (indicating very high power-distance) based on the culture taxonomies obtained from Hofstede (2001). For example, according to Hofstede's research, Austria has a very low power distance with a score of 11. Malaysia, on the other hand, has a score of 100. We took two steps to code the industry knowledge intensity. First, we coded the studies' industry if the information was available. We then coded the studies' industry type as a dichotomous/nominal variable where 1 represents high-knowledge intensity, and 0 represents low-medium-knowledge intensity. We coded industry knowledge intensity based on Alvesson's (2000) and OECD's definition of knowledge intensive industries (Liao et al., 2007; Miles, 2008). For example, industries that are considered to be high knowledge intensity typically include high-tech service (e.g., telecommunication, computer and related activities), professional service (e.g., law and accounting, banking and insurance, health and social work, management, consultancy, education, information service industries), and high-tech manufacturing (e.g., pharmaceuticals, aerospace, and biotechnology industries). Industries that are considered low-medium industry knowledge intensity typically include retail trade, wholesale trade, and textile and clothing manufacturing (Miles, 2008). Additionally, we followed the categorization used by Classification of Economic Activities in the European Community (NACE) to categorize industries based on Alvesson's definition if the industry appears as a sub-category of the main knowledge intensive industry categories. For example, computer and related activities category can include industries such as industries reported as database activities and software/IT service. Finally, follower gender was coded as the proportion of the followers in the study that were male.

To test for the relative predictive validity of the different leadership variables, we conducted relative weights analysis (Johnson, 2000). Relative weights analysis tests the relative contribution (i.e., relative importance) among multiple (often correlated) predictor variables in a regression analysis. Relative weights analysis converts the total variance predicted in a regression model (R squared) into weights that accurately reflect the proportional contribution of the various predictor variables. Specifically, these weights represent an additive decomposition of the total model and can be interpreted as the proportion (percentage) of variance explained in the outcome (e.g. creativity) that is appropriately attributed to each leadership variable. As such relative weights analysis considers *only* the relative contribution of a variable to total variance explained. The analysis addresses the problem caused by correlated predictors by using a variable transformation approach that takes into account a variable's contribution to an outcome by itself and in combination with other predictor variables (see Johnson, 2000; Johnson & LeBreton, 2004; LeBreton & Tonidandel, 2008; Tonidandel & LeBreton, 2011, for a detailed discussion of relative weight analysis). The use of relative weights in meta-analyses has gained great popularity and is common in the management literature (see Hoch et al., 2018; Kurtessis et al., 2017; Lee et al., 2018). To conduct the analysis, we first created a correlation matrix, which included meta-analytic correlations between all study variables (where possible). To reduce common-source variance and common-method bias, the correlations between leadership and creativity and/or innovation, were based on non-common source estimates (cf. Podsakoff et al., 2012). In other words, we did not include self-rated creative or innovative performance in these analyses. Using this correlation matrix, we conducted relative weights analyses, using Tonidandel and LeBreton's (2011) guidelines.

Results

Meta-analytic coefficients between the various leadership variables and individual-level creativity and innovation are displayed in Table 1. We formulated effect sizes using all studies, studies using only self-reported creativity and innovation, and studies using only non-self-report creativity and innovation.

All the leadership variables, except transactional leadership, were significantly associated with creativity. Entrepreneurial leadership and authentic leadership shared the largest correlation with creativity (ρ = .47). As indicated by non-overlapping 95% confidence intervals, authentic leadership had a significantly larger association than transformational, benevolent, humble, supportive, authoritarian, and destructive. The association between transactional leadership and creativity was found to be more variable – with confidence intervals that crossed zero. To better understand the effects of transactional leadership we examined its dimensions separately. Of the 12 studies examining transactional leadership and creativity, five examined contingent reward as a separate dimension, while three focused on management by exception. We found that contingent reward was positively and significantly associated with creativity, whereas management by exception had a non-significant association with creativity (See Table 2). Table 2 also shows the meta-analytic coefficients for the

Table 1. Meta-analytic correlations between leadership styles, creativity and innovation.

				95% CI					80% CV	
Variable	*k*	*N*	*r*	Lower	Upper	ρ	SD_ρ	%VE	Lower	Upper
Transformational Leadership										
Creativity	55	18,122	0.28	0.23	0.33	0.31	0.20	7.51	0.05	0.57
Creativity: Self-rated	21	7483	0.32	0.23	0.41	0.36	0.22	5.61	0.08	0.64
Creativity: Other-rated	34	11,010	0.25	0.19	0.30	0.27	0.18	9.80	0.04	0.51
Innovation:	34	14,043	0.26	0.21	0.31	0.29	0.16	9.30	0.08	0.50
Innovation: Self-rated	19	9806	0.29	0.23	0.34	0.33	0.13	11.19	0.16	0.49
Innovation: Other-rated	16	3946	0.23	0.14	0.26	0.26	0.22	8.62	−0.02	0.54
Transactional Leadership										
Creativity	12	5041	0.12	−0.03	0.26	0.14	0.29	3.57	−0.23	0.51
Creativity: Self-rated	4	2556	0.28	0.12	0.44	0.34	0.19	5.29	0.10	0.57
Creativity: Other-Rated	8	2485	−0.04	−0.20	0.12	−0.04	0.26	5.96	−0.37	0.29
Innovation	11	7186	0.19	0.10	0.27	0.23	0.17	7.12	0.02	0.45
Innovation: Self-rated	6	5746	0.20	0.10	0.30	0.24	0.14	6.53	0.06	0.43
Innovation: Other-rated	6	1440	0.14	−0.03	0.32	0.18	0.24	8.53	−0.13	0.49
Authentic Leadership										
Creativity	16	5088	0.42	0.34	0.51	0.47	0.18	7.32	0.24	0.71
Creativity: Self-rated	7	2905	0.43	0.35	0.52	0.48	0.11	13.17	0.33	0.63
Creativity: Other-rated	9	2184	0.41	0.26	0.56	0.47	0.25	5.56	0.15	0.79
Servant Leadership										
Creativity	11	4490	0.34	0.21	0.47	0.38	0.25	3.83	0.06	0.70
Creativity: Self-rated	5	2385	0.40	0.22	0.58	0.45	0.24	3.30	0.15	0.75
Creativity: Other-rated	6	2105	0.27	0.09	0.45	0.31	0.24	5.17	0.00	0.61
Innovation	7	1491	0.30	0.18	0.42	0.34	0.18	13.87	0.11	0.56
Innovation: Self-rated	4	811	0.40	0.27	0.54	0.46	0.16	16.16	0.26	0.66
Innovation: Other-rated	3	680	0.18	0.09	0.28	0.20	0.06	59.56	0.13	0.28
Ethical Leadership										
Creativity	15	3982	0.31	0.24	0.39	0.36	0.14	16.16	0.18	0.55
Creativity: Self-rated	5	1250	0.29	0.16	0.41	0.34	0.14	19.10	0.16	0.52
Creativity: Other-rated	10	2732	0.33	0.24	0.41	0.37	0.15	15.16	0.19	0.56
Innovation	7	2349	0.24	0.16	0.32	0.28	0.12	19.76	0.12	0.44
Innovation: Self-rated	4	1396	0.25	0.12	0.38	0.28	0.15	13.13	0.09	0.47
Innovation: Other-rated	3	953	0.23	0.17	0.29	0.28	0.05	59.32	0.22	0.35
Humble Leadership										
Creativity	4	1347	0.24	0.15	0.33	0.28	0.10	27.38	0.15	0.40
Creativity: Other-rated	4	1347	0.24	0.15	0.33	0.28	0.10	27.38	0.15	0.40
Empowering Leadership										
Creativity	22	5810	0.32	0.26	0.39	0.36	0.17	11.06	0.14	0.58
Creativity: Self-rated	6	1174	0.40	0.31	0.50	0.44	0.12	24.01	0.29	0.59
Creativity: Other-rated	16	2892	0.38	0.31	0.45	0.42	0.15	11.81	0.22	0.62
Innovation	9	4595	0.31	0.25	0.37	0.35	0.10	16.35	0.22	0.48
Innovation: Self-rated	5	2450	0.37	0.30	0.44	0.43	0.08	24.88	0.33	0.53
Innovation: Other-rated	4	2145	0.24	0.18	0.31	0.27	0.06	39.07	0.20	0.35
Entrepreneurial Leadership										
Creativity	3	820	0.40	0.27	0.54	0.47	0.11	21.02	0.32	0.62
Innovation	5	1379	0.26	0.19	0.33	0.29	0.06	49.23	0.21	0.37
LMX										
Creativity	39	11,671	0.30	0.26	0.35	0.34	0.14	15.46	0.16	0.52
Creativity: Self-rated	16	4846	0.36	0.31	0.42	0.41	0.12	18.68	0.26	0.56
Creativity: Other-Rated	27	7411	0.27	0.21	0.32	0.30	0.14	17.29	0.12	0.47
Innovation	22	6449	0.27	0.22	0.31	0.31	0.10	28.67	0.18	0.43
Innovation: Self-rated	11	4257	0.29	0.22	0.36	0.35	0.11	19.34	0.20	0.49
Innovation: Other-rated	11	2192	0.21	0.18	0.24	0.24	0.00	100.00	0.24	0.24
Supportive Leadership										
Creativity	14	4261	0.21	0.13	0.29	0.24	0.18	11.05	0.01	0.47
Creativity: Self-rated	8	2760	0.27	0.17	0.37	0.30	0.18	9.49	0.07	0.53
Creativity: Other-rated	7	1779	0.08	−0.01	0.18	0.09	0.14	23.08	−0.08	0.26
Innovation	8	2770	0.31	0.24	0.38	0.36	0.12	17.60	0.20	0.51
Innovation: Self-rated	4	1419	0.27	0.15	0.40	0.31	0.15	12.55	0.12	0.50

(*Continued*)

Table 1. (Continued).

				95% CI					80% CV	
Variable	*k*	*N*	*r*	Lower	Upper	ρ	SD_ρ	%VE	Lower	Upper
Innovation: Other-rated	4	1351	0.35	0.31	0.39	0.41	0.05	60.97	0.35	0.47
Benevolent Leadership										
Creativity	6	1780	0.23	0.17	0.30	0.27	0.07	42.66	0.18	0.37
Creativity: Other-rated	4	1206	0.20	0.15	0.26	0.23	0.00	100.00	0.23	0.23
Innovation	5	1452	0.25	0.10	0.40	0.28	0.20	9.25	0.02	0.53
Innovation: Self-rated	3	741	0.23	−0.02	0.48	0.23	0.25	6.73	−0.08	0.55
Authoritarian Leadership										
Creativity	11	4367	−0.10	−0.20	−0.00*	−0.13	0.18	9.07	−0.36	0.11
Creativity: Self-rated	6	1422	−0.13	−0.30	0.03	−0.16	0.23	10.01	−0.45	0.12
Creativity: Other-rated	5	2945	−0.09	−0.21	0.04	−0.11	0.16	8.39	−0.31	0.09
Innovation	6	1619	−0.13	−0.22	−0.03	−0.15	0.11	27.70	−0.29	−0.01
Innovation: Self-rated	3	742	−0.24	−0.33	−0.14	−0.25	0.08	40.98	−0.35	−0.15
Innovation: Other-rated	3	877	−0.04	−0.09	0.01	−0.05	0.00	100.00	−0.05	−0.05
Destructive Leadership										
Creativity	14	4911	−0.20	−0.25	−0.14	−0.22	0.11	21.51	−0.36	−0.08
Creativity: Self-rated	5	1494	−0.24	−0.30	−0.19	−0.26	0.06	53.19	−0.33	−0.19
Creativity: Other-rated	9	3417	−0.18	−0.25	−0.10	−0.20	0.12	17.53	−0.35	−0.04

Note. Results are corrected for criterion and predictor unreliability. *k* = number of correlations; *N*= number of respondents; *r*= sample weighted mean correlation; ρ =corrected population correlation; SD_ρ = standard deviation of the corrected population correlation; % VE = percentage of variance attributed to sampling error in corrected population correlation; 95% CI = 95% confidence interval around the sample weighted mean correlation; 80% CV = 80% credibility interval around the corrected population correlation. * Rounded up from −0.0045

Table 2. Meta-analytic results for the relationship between the dimensions of transformational and transactional leadership.

				95% CI					80% CV	
Variable	*k*	*N*	*r*	Lower	Upper	ρ	SD_ρ	%VE	Lower	Upper
Transformational – Creativity										
Idealized Influence & Charisma	7	2283	0.18	0.13	0.23	0.20	0.06	54.75	0.13	0.27
Inspirational Motivation	4	1149	0.17	0.14	0.20	0.20	0.00	100.00	0.20	0.20
Intellectual Stimulation	4	1174	0.18	0.06	0.31	0.22	0.13	20.88	0.05	0.38
Individualized Consideration	5	1888	0.19	0.14	0.24	0.22	0.05	53.93	0.15	0.29
Transactional – Creativity										
Contingent Reward	5	2511	0.30	0.16	0.43	0.36	0.18	7.21	0.14	0.59
Contingent Reward: Other-rated	3	849	0.15	0.04	0.26	0.19	0.03	83.26	0.16	0.23
Management by Exception*	3	1085	−0.01	−0.05	0.03	−0.01	0.00	100.0	−0.01	−0.01
Transactional – Innovation										
Contingent Reward	5	4349	0.25	0.23	0.26	0.30	0.00	100.00	0.30	0.30
Contingent Reward: Other-rated	3	1049	0.26	0.23	0.30	0.33	0.00	100.00	0.33	0.33

Results are corrected for criterion and predictor unreliability. *k* = number of correlations; *N*= number of respondents; *r*= sample weighted mean correlation; ρ =corrected population correlation; SD_ρ = standard deviation of the corrected population correlation; % VE = percentage of variance attributed to sampling error in corrected population correlation; 95% CI = 95% confidence interval around the sample weighted mean correlation; 80% CV = 80% credibility interval around the corrected population correlation.

**Due to lack of primary studies, it was not possible to examine management by exception passive and active or laissez-faire.*

dimensions of transformational leadership; no significant differences were found across the four dimensions of transformational leadership (ρ = .20 – .22).

Innovation was significantly associated with all the leadership variables. However, we did not find enough primary studies to explore the associations between innovation and authentic, humble, authoritarian, or destructive leadership. Further, we did not find enough primary studies that explored the dimensions of transformational leadership in relation to follower innovation. The largest association was found between supportive leadership and innovation (ρ = .38). To better understand the effects of transactional leadership we examined its dimensions and found that contingent reward was positively and significantly associated with creativity (ρ = .30), however we were unable to find enough studies that examined the effect of management by exception on individual innovation (See Table 2).

Moderation analysis

Table 3 displays the results of our moderation analyses. Further, the meta-analytic correlations between the leadership variables and creativity/innovation at different levels of the dichotomous moderators (i.e., published vs unpublished studies; high vs low knowledge-intensive industry; cross-sectional vs time separated design) can be found in Appendix B (Table B1).

First, we tested for the possibility of publication bias, by examining any difference in effect between published and unpublished studies. As highlighted in Table 3, we found no differences in the relationship between creativity and LMX, transformational, and empowering leadership dependent on whether the data were published or unpublished. Further, we found no evidence for publication bias in the relationship between transformational leadership and innovation. The

Table 3. Moderation analyses.

Variable	*k*	*N*	*r*	*β*	*s.d.*	95%-CI-LL	95%-CI-UL	z-value	*p*-value	T^2	Moderator effect present?
Published vs Unpublished Studies											
Transformational – creativity	55	18,122	.27	−.03	.07	−.17	.11	−.44	.66	.05	No
Transformational – innovation	33	10,863	.28	−.01	.09	−.19	.17	−.14	.89	.03	No
LMX – creativity	39	11,671	.32	−.05	.08	−.21	.11	−.58	.56	.02	No
Empowering – creativity	22	5810	.35	.02	.15	−.26	.31	.15	.89	.03	No
Common-source vs non-common source ratings of outcome											
Transformational – creativity	55	18,122	.27	−.12	.06	−.24	−.00	−2.04	.04	.04	Yes, the correlation is smaller when the data is based on non-common source data.
Transformational – innovation	33	10,863	.27	−.14	.07	−.27	−.01	−2.07	.04	.03	Yes, the correlation is smaller when the data is based on non-common source data.
Transactional – creativity	12	5041	.10	−.21	.15	−.50	.08	−1.40	.16	.06	No
Transactional – innovation	8	3062	.90	−.20	.19	−.58	.18	−1.04	.30	.07	No
LMX – creativity	39	11,671	.32	−.11	−.05	−.21	−.00	−2.06	.04	.02	Yes, the correlation is smaller when the data is based on non-common source data.
LMX – innovation	21	6112	.26	−.09	.06	−.20	.02	−1.57	.12	.01	No
Authentic – creativity	16	5088	.44	.02	.12	−.22	.25	.13	.90	.05	No
Benevolent – creativity	6	1780	.25	−.11	.09	−.28	.05	−1.33	.18	.01	No
Empowering – creativity	22	5810	.35	−.13	.09	−.31	.05	−1.49	.14	.03	No
Empowering – innovation	7	3727	.37	−.24	.10	−.43	−.04	−2.40	.02	.01	Yes, the correlation is smaller when the data is based on non-common source data.
Servant – creativity	11	4490	.26	−.07	.19	−.41	.29	−.35	.72	.08	No
Servant – innovation	7	1491	.28	.13	.15	−.17	.42	.85	.40	.03	No
Authoritarian – creativity	11	4367	−.14	−.01	.14	−.28	.25	−.10	.92	.05	No
Authoritarian – innovation	6	1619	−.14	0.22	0.07	0.09	0.36	3.2	0.00	0.00	Yes, the correlation is smaller when the data is based on non-common source data.
Ethical – creativity	15	3982	.35	.01	.10	−.19	.21	.12	.91	.03	No
Ethical – innovation	7	2349	.26	−.07	.11	−.23	.15	−.60	.55	.02	No
Supportive – creativity	14	4261	.23	−.21	.10	−.40	−.02	−2.20	.03	.03	Yes, the correlation is smaller when the data is based on non-common source data.
Supportive – innovation	8	2770	.31	.06	.10	−.13	.24	.58	.56	.01	No
Destructive – creativity	13	4796	−.21	.08	.08	−.07	.24	1.02	.31	.01	No
Cross-sectional vs Time-separated studies											
Transformational – creativity	50	16,921	.23	−.01	.08	−.17	.16	−.09	.93	.05	No
Transformational – innovation	33	10,863	.27	−.12	.08	−.27	.03	−1.59	.11	.03	No
LMX – creativity	39	11,671	.32	−.11	.06	−.22	−.00	−1.96	.05	.37	Yes, the correlation is smaller for time-separated studies
LMX – innovation	21	6112	.26	−.00	.10	−.21	.20	−.03	.98	.01	No
Authentic – creativity	16	5088	.44	−.11	.17	−.45	.23	−.65	.52	.07	No
Empowering – Creativity	22	5810	.35	−.06	.03	−.13	−.00	−1.98	.05	.03	Yes, the correlation is smaller for time-separated studies
Servant – creativity	11	4490	.26	−.01	.20	−.40	.38	−.04	.97	.08	No
Destructive – creativity	13	4796	−.21	−.01	.08	−.16	.13	−.19	.85	.01	No
National Culture – Power Distance											
Transformational – creativity	51	16,447	.21	.00	.00	−.00	.00	.91	.36	.03	No
Transformational – innovation	32	10,542	.28	−.00	.00	−.00	.00	−.01	.99	.04	No
Transactional – creativity	11	3938	.10	.00	.00	−.00	.01	1.19	.23	.04	No
Transactional – innovation	7	2741	.10	.00	.01	−.01	.02	.72	.47	.13	No
LMX – creativity	39	11,671	.32	−.00	.00	−.00	.00	−.35	.73	.02	No
LMX – innovation	19	5712	0.27	0.00	0.00	−0.00	0.00	1.03	0.31	0.01	No
Authentic – creativity	16	5088	.44	−.00	.01	−.01	.01	−.32	.75	.06	No
Benevolent – creativity	6	1780	.25	.00	.00	−.01	.01	.36	.72	.01	No
Empowering – creativity	21	5584	.30	−.01	.00	−.01	−.00	−2.03	.04	.02	Yes, the higher the power distance score, the smaller the correlation.
Empowering – innovation	7	3727	.37	−.00	.00	−.01	.00	−1.63	.10	.02	No
Servant – creativity	9	4121	.31	−.00	.00	−.01	.01	−.39	.70	.07	No
Servant – innovation	5	1191	.34	.01	.00	.01	.01	5.20	.00	.00	Yes, the higher the power distance score, the larger the correlation
Authoritarian – creativity	9	4026	−.12	.01	.01	−.00	.02	1.37	.17	.03	No
Authoritarian – innovation											
Ethical – creativity	15	3982	.35	.00	.00	−.00	.01	.94	.35	.03	No
Ethical – innovation	7	2349	.26	.01	.00	−.00	.01	1.28	.20	.01	No

(*Continued*)

Table 3. (Continued).

Variable	*k*	*N*	*r*	*β*	*s.d.*	95%-CI-LL	95%-CI-UL	z-value	*p*-value	T^2	Moderator effect present?
Supportive – creativity	11	3864	.15	.01	.00	.00	.01	2.98	.00	.01	Yes, the higher the power distance score, the larger the correlation
Supportive – innovation	8	2770	.23	−.00	.00	−.01	.01	−.11	.91	.02	No
Destructive – creativity	13	4796	−.21	−.00	.00	−.01	.00	−.20	.83	.01	No
Industry Knowledge Intensity											
Transformational – creativity	38	12,561	.26	.01	.09	−.16	.18	.11	.91	.03	No
Transformational – innovation	29	10,501	.26	−.02	.09	−.19	.16	−.18	.86	.04	No
Transactional – creativity	10	3779	0.05	0.18	0.16	−0.19	0.54	0.95	0.34	0.05	No
LMX – creativity	33	9462	.32	.05	.08	−.11	.20	.61	.54	.02	No
LMX – innovation	21	6112	0.26	−.24	0.06	−0.36	−0.13	−4.02	0.00	0.01	Yes, the correlation is smaller in knowledge intensive industries
Empowering – creativity	21	5358	.35	−.06	.10	−.25	.13	−.60	.55	.04	No
Authentic – creativity	12	3787	.41	−.31	.16	−.63	.01	−1.89	.06	.07	No
Supportive – creativity	10	3051	.21	−.16	.13	−.42	.11	−1.17	.24	.03	No
Supportive – innovation	8	2770	.31	−.19	.09	−.37	−.01	−2.14	.03	.01	Yes, the correlation is smaller in knowledge intensive industries
Destructive – creativity	12	3847	−.22	−.07	.10	−.27	.12	−.73	.47	.02	No
Follower Gender											
Transformational – creativity	41	12,783	.27	.00	.00	−.00	.00	.53	.59	.04	No
Transformational – innovation	21	6545	.23	.00	.00	−.00	.01	.26	.79	.04	No
Transactional – creativity	9	3014	.06	−.00	.00	−.01	.01	−.03	.98	.04	No
LMX – creativity	35	11,098	.33	−.00	.00	−.00	−.00	−3.34	.00	.02	Yes, the higher the percentage of male followers, the smaller the correlation
LMX – innovation	17	5537	.27	−.00	.00	−.01	−.00	−2.18	.03	.01	Yes, the higher the percentage of male followers, the smaller the correlation
Authentic – creativity	13	4266	.43	−.01	.00	−.01	−.00	−2.46	.01	.04	Yes, the higher the percentage of male followers, the smaller the correlation
Benevolent – creativity	6	1780	.25	−.00	.00	−.01	.00	−.90	.37	.01	No
Empowering – creativity	21	5458	.34	−.00	.00	−.01	.00	−1.29	.20	.03	No
Empowering – Innovation	6	3872	.27	−.00	.01	−.01	.01	−.52	.60	.02	No
Servant – creativity	11	4490	.26	−.01	.00	−.01	−.00	−2.17	.03	.04	Yes, the higher the percentage of male followers, the smaller the correlation
Servant – innovation	6	1443	.27	.00	.01	−.01	.02	.34	.74	.05	No
Authoritarian – creativity	10	3980	−.12	−.00	.00	−.01	.01	−.20	.84	.03	No
Authoritarian – innovation	5	1464	−.12	0.00	0.02	−0.04	0.04	0.12	0.90	0.02	No
Ethical – creativity	12	3036	.37	.00	.00	−.01	.01	.20	.84	.04	No
Ethical – innovation	7	2349	.26	−.00	.01	−.01	.01	−.33	.74	.02	No
Supportive – creativity	13	4032	.13	−.00	.00	−.01	.01	−.52	.60	.04	No
Supportive – innovation	7	1984	.30	−.00	.00	−.01	.01	−.49	.62	.02	No
Destructive – creativity	13	4452	−.29	.01	.00	.00	.01	3.20	.00	.00	Yes, the greater the percentage of male followers, the smaller (i.e. less negative) the correlation

k = number of correlations; N = number of respondents; r = sample-weighted mean correlation; b = Beta coefficient; SD = standard deviation of the beta coefficient; z-value = test of the null hypothesis that there is no difference in effect size between groups; p-value = tests for the significance of the z-value; T2 = Tau squared, the between-studies variance.

aforementioned relationships were the only ones with enough unpublished data to test for differences.

Regarding methodological moderators, we found some evidence that correlations were inflated when either creativity or innovation were self-rated as opposed to other-rated (e.g., leader-rated) or objectively assessed (See Table 3). For example, we found that the relationship between transformational leadership and both creativity and innovation was significantly larger when common-source data were used. We also found evidence for inflated correlations when leadership and creativity were assessed concurrently. Specifically, the link between creativity and both LMX and empowering leadership was weaker when these variables were time separated compared to measured simultaneously. For many leadership variables, there were too few time-separated designs to conduct this moderation analysis.

We respect to knowledge intensity, we found little evidence that this aspect of industrial context influenced the strength of the relationship between leadership and either creativity or innovation. However, LMX and supportive leaders had a weaker impact on innovation in knowledge intensive industries.

In terms of national culture, we explored the moderating effect of power distance. In most of the analyses power distance had no significant effect on the relationship between leadership and either creativity or innovation. However, for empowering leadership, we found that the relationship with creativity was weaker in cultures higher in power distance. Conversely, we found that the relationship between supportive leadership and creativity and was stronger in cultures higher in power distance. Similarly, the relationship between servant leadership and innovation was stronger in such cultures.

Finally, we found evidence that several leadership variables had stronger correlations when the proportion of female followers was higher compared to lower. Correlations between creativity and LMX, authentic, servant, and destructive leadership were weaker when there was a higher proportion of male followers. Correlations between LMX and innovation were weaker when there was a higher proportion of male followers.

Relative weights analysis

We explored the relative association between the leadership variables and creativity and innovation. We conducted this analysis in two steps. First, we compared the effect of each leadership variable to the full-range leadership model (i.e., transformational and transactional leadership). Where possible we did this for both creativity and innovation. For transactional leadership, we decided to focus on contingent rewards. Measures that combined contingent reward and management by exception had inconsistent effects on both creativity and innovation (i.e., 95% confidence intervals that overlapped zero) but the contingent reward dimension had positive and significant effects on creativity/innovation (See Table 2). The second step focused on comparing the effect of leadership variables within the different categories. For instance, we examined the relative importance of authentic, servant, ethical and humble leadership on creativity to ascertain which of these "moral styles" had the strongest relationship to creativity. For all these analyses, we decided to exclude self-rated creativity and innovation because our moderation analyses suggested that self-rated creativity and innovation was often significantly more strongly related to leadership – suggesting the potential for common-method bias (Podsakoff et al., 2012).

Table 4 shows the relative weight analyses comparing each of the leadership variables with transformational and contingent reward leadership. Relative weights analysis considers the relative contribution of a variable to total variance explained by the model tested. Regarding creativity, empowering (75%), LMX (51%), servant (47%), ethical (62%) and authentic (77%) leadership explained relatively more of the total predictable variance explained by the model than did transformational leadership or contingent reward leadership, whereas authoritarian (13%), destructive (26%), and supportive (15%) leadership accounted for relatively less of the total predictable variance explained than did transformational and contingent reward leadership. For humble and benevolent styles of leadership, we could only find enough studies to compare with transformational leadership. Humble leadership explained slightly more of the total predictable variance (53%) in creativity compared to transformational leadership, whereas benevolent explained much less (27%). These findings suggest that authentic and empowering leadership have the strongest relationship to creativity over transformational and contingent reward leadership. It is also interesting to note that apart from authoritarian and supportive leadership, contingent reward accounted for the smallest proportion of the variance explained in creativity.

Regarding innovation, a different pattern was evident, with only supportive leadership (58%) explaining relatively more of the total predictable variance than the full-range leadership

Table 4. Relative weights analysis comparing different leadership style with the full-range model.

	Individual Creativity: Other Rated			Individual Innovation: Other Rated		
Leadership Style	Relative Effect	Transformational	Contingent Reward	Relative Effect	Transformational	Contingent Reward
Empowering	74.88	17.76	7.37	28.84	19.35	51.81
LMX	50.80	35.35	13.84	19.47	23.82	56.71
Servant	46.61	33.25	20.13	17.17	26.22	56.60
Ethical	62.23	23.85	13.92	28.81	21.65	49.54
Authentic	77.14	15.98	6.89	n/a	n/a	n/a
Authoritarian	12.69	57.14	30.17	13.74	23.84	62.42
Destructive	25.90	53.56	20.54	n/a	n/a	n/a
Supportive	14.88	62.90	22.22	57.93	14.47	27.61
Benevolent	26.82	63.18	n/a	n/a	n/a	n/a
Humility	53.26	46.74	n/a	n/a	n/a	n/a
Entrepreneurial	n/a	n/a	n/a	42.61	57.39	n/a

Table 5. Relative weights analysis comparing different leadership style within leadership categories.

Leadership Style	Individual Creativity: Other Rated	Individual Innovation: Other Rated
Relationship Orientated Leadership Styles		
LMX	58.96	20.43
Supportive	19.08	79.57
Benevolence	21.96	n/a
Morally Based Leadership Styles		
Servant	15.14	26.32
Ethical	21.27	73.68
Authentic	53.58	n/a
Humility	10.01	n/a
Motivational Leadership		
Empowering	n/a	59.86
Entrepreneurial	n/a	40.14
Negative Leadership		
Authoritarian	17.70	n/a
Destructive	82.30	n/a
Transformational Leadership Dimensions		
Idealized Influence & Charisma	24.06	n/a
Inspirational Motivation	20.09	n/a
Intellectual Stimulation	27.14	n/a
Individualized Consideration	28.70	n/a

model. It is interesting to note that except for supportive leadership, the use of contingent rewards accounted for the greatest proportion of the variance explained in innovation. As far as data allowed, we conducted additional relative weights analysis within the categories of leadership. As shown in Table 5, we explored the relative weights of the relational-oriented leadership variables: LMX, supportive and benevolent leadership. Of these, LMX (59%) explained a larger proportion of the variance explained than either supportive (19%) or benevolent leadership (22%). However, supportive leadership (80%) explained a greater proportion of the variance explained in innovation compared to LMX (20%). Of the moral-based leadership styles, we found that authentic leadership accounted for the largest proportion of the variance explained in creativity (54%), whereas compared to servant leadership, ethical leadership (74%) accounted for most of the variance explained in innovation. For the two motivational styles, empowering leadership (60%) was the strongest predictor of innovation, explaining a higher proportion of the explained variance compared to entrepreneurial leadership (40%). Finally, of the negative leadership styles, destructive leadership (82%) explained a much larger proportion of the variance explained in creativity compared to authoritarian (18%).

Additionally, as shown in Table 5, we compared the relative importance of the different dimensions of transformational leadership on creativity. Of the four dimensions, individualized consideration explained the largest proportion of the variance explained in creativity (29%), however generally speaking the four dimensions accounted for similar proportions of the variance explained.

Discussion

To date, leadership, creativity and innovation research have produced a complex literature that hinders understanding and the development of evidence-based practical recommendations. We aimed to add clarity to the area by synthesizing empirical work to produce robust estimates of the correlations between 13 leadership variables and employee creativity and innovation, explore the relative importance of different leader variables, and explore some potential moderators. We discuss our findings in relation to our three key aims below.

Research question 1: Which leadership variable(s) is(are) most strongly associated with creativity and innovation?

Several previous meta-analyses reported positive correlations between authentic, servant, transformational, and empowering leadership and either creativity, innovation, or some combination of the two (Banks et al., 2016; Lee et al., 2018, 2019; Rosing et al., 2011; Wang et al., 2011). Our findings help to further clarify the field in two main ways. First, we estimated correlations for creativity and innovation, separately. Second, because we estimated reliable correlations between 13 leadership variables and creativity and innovation, we were better able to summarize the vast literature.

Before we discuss some of the more nuanced results, we first offer a broad overview of the main trend in the analysis, namely, that almost all leader variables are modestly correlated with employee creativity and innovation. In pursuit of parsimony, we sorted the 13 variables into five theoretically informed categories: the full-range model, moral leadership, motivational leadership, relational leadership, and negative leadership. We found that twelve of thirteen leadership styles had significant associations with creativity regardless of where they were categorized. Transactional leadership was the only style not to share a significant correlation. Due to data limitations, we were unable to estimate the association between innovation and authentic, destructive, or humble leadership. All the nine remaining variables (i.e., transformational, transactional, LMX, servant, ethical, entrepreneurial, authoritarian, benevolent, and supportive leadership) shared significant correlations with innovative behaviour. This is an interesting finding that can be interpreted in different ways.

One interpretation is that any of the leadership variables highlighted above will help leverage followers' creativity or innovation. Indeed, the same theoretical mechanisms have been posited to explain the effects of many different leadership variables (Hughes et al., 2018). For example, employee psychological empowerment (i.e., feelings of competence, purpose, autonomy, and impact) has been found to mediate the effects of transformational (e.g., Sun, Zhang, Qi, & Chen, 2012), transactional (Wei, Yuan, & Di, 2010), empowering (e.g., Zhang & Bartol, 2010), and ethical (e.g., Javed, Khan, Bashir, & Arjoon, 2017) leadership on creativity.

An alternative, perhaps more likely, the explanation is that many leader variables are redundant, and their assessment tools assess overall attitudes regarding leaders rather than actual behaviours (Lee, Martin, Thomas, Guillaume, & Maio, 2015). Current study designs preclude firm conclusions because they are plagued by endogeneity biases (i.e., the predictor variable is correlated with the error term of the outcome variable),which mean that ratings of leadership often correlate with outcomes such as employee creativity or innovation in two or more ways: (i) as a meaningful cause and (ii) due to errors such as common-method bias, reciprocal

effects, or relationships with a common cause (Antonakis et al., 2010, 2014; Banks et al., 2018; Hughes et al., 2018). However, it is likely that at least some leader variables are redundant and future research should prioritize efforts to identify which leader variables are unique and useful. Doing so would involve at least two steps. First, researchers should continue to identify overlap and uniqueness between leadership variables (e.g., Lemoine et al., 2019). Our relative weights analysis, discussed below, can also begin to shed some light on this matter by highlighting that while there is empirical overlap between the leadership variables, their correlations with creativity and innovation suggest there are also unique elements that can be drawn out. Arguably, the field would benefit most from a single taxonomy of important, behaviourally focussed, leader variables that could then be combined in different ways to produce more complex "styles". Such an approach would allow for both parsimony and emergent complexity. Second, researchers would need to use methods that are resistant to endogeneity bias in order to establish causal links between leadership and creativity/innovation. This would involve the use of experimental studies or by using instrumental variables and longitudinal designs (see Hughes et al., 2018).

Turning to some more nuanced findings. First, authentic (a moral style) and entrepreneurial (a motivational style), two rather different leadership styles, had the largest association with individual creativity. Entrepreneurial leaders are often creative themselves and focus their resources on enabling followers to experiment and challenge the status quo (Renko et al., 2015). In contrast, authentic leaders focus on developing their followers in a more holistic manner, by role-modelling personally expressive and authentic behaviour and providing opportunities for skill development and autonomy (e.g., Hoch et al., 2018). This would suggest that leaders can effectively influence creativity through behavioural modelling, providing autonomy, and being encouraging and honest.

Second, for individual innovation, supportive, empowering, and servant leadership had the strongest correlations. These findings tentatively suggest that employees are better able to innovate (i.e., promote and implement novel ideas) when their leaders become less "leader-like" in the traditional sense. That is, when leaders act as facilitators and support and empower employees.

Third, "negative" leadership (i.e., authoritarian and destructive) typically had weaker associations with creativity compared to "positive" leadership, suggesting that the effects of negative leaders are less pronounced that the effects of more positive leadership styles, such as those focused on morals, relationships, or motivation. These results add to the growing literature on negative leadership and specifically to results from a previous meta-analysis which found that destructive leaders had stronger effects than constructive leaders for some follower outcomes, but not others (Schyns & Schilling, 2013).

Research questions 2–6: Which leadership variable(s) have the largest relative association with creativity and innovation?

We used our uniquely comprehensive data set to conduct a series of analyses to address the fact that "it is unclear which leadership approaches are the strongest predictors because the literature has largely failed to examine the relative contribution of different leadership variables." (Hughes et al. p. 564). Two previous meta-analyses, using a combined creativity and innovation variable, have examined relative effects, finding that empowering leadership had stronger effects than transformational leadership (Lee et al., 2018) and servant leadership (Lee et al., 2019) had stronger effects than transformational, ethical, or authentic leadership. Our study builds on these initial findings by testing a wider range of variables and considering their effects on individual-level creative and innovative behaviour separately. Specifically, we estimated the relative effects of each leadership variable in comparison to the full-range leadership model (i.e., transformational leadership and contingent reward) and we estimated the relative effects of each leader style within the five theoretical categories (as far as data allowed). The findings of both analyses converged to present an interesting picture.

For creativity, the leader variables that had the strongest relative effects, when compared to the full-range leadership model, were authentic, empowering, ethical, and LMX, whereas contingent reward was a particularly weak contributor. Overall, authentic leadership showed the largest relative effect over transformational and contingent reward leadership. Although spread across different theoretical groupings the commonality across these variables is that they focus on developing genuine and close relationships with followers through social exchanges including coaching, participative decision-making, showing concern, and relational transparency. Similarly, when compared within theoretical groupings, LMX and Authentic leadership were found to be particularly prominent. This suggests the same mechanism is at play, namely, that in order to facilitate creativity, leaders should develop close relationships with their employees which allow them to better leverage existing employee resources (e.g., cognitive skills, motivation; Fischer et al., 2017). This interpretation is consistent with current empirical evidence and theory (e.g., Amabile, 1996; Perry-Smith & Mannucci, 2017) which shows that when creating, employees require psychologically safe environments characterized by a high degree of trust in which they feel able to engage in cognitively flexible thought and potentially spend time generating novel but useless ideas.

In almost direct contrast were the relative weights analyses for innovation. Authentic leadership and LMX were relatively unimportant, whereas supportive leadership showed the strongest relative effects. Interestingly, the contingent reward was one of the most important leadership variables for innovation. The difference in the importance of contingent reward between creativity and innovation is one of the most striking findings, and again, consistent with theory and empirical evidence. Previous research has demonstrated that extrinsic rewards do little to provide the safe, autonomous conditions suited to generating novel ideas (Amabile, 1996; Perry-Smith & Manucci, 2017) but that innovative work behaviour (i.e., promoting and implementing novel ideas) is not hampered by the presence of extrinsic rewards (Hughes et al., 2018; Perry-Smith & Mannucci, 2017). It is probably the case that whereas creativity requires unbounded mental exploration that can be constrained by extrinsic rewards (e.g., Baer, Oldham, & Cummings, 2003; Malik, Butt, & Choi, 2015), the tasks central to innovation require a more focused, targeted, and persistent behavioural

approach that is incentivized by tangible rewards (Behrens & Patzelt, 2018). Equally, because innovation is applied in nature, it is probably easier to assess and to design appropriate performance-contingent rewards. Thus, it is perhaps unsurprising that extrinsic rewards are effective in promoting innovative work behaviour (e.g., Honig-Haftel & Martin, 1993).

Another notable finding was that supportive, empowering and entrepreneurial leadership proved to be strong predictors of innovative behaviour. It is not surprising that entrepreneurial leadership was relevant because its scale assesses the degree to which the leader themselves innovates or explicitly encourages innovative employee behaviour. Similarly, empowering leaders tend to encourage employees to use their initiative in a self-directed manner and provide the autonomy required to do so. Further, it seems that both empowering and supportive leadership scales are relatively unique from other scales in their categories because they contain a greater proportion of items that refer to the provision of instrumental, goal-directed-support (e.g., My leader is concerned that I work in a goal-directed manner; My supervisor takes pride in my accomplishments; My leader coordinates his/her goals with my goals; My supervisor supports my work group's effort; Help is available from my supervisor when I have a problem; Helps my work group focus on our goals) as opposed to social or emotional support focussed on meeting relational goals and improving employee well-being that is typical of other styles in those categories (e.g., servant, LMX, authentic). Thus, it appears that these leader styles encapsulate three important avenues through which leaders can facilitate employee innovation: role-modelling, providing autonomy, and providing instrumental, goal-directed support (e.g., social influence when attempting to promote and implement ideas; Perry-Smith & Mannucci, 2017).

In sum, because creativity and innovation are fundamentally different (see Hughes et al., 2018, Table 2), and driven by different antecedents (e.g., Axtell et al., 2000; Hughes et al., 2018; Magadley & Birdi, 2012) our separate analysis has revealed some interesting nuances. Specifically, leadership that focuses upon building a close leader-follower relationship, characterized by a high degree of trust appear most effective in facilitating employee creativity. In contrast, leader behaviours characterized by providing by active role-modelling, providing autonomy, goal-directed support, and performance-contingent rewards appear most effective in facilitating employee innovation.

Research question 7: To what extent do study design features, national culture, industrial context, and follower gender impact the strength of the relationship between different leadership variables and creativity/innovation?

Previous studies have noted that a large amount of variation exists in the relationship between leadership and creativity/innovation (e.g., Hughes et al., 2018). This was echoed in our findings, as indicated by a large 80% credibility intervals regarding the correlations between the leadership variables and both creativity and innovation. As such, we sought to explore some potential methodological and substantive moderators of the correlations between leadership and creativity and innovation.

Methodological moderators

To test whether the main effects found in our analysis were influence by the methodology employed in the primary studies, we explored the effect of the two most common practices employed to reduce common method bias (see Podsakoff et al., 2012). The relationship between leadership and follower creativity and innovation was often larger when the outcome was self-rated compared to supervisor-rated or objectively measured and when studies were cross-sectional as opposed to time-lagged. However, for many leadership variables, there were no significant differences based on these study design issues. It is also important to note that the two methods are inadequate to deal with all endogeneity biases (see Antonakis et al., 2010), which do influence effect sizes in the leadership, creativity, and innovation field, making it difficult to make firm conclusions (Hughes et al., 2018). Thus, we echo calls for future research to use stronger designs, including, experimental studies, proper longitudinal designs, and instrumental variables (see Hughes et al., 2018 for specific recommendations).

Substantive moderators

Industrial setting did not moderate correlations between most leadership variables and creativity and innovation. Thus, regardless of whether studies were conducted in knowledge intensive sectors or not, effects were largely consistent. However, we did find that supportive leadership and LMX (both relational variables) had a weaker relationship with innovation in more knowledge intensive industries. It is possible that these findings are spurious and due to chance but we can also speculate that because knowledge-intensive work is of an "intellectual nature" and the majority of employees are "well-educated" (Alvesson, 2000, p. 1101), they may feel less need for relational leadership and instead prefer leadership styles that promote self-reliance and initiative. Indeed, a strong supportive leadership style in this context could even make knowledge workers, feel less independent, less trusted, and as a result, use their competencies to be creative to a lesser extent (Burnett, Chiaburu, Shapiro, & Li., 2015).

Another contextual variable examined was the national culture. Focusing on societal-level power-distance, we found that culture moderated the correlations between empowering, servant, and supportive leadership and creativity (empowering and supportive) and innovation (servant). For empowering leadership, we found that higher levels of power distanced weakened the relationship with creativity. This is not surprising as cultures high in power distance may perceive empowering behaviour such as the delegation of responsibility to be inconsistent with societal norms suggesting that only those with formal power should have authority and discretion, whereas the role of low power individuals is to carry out the explicit orders of superiors (Rockstuhl et al., 2012). As such individuals in high-power distance societies may be less

willing to accept and exercise discretionary power granted by leaders (e.g., Chow, Lo, Sha, & Hong, 2006).

In contrast, supportive and servant leadership had stronger effects on creativity and innovation, respectively, when power-distance was higher. High power-distance cultures adopt policies and norms that consider followers to be less important than leaders (Tyler, Lind, & Huo, 2000) and expect followers to show deference and obedience (Li & Sun, 2015). Thus, when leaders demonstrate individualized support to followers, it is likely perceived as a kindness that surpasses expectations and is received with gratitude (Lin et al., 2018). By contrast, followers in lower power-distance societies likely expect individualized support as the norm, meaning that supportive efforts confer weaker effects on behaviour.

With regards to follower gender, five correlations were moderated. The higher the proportion of males in a team, the weaker the correlations between creativity and innovation and LMX, Authentic, Servant, and Destructive leadership. These results are in line with the "male hubris-female humility" bias (Furnham et al., 1999) and suggest that, on average, females' creative and innovative performance is more heavily aided and hindered by their leaders. This effect seems to be particularly pronounced for leader variables that have a strong social exchange component, suggesting that leaders' social interactions might be particularly important for harnessing the creative potential of female employees. Given these findings, we argue that a fruitful area for future research is to further examine gender in relation to leadership, creativity and innovation. The research could, for example, explore the effect of gender dissimilarity between leaders and followers and continue to explore when the "male hubris-female humility" bias is observed.

Limitations and future research directions

As with any meta-analysis, the results are bound by the data available in the primary studies. The leadership, creativity, and innovation literature are characterized by an over-reliance on cross-sectional and correlational data, which are unable to provide robust estimates of causal effects, due to endogeneity biases (e.g., Antonakis et al., 2014; Fischer et al., 2017; Hughes et al., 2018). Thus, it is impossible to draw conclusions related to causality in our analyses. That said, there are strong theoretical grounds and mounting experimental evidence (e.g., Jaussi & Dionne, 2003; Sosik, Kahai, Avolio, 1999) to suspect that leadership influences follower creativity and innovation.

For some of the relationships in our analyses, we had to rely on a small number of primary studies. For example, the relationship between entrepreneurial leadership and creativity was particularly strong but based on only three studies (N = 820) and there were too few studies using non-common source data, to include entrepreneurial in our relative weight analysis. The lack of primary studies makes it impossible to derive strong conclusions since the results may have been strongly influenced by particularly strong or weak correlations. This limitation also highlights clear areas for future research by demonstrating which outcomes particularly require further investigation.

It is important to consider our meta-analytic findings in relation to the wider leadership literature. The literature has been subject to much evaluation in recent years – with high profile critiques of the conceptualization and measurement of prominent leadership variables (e.g., Alvesson & Einola, 2019; Antonakis, Bendahan, Jacquart, & Shamir, 2016; Bank et al., 2018; Van Knippenberg & Sitkin, 2013) and the way in which leadership studies are typically designed (e.g., Antonakis et al., 2010; Hughes et al., 2018). For instance, there have been recent and compelling critiques regarding the conceptualization and measurement of authentic leadership (Alvesson & Einola, 2019), transformational leadership (Van Knippenberg & Sitkin, 2013), and charismatic leadership (Antonakis et al., 2016) which suggest that they are in some cases, "ill-defined, tautological, ideological and resist rigorous study" (Alvesson & Einola, 2019, p. 12).

More generally, the leadership literature suffers from construct redundancy (Shaffer et al., 2016), with high correlations being observed between "different" leadership variables (e.g., Banks et al., 2018). The findings of our meta-analysis should be interpreted with these critiques in mind and even add weight to the argument. Appendix A (Table A1) shows the high meta-analytic correlations between the different leadership variables that we examined in relation to creativity and innovation. Our findings also show that all leadership variables, except for transactional leadership, showed significant relationships with creativity and innovation that were often hard to distinguish. These findings can be interpreted as indicative of construct redundancy, but they could also be due to factors that inflate and attenuate effects, such as endogeneity biases (see Banks et al., 2018). For instance, the high correlations observed in primary studies between transformational and entrepreneurial leadership (e.g., Newman et al., 2018) could be due to the fact that both measures are lack accuracy and precision (Hughes, 2018) meaning they capture overall positive leader evaluations (see Lee et al., 2015). Indeed, our results, which show differential effects of different leadership variables, suggest some uniqueness within some leader variables. If the uniqueness for each leader variable was identified and only that was assessed (i.e., remove construct irrelevant content) then scales would offer more nuanced and accurate assessments of the target constructs (Hughes, 2018). Accordingly, we echo the call for better measurement and study design than can reduce endogeneity biases and provide more accurate estimates of the relationship between leadership variables (e.g., Antonakis et al., 2010; Banks et al., 2018; Hughes et al., 2018; Lemoine et al., 2019).

Practical implications

Although the limitations noted are non-trivial (see Hughes et al., 2018), our synthesis suggests some tentative implications for leaders. There are two notable findings in this regard that emanate from the fact that creativity and innovation are fundamentally different (see Hughes et al., 2018, Table 2).

For enhancing individual-level creativity, leaders should try to enact behaviours that focus upon building a close leader–follower relationship, characterized by a high degree of trust, as would be indicative of the relatively important leader variables of LMX, authentic, and empowering leadership. To help in this regard, organizations might wish to train leaders in such styles (see Baron & Parent, 2015, for a recent evaluation

of such training). In addition, leaders should be careful if trying "buy" creativity through contingent rewards and would probably be better served to allow employees the autonomy and time needed to generate novel ideas – many of which will likely be of little tangible value yet important in the overall process. Similarly, organizations must create appropriate processes to allow for idea generation at work.

In contrast, when seeking to help employees innovate, leaders should behave in a manner that is characterized by actively role-modelling desired behaviours, providing autonomy, goal-directed support such as ensuring adequate resources and lending social influence to followers when required. Perhaps the key finding that emerged from our analysis relates to the strong relationship between the use of a contingent rewards and innovation. Clearly, organizations should design their reward systems carefully and/or allow leaders to have the discretion to offer innovation-contingent rewards, when appropriate.

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Appendies

Appendix A

Table A1. Meta-analytic results for leadership intercorrelations needed for relative weights analysis.

				95% CI					80% CV	
Variable	k	N	r	Lower	Upper	ρ	SD_ρ	%VE	Lower	Upper
Transformational – Contingent Reward[1]	87	22,369	0.68	0.78	0.83	0.80			0.65	0.95
Transformational – Empowering[2]	5	1721	0.60	0.56	0.64	0.67	0.03	650.72	0.63	0.70
Transformational – Ethical[3]	20	3717	0.63	0.62	0.79	0.70	0.17		0.48	0.93
Transformational – Authentic[4]	23	5414	0.70	0.60	0.83	0.72	0.27		0.37	1.00
Transformational – LMX[5]	20	5451	0.66	0.49	0.97	0.73	0.19		0.49	0.97
Transformational – Destructive	8	1242	−0.49	−0.56	−0.41	−0.56	0.07	460.60	−0.65	−0.46
Transformational – Servant[6]	14	3867	0.45	0.40	0.51	0.52	0.11			
Transformational – Authoritarian[7]	12	3829	−0.29	−0.45	−0.13	−0.29	0.28		−0.65	0.06
Transformational – Entrepreneurial	2	583	0.85	0.79	0.91	0.93	0.04	17.64	0.88	0.98
Transformational – Humble	3	497	0.73	0.61	0.84	0.80	0.16	6.52	0.60	1.00
Transformational – Benevolent[7]	10	3671	0.66	0.64	0.78	0.71	0.10		0.58	0.84
Transformational – Supportive	4	1184	0.67	0.46	0.87	0.75	0.18	3.78	0.52	0.98
Contingent Reward – LMX[5]	6	1900	0.65	0.58	0.88	0.73	0.18		0.51	0.96
Contingent Reward – Empowering	5	1864	0.46	0.23	0.68	0.54	0.30	2.51	0.15	0.93
Contingent Reward – Ethical[8]	7	1156	0.63	0.64	0.86	0.75	0.15		0.50	1.00
Contingent Reward- Authentic	3	711	0.50	0.41	0.60	0.59	0.05	55.35	0.52	0.65
Contingent Reward- Destructive	4	907	−0.31	−0.45	−0.17	−0.34	0.16	15.32	−0.55	−0.14
Contingent Reward- Servant	3	475	0.70	0.60	0.79	0.80	0.14	10.65	0.62	0.97
Contingent Reward- Authoritarian	3	905	0.23	0.08	0.37	0.27	0.18	11.94	0.04	0.50
Contingent Reward- Supportive	3	788	0.61	0.35	0.88	0.71	0.26	2.76	0.38	1.00
Ethical – Authentic[6]	3	462	0.77	0.56	0.98	0.85	0.15			
Ethical – Servant[6]	4	3106	0.74	0.62	0.86	0.82	0.11			
Authentic – Servant[6]	5	2686	0.78	0.67	0.89	0.84	0.11			
Authentic – Humble	3	796	0.59	0.47	0.71	0.68	0.15	9.02	0.49	0.87
Servant – Humble*	1	283				0.81				
Ethical – Humble	2	545	0.75	0.57	0.93	0.79	0.12	4.78	0.63	0.95
LMX – Benevolence[7]	7	2619	0.64	0.67	0.79	0.73	0.07		0.63	0.82
LMX – Supportive	7	2137	0.67	0.57	0.77	0.79	0.14	6.43	0.61	0.97
Supportive – Benevolence	5	1674	0.51	0.39	0.64	0.57	0.15	8.49	0.38	0.75
Empowering – Entrepreneurial*	1	346				0.71				
Destructive – Authoritarian	4	882	0.63	0.49	0.78	0.74	0.16	7.84	0.54	0.95

Results are corrected for criterion and predictor unreliability. *k* = number of correlations; *N*= number of respondents; *r*= sample weighted mean correlation; *ρ* =corrected population correlation; SD_ρ = standard deviation of the corrected population correlation; % VE = percentage of variance attributed to sampling error in corrected population correlation; 95% CI = 95% confidence interval around the sample weighted mean correlation; 80% CV = 80% credibility interval around the corrected population correlation

1 = Judge & Piccolo, (2004); 2 = Lee et al. (2018); 3 = Hoch et al. (2018); 4 = Banks et al. (2016); 5 = Dulebohn, Bommer, Liden, Brouer, & Ferris, (2012); 6 = Lee et al. (2019); 7 = Hiller, Sin, Ponnapalli, & Ozgen, (2019); 8 = Ng and Feldman (2015)

*- Correlation based on a single study only

Appendix B

Table B1. Meta-analytic results for dichotomous moderators.

				95% CI					80% CV	
Variable	*k*	*N*	*r*	Lower	Upper	ρ	SD_ρ	%VE	Lower	Upper
Transformational Leadership										
Creativity: Published	46	15,800	0.29	0.24	0.34	0.32	0.21	6.81	0.06	0.59
Creativity: Unpublished	9	2322	0.22	0.13	0.30	0.23	0.13	19.65	0.07	0.40
Innovation: Published	27	9868	0.27	0.20	0.33	0.30	0.19	8.11	0.06	0.54
Innovation: Unpublished	6	995	0.22	0.07	0.36	0.25	0.17	18.94	0.03	0.47
Creativity: Cross-sectional	43	14,850	0.28	0.23	0.34	0.32	0.19	7.72	0.07	0.56
Creativity: Time-separated	9	2602	0.28	0.15	0.40	0.31	0.21	7.61	0.04	0.57
Innovation: Cross-sectional	25	8082	0.29	0.23	0.35	0.33	0.17	10.06	0.10	0.55
Innovation: Time-separated	8	2781	0.18	0.07	0.30	0.20	0.19	8.89	−0.04	0.44
Creativity: High Knowledge Intensity	32	9567	0.16	0.20	0.32	0.29	0.19	9.36	0.05	0.52
Creativity: Low Knowledge Intensity	6	2994	0.24	0.19	0.30	0.29	0.07	33.43	0.20	0.37
Innovation: High Knowledge Intensity	23	8834	0.26	0.20	0.32	0.29	0.17	9.05	0.07	0.51
Innovation: Low Knowledge Intensity	7	1897	0.23	0.06	0.39	0.25	0.24	6.63	−0.06	0.56
Transactional Leadership										
Creativity: High Knowledge Intensity	8	2723	0.06	−0.07	0.20	0.08	0.22	7.56	−0.20	0.35
Creativity: Low Knowledge Intensity	2	1056	−0.07	−0.36	0.21	−0.10	0.23	4.61	−0.39	0.20
LMX										
Creativity: Published	34	10,899	0.30	0.26	0.35	0.34	0.13	15.74	0.17	0.51
Creativity: Unpublished	5	772	0.28	0.11	0.45	0.30	0.19	14.59	0.05	0.55
Creativity: Cross-sectional	28	7651	0.33	0.28	0.38	0.37	0.13	17.17	0.20	0.54
Creativity: Time-separated	11	4020	0.25	0.17	0.33	0.28	0.13	15.70	0.12	0.44
Innovation: Cross-sectional	19	5752	0.27	0.22	0.32	0.31	0.11	25.20	0.18	0.45
Innovation: Time-separated	2	360	0.26	0.24	0.27	0.30	0.00	100.00	0.30	0.30
Creativity: High Knowledge Intensity	28	8197	0.30	0.25	0.35	0.33	0.14	16.22	0.16	0.51
Creativity: Low Knowledge Intensity	5	1265	0.26	0.19	0.34	0.30	0.06	54.60	0.22	0.38
Innovation: High Knowledge Intensity	18	5183	0.24	0.20	0.28	0.28	0.06	54.05	0.20	0.35
Innovation: Low Knowledge Intensity	3	929	0.44	0.35	0.53	0.50	0.06	39.63	0.42	0.58
Empowering Leadership										
Creativity: Published	20	5172	0.32	0.26	0.37	0.35	0.13	19.06	0.19	0.51
Creativity: Unpublished	2	638	0.38	−0.07	0.83	0.44	0.39	2.07	−0.06	0.94
Creativity: Cross-sectional	17	4569	0.33	0.25	0.42	0.36	0.18	9.56	0.13	0.60
Creativity: Time-separated	5	1241	0.29	0.18	0.40	0.33	0.12	23.60	0.18	0.48
Creativity: High Knowledge Intensity	16	4015	0.33	0.24	0.41	0.36	0.18	10.39	0.12	0.60
Creativity: Low Knowledge Intensity	6	1629	0.32	0.20	0.43	0.35	0.15	13.38	0.15	0.54
Servant Leadership										
Creativity: Cross-sectional	8	3819	0.35	0.19	0.52	0.39	0.26	2.84	0.06	0.73
Creativity: Time-separated	3	671	0.25	0.15	0.36	0.30	0.09	41.77	0.19	0.41
Supportive Leadership										
Creativity: High Knowledge Intensity	7	2381	0.15	0.04	0.26	0.16	0.17	11.42	−0.05	0.37
Creativity: Low Knowledge Intensity	3	670	0.34	0.19	0.49	0.41	0.16	18.23	0.22	0.61
Innovation: High Knowledge Intensity	6	2282	0.28	0.21	0.35	0.32	0.09	25.01	0.20	0.44
Innovation: Low Knowledge Intensity	2	488	0.45	0.35	0.55	0.53	0.09	33.62	0.42	0.64
Authentic Leadership										
Creativity: Cross-sectional	13	4291	0.48	0.41	0.55	0.53	0.13	11.14	0.36	0.70
Creativity: Time-separated	3	797	0.14	0.06	0.21	0.15	0.05	67.90	0.09	0.21
Creativity: High Knowledge Intensity	8	2297	0.35	0.20	0.49	0.40	0.23	6.19	0.10	0.69
Creativity: Low Knowledge Intensity	4	1490	0.50	0.38	0.63	0.55	0.13	10.12	0.39	0.71
Destructive Leadership										
Creativity: Cross-sectional	6	1992	−0.19	−0.29	−0.10	−0.21	0.12	18.52	−0.37	−0.05
Creativity: Time-separated	7	2804	−0.19	−0.27	−0.12	−0.22	0.10	23.69	−0.34	−0.09
Creativity: High Knowledge Intensity	9	2986	−0.19	−0.28	−0.10	−0.22	0.14	14.83	−0.41	−0.03
Creativity: Low Knowledge Intensity	3	861	−0.17	−0.21	−0.13	−0.18	0.00	100.00	−0.18	−0.18

k = number of correlations; *N*= number of respondents; *r*= sample weighted mean correlation; ρ =corrected population correlation; SD_ρ = standard deviation of the corrected population correlation; % VE = percentage of variance attributed to sampling error in corrected population correlation; 95% CI = 95% confidence interval around the sample weighted mean correlation; 80% CV = 80% credibility interval around the corrected population correlation

Appendix C

Table C1. List of papers used in meta-analysis.

Transformational Leadership – Creativity		
Akinlade, 2014	Hirst, van Dick, & van Knippenberg, 2009	Moss & Ritossa, 2007
Arendt, 2009	Jaffer, 2013	Nguyen, 2017
Bae, Song, Park, & Kim, 2013	Jaiswal & Dhar, 2016	Qu, Janssen, & Shi, 2015
Cai et al., 2019	Jaussi & Dionne, 2003	Rickards et al., 2001
Carmeli, Sheaffer, Binyamin, Reiter-Palmon, & Shimoni, 2013	Jyoti & Dev, 2015	Shin & Zhou, 2003
Chang & Teng, 2017	Kark et al., 2018 (2 studies)	Si & Wei, 2012
Chaubey, Sahoo, & Khatri, 2019	Kim, 2000	Sosik et al., 1999
Charbonnier-Voirin, Akremi, & Vandenberghe, 2010	Khalili, 2016	Suifan, Abdallah, & Al Janini, 2018
Cheung & Wong, 2011	Kim & Lee, 2011	Sun, Zhang, Chen, 2012
Dong, Bartol, Zhang, & Li, 2017	Kollman, Stockmann, & Krell (2011)	Taylor, 2015
Eisenbeiss & Boerner, 2013	Koseoglu, Liu, & Shalley, 2017	Tse & Chiu, 2014
Ghafoor, Qureshi, Azeemi, & Hijazi, 2011	Li, Yu, Yang, Qi, & Fu, 2014 (2 studies)	Tse, To, & Chiu, 2017
Gilmore, Hu, Wei, Tetrick, & Zaccaro, 2013	Li, Zhao, & Begley, 2015	Tung, 2016
Golden, 2016	Luu, 2017	Wang & Rode, 2010
Gong, Huang, & Farh, 2009	Ma & Jiang, 2018	Wang & Zhu, 2011
Gumusluoglu & Ilsev, 2009	Miao & Wang, 2016	Wang, Tsai & Tsai, 2014
Henker, 2013	Mittal & Dhar, 2015	Zacher & Johnson, 2015
Henker, Sonnentag, & Unger, 2015	Monowar Mahmood, & Luo, 2019	Zhou & Pan, 2015
Transformational Leadership – Innovation		
Afsar, Badir, & Bin Saeed, 2014	Kang, Solomon & Choi, 2015	Rank, Nelson Allen,& Xu, 2009
Basu & Green, 1995	Khalili, 2016	Sethibe & Steyn, 2017
Boerner, Eisenbeiss, & Griesser, 2007	Kang, 2013	Slåtten, 2014
Chang, Bai, & Li, 2015	Kao, Pai, Lin, & Zhong, 2015	Saeed, Afsar, Shahjehan, & Shah, 2019 (2 studies)
Choi, Kim, Ullah, & Kang, 2016	Lee, 2008	Turunc et al., 2010
Chen et al., 2013	Li, Mitchell, & Boyle, 2016	Vazquez, 2016
Craig, 2015	Miao, Newman, & Lamb, 2012	Weng, Huang, Chen, & Chang, 2015
Gross, 2016	Newman et al., 2018	Zhang, Lepine, Buckman, & Wei, 2014
Günzel-Jensen, Hansen,Jakobsen & Wulff, 2018	Pieterse, van Knippenberg, Schippers, & Stam, 2010	Zhang, Zheng, & Darko, 2018
Hussain, Talib, & Shah, 2014	Pundt, 2015	Zhu, Wang, Zheng, Liu, & Miao, 2013
Iskandarani, 2017	Rada, 2018	Zhu & Mu, 2016
Transactional Leadership – Creativity		
Kark et al., 2018	Moss & Ritossa, 2007	Sosik et al., 1999
Kim, 2000	Rickards et al., 2001	Tung, 2016
Kim & Lee, 2011	Sanda & Arthur, 2017	Wei et al., 2010
Ma & Jiang, 2018	Si & Wei, 2012	Zacher & Johnson, 2015
Transactional Leadership – Innovation		
Chang, Bai & Li, 2015	Günzel-Jensen, Hansen,Jakobsen & Wulff, 2018	Rank, Nelson, Allen, & Xu, 2009
Elenkov & Manev, 2005	Kang, Soloman, & Choi, 2015	Sethibe & Steyn, 2017
Elenkov, Judge, & Wright, 2005	Lee, 2008	Turunc et al., 2010
Gross, 2016	Pieterse, van Knippenberg, Schippers & Stam, 2010	
Authentic Leadership – Creativity		
Černe, Jaklič, & Škerlavaj, 2013	Mubarak & Noor, 2018	Semedo, Coelho, & Ribeiro, 2016
Chaudhary & Panda, 2018	Rego, Sousa, Marques, & Cunha, 2012	Semedo, Coelho, & Ribeiro, 2017
Li, Lu, Yang, Qi, & Fu, 2014 (2 studies)	Rego, Sousa, Maruques, & Cunha, 2014	Semedo, Coelho, & Ribeiro, 2018
Malik, Dhar & Handa, 2016	Ribeiro, Duarte & Filipe, 2018	Sercan, 2016
Meng, Cheng & Guo, 2016	Sanda & Arthur, 2017	Xu, Zhao, Li, & Lin, 2017
Empowering Leadership – Creativity		
Al-Madadha, 2016	Fatima, Safdar, & Jahanzeb, 2017	Liu, Gong, Zhou, & Huang, 2017
Amundsen & Martinsen, 2014a	Harris et al., 2014 (2 studies)	Slåtten, Svensson, & Sværi, 2011
Amundsen & Martinsen, 2014b	Hon, 2011	Tung & Yu, 2015
Amundsen & Martinsen, 2015	Hon, Bloom, & Crant, 2014	Zhang & Bartol, 2010
Audenaert & Decramer, 2016	Hwang, 2013	Zhang, Ke, Wang, & Liu, 2018
Byun, Dai, Lee, & Kang, 2016	Kim, 2019	Zhang & Zhou, 2014 (2 studies)
Chow, 2018	Li & Zhang, 2016	
Empowering Leadership – Innovation		
Chen, Sharma, Edinger, Shapiro, & Farh, 2011 (2 studies)	Günzel-Jensen, Hansen,Jakobsen & Wulff, 2018	Sagnak, 2012
De Jong & Den Hartog, 2010	Newman et al., 2018	Slåtten, Svensson, & Sværi, 2011
Gkorezis, 2016	Odoardi, Montani, Boudrias, & Battistelli, 2014	
Servant Leadership – Creativity		
Do, Budhwar, & Patel, 2018	Liden, Wayne, Meuser, Hu, Wu, & Liao, 2015	Williams Jr, Brandon, Hayek, Haden, & Atinc, 2017
Jaiswal & Dhar, 2017	Malingumu, Stouten, Euwema, & Babyegeya, 2016	Yang, Liu, & Gu, 2017
Jaramillo, Grisaffe, Chonko, & Roberts, 2009	Neubert, Hunter, & Tolentino, 2016	Yoshida, Sendjaya, Hirst, & Cooper, 2014
Karatepe, Ozturk & Kim, 2019	Neubert, Kacmar, Carlson, Chonko, & Roberts, 2008	
Servant Leadership – Innovation		
Krog & Govender, 2015	Searle, 2011	Weaver, 2017

(*Continued*)

Table C1. (Continued).

Transformational Leadership – Creativity		
Newman, Neesham, Manville, & Tse, 2017	Sun, 2016	
Panaccio, Henderson, Liden, Wayne, & Cao, 2015	Topcu, Gursoy, & Gurson, 2015	
Destructive Leadership – Creativity		
Choi, Anderson, & Veilette, 2009	Jiang, Gu, & Tang, 2017	Naseer et al., 2016
Gu et al., 2016	Lee, Yun, & Srivastava, 2013	Rasool, Naseer, Syed, & Ahmad, 2018
Guo, Decoster, Babalola, Schutter, Garba, & Riisla, 2018 (2 studies)	Liu, Liao, & Loi, 2012	Zhang, Kwan, Zhang, & Wu, 2014
Han, Harms, & Bai, 2017	Liu, Zhang, Liao, Hao, & Mao, 2016	
Jiang & Gu, 2016	Meng et al., 2017	
Authoritarian Leadership – Creativity		
Dedahanov et al., 2016	Guo, Decoster, Babalola, Schutter, Garba, & Riisla, 2018 (2 studies)	Wang, Chiang, Tsai, Lin, & Cheng, 2013
Gu, He, & Liu, 2017	Hwang, 2013	Wang, Tang, Naumann, & Yang, 2019
Gu, Wang, Liu, Song, & He, 2018	Pan, Wu, Zhou, & Lou, 2015	Wu, 2018
Authoritarian Leadership – Innovation		
Dedahanov, Bozorov, & Sung, 2019	Mansur, 2016	Wang, Chang, & Wang, 2018
Karakitapoğlu-Aygün, Gumusluoglu, & Scandura, 2019	Tian & Sanchez, 2017	Wu, 2018
Entrapreneurial Leadership – Creativity		
Bagheri, 2017	Bagheri & Akbari, 2018	Cai et al., 2019
LMX – Creativity		
Akinlade, 2014	Lee, Scandura, Kim, Joshi, & Lee, 2012	Ramos, 2003
Aleksić, Mihelič, Černe, & Škerlavaj, 2017	Khalili, 2018	Pan, Wu, Zhou, & Lou, 2015
Atwater & Carmeli, 2009	Kong, Xu, Zhou, & Yuan, 2019	Sercan, 2016
Chughtai, 2016	Li, Chen, & Cao, 2017	Son, Cho, & Kang, 2017
Gong, Kim, Lee, & Zhu, 2013	Liao, Chen, & Hu, 2018	Tierney, 1992
Gu, Tang, & Jiang, 2015	Liao et al., 2010	Tierney, Farmer, & Graen, 1999
Gu, Wang, Liu, Song, & He, 2018	Lin et al., 2018	Xu, Zhao, Li, & Lin, 2017
Hassanzadeh, 2014	Martinaityte & Sacramento, 2013	Volmer, Spurk, & Niessen, 2012
Huang, Krasikova, & Liu, 2016	Meng et al., 2017	Wang, 2016
Jaffer, 2013	Munoz-Doyague, & Nieto, 2012	Zaitouni & Ouakouak, 2018
Jiang & Yang, 2015	Naseer et al., 2016	Zhang, Fan, & Zhang, 2015
Joo & Bennett, 2018	Pan et al., 2012	Zhao, Kessel, & Kratzer, 2014
Joo, Yang, & McLean, 2014	Qu, Janssen, & Shi, 2017	
LMX – Innovation		
Atitumpong & Badir, 2017	Khalili, 2018	Scott, 1993
Basu & Green, 1995	Lee, 2008	Scott & Bruce, 1998 (2 studies)
Clegg, Unsworth, Epitropaki, & Parker, 2002	Liao & Chun, 2016	Song, Liu, Gu, & He, 2018
Denti, 2011	Park & Jo, 2018	Turunc et al., 2010
Denti & Hemlin, 2015	Pundt, 2015	Wang, Fang, Qureshi, & Janssen, 2015
Janssen & van Yperen, 2004	Sanders, Moorkamp, Torka, Groeneveld, & Groeneveld, 2010	Wu, Liu, Kim, & Gao, 2018
Kim & Koo, 2017	Schermuly, Meyer, & Dämmer, 2013	Yuan, 2005
Benevolent Leadership – Creativity		
Dedahanov et al., 2016	Wang & Cheng, 2010	Wang, Tang, Naumann, & Yang, 2019
Lin et al., 2018	Wang, Chiang, Tsai, Lin, & Cheng, 2013	Wu, 2018
Benevolent Leadership – Innovation		
Dedahanov, Bozorov, & Sung, 2019	Tian & Sanchez, 2017	Wu, 2018
Karakitapoğlu-Aygün, Gumusluoglu, & Scandura, 2019	Wang, Chang, & Wang, 2018	
Humble Leadership – Innovation		
Tuan, 2019	Wang, Zhang, & Jia, 2017	
Wang, Liu, & Zhu, 2018	Yuan, Zhang, & Tu, 2018	
Supportive Leadership – Creativity		
Cheung & Wong, 2011	Hwang, 2013	Škerlavaj Černe, & Dysvik, 2014
Choi, 2004	Jafri, 2018	Unsworth, Wall, & Carter, 2005
Darvishmotevali, 2019	Lim & Choi, 2009	Wang et al., 2010
George & Zhou, 2007	Ohly, Sonnentag, & Pluntke, 2006	Zaitouni & Ouakouak, 2018
Gu, He, & Liu, 2017	Oldham & Cumming, 1996	
Supportive Leadership – Innovation		
Chen, Li, & Leung, 2016 (2 studies)	Ohly, Sonnentag, & Pluntke, 2006	Yasir & Majid, 2018
Darvishmotevali, 2019	Škerlavaj Černe, & Dysvik, 2014	
Janssen, 2005	Sönmez & Yıldırım, 2019	
Ethical Leadership – Creativity		
Chen & Hou, 2016	Feng, Zhang, Liu, Zhang, & Han, 2016	Mehmood, 2016
Chughtai, 2016	Gu, Tang, & Jiang, 2015	Sercan, 2016
Dedahanov et al., 2016	Javed et al., 2017	Wang, Tang, Naumann, & Yang, 2019
Dedahanov et al., 2016	Javed, Rawwas, Khandai,Shahid, & Tayyeb, 2018	Wu, 2018
Duan, Liu, & Che, 2018	Ma, Cheng, Ribbens, & Zhou, 2013	
Ethical Leadership – Innovation		
Dedahanov, Bozorov, & Sung, 2019	Schuh, Zhang, & Tian, 2013	Zahra & Waheed, 2017
Dhar, 2016	Tu & Lu, 2013	

(*Continued*)

Table C1. (Continued).

Transformational Leadership – Creativity		
Javed, Bashir, Rawwas, & Arjoon, 2017	Wu, 2018	
Transformational Leadership – Destructive Leadership		
Byrne, Dionisi, Barling, Akers et al. 2014 Collins & Jackson, 2015 (2 studies) Courtwright, 2012	Johnson, Venus, Lanaj, Mao & Chang, 2012 Ogunfowora, 2009	Schmidt, 2008 Taylor, 2012
Transformational Leadership – Entrepreneurial Leadership		
Newman, Tse, Schwarz & Niesen, 2018	Cai et al., 2019	
Transformational Leadership – Humble Leadership		
Hwang, 2017	Owens & Hekman, 2016	Oyer, 2015
Transformational Leadership – Supportive Leadership		
Cheung & Wong, 2011 Lin, MacLennan, Hunt & Cox, 2015	Guild, 2009	Liaw, Chi & Chuang, 2010
Contingent Reward – Empowering Leadership		
Buengeler, Homan, & Voelpel, 2016 Ensley, Hmieleski & Pearce, 2006	Khuong & Hoang, 2015	Nguyen, Kuntz, Naswall & Malinen, 2016
Contingent Reward – Authentic Leadership		
Chiaburu, Diaz & Pitts, 2011	Emuwa & Fields, 2017	Sanda & Arthur, 2017
Contingent Reward – Destructive Leadership		
Bardes, 2009 Ogunfowora, 2009	Taylor, 2012	Zhang, 2013
Contingent Reward – Servant Leadership		
Kool & van Dierendonck, 2012	Steinmann, Nubold & Maier, 2016	Washington, Sutton & Sauser, 2014
Contingent Reward – Authoritarian Leadership		
Ensley, Hmieleski & Pearce, 2006	Khuong & Hoang, 2015	
Contingent Reward – Supportive Leadership		
Malatesta, 1995	Tremblay & Gibson, 2016	Walumbwa, Wu, & Orwa, 2008
Authentic Leadership – Humble Leadership		
Bharanitharan, Chen, Bahmannia & Lowe, 2018	Hwang, 2017	Mao, Chiu, Owens, Brown, & Liao, 2019
Servant Leadership – Humble Leadership		
Hwang, 2017		
Ethical Leadership – Humble Leadership		
Owens, Yam, Bednar, Mao, & Hart, (2019).		
LMX – Supportive Leadership		
Bhal, Ansari, & Aafaqi, 2007 Bryant, 2008 Gkorezis, 2015	Hsu, Chen, Wang, & Lin, 2010 Lu & Sun, 2017	Schaffer & Riordan, 2013 White, Campbell, & Kacmar, 2012
Benevolent Leadership – Supportive Leadership		
Chan, 2007 Chan, 2017	Lee, Jang, & Lee, 2018	Shu, Chiang, & Lu, 2018
Empowering Leadership – Entrepreneurial Leadership		
Newman et al., 2018		
Destructive Leadership – Authoritarian Leadership		
Aryee et al., 2007 Bell, 2017	Dobbs, 2014	Schmidt, 2008

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Motivated or Demotivated to Be Creative: The Role of Self-Regulatory Focus in Transformational and Transactional Leadership Processes

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Numerous studies have recognised the importance of transformational leadership style for encouraging employees' creativity. Self-regulation studies have highlighted the influence of a promotion focus on employees' creative behaviours. Yet both leadership and self-regulation theories have paid less attention to the role transactional leadership style and situational prevention regulatory focus may play in affecting employees' creativity. In this article we present a theoretical model which examines transformational and transactional leadership styles and both promotion and prevention situational self-regulatory focus (SRF). The model suggests that while transformational leadership promotes creativity, at least partially by enhancing follower's situational promotion SRF, transactional leadership style (transactional active) is aligned with followers' prevention situational SRF, which is associated with leaders' hindering of followers' creativity. Findings from two studies, an experimental study ($N = 189$) and a field study ($N = 343$ employees and 75 managers), support this model, showing that the relationship between different types of leadership and creativity are more complex than previously regarded. The theoretical and practical implications are discussed.

INTRODUCTION

Creativity can be described as the generation of original and practical ideas by an individual or team members working together (Amabile, 1988; Mainemelis, 2010; Zhou & Shalley, 2003). Recent studies have shown that it can be either

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fostered or hindered by managers in the workplace (e.g. George, 2007; Lin, Mainemelis, & Kark, 2016; Mainemelis, Kark, & Epitropaki, 2015; Shalley & Gilson, 2004). Today, greater numbers of managers find it essential to encourage employee creativity (Mainemelis, 2010; Shalley & Gilson, 2004) and innovation (Garcia-Morales, Jimenez-Barrionuevo, & Gutierrez-Gutierrez, 2012; Jung, Chow, & Wu, 2003) due to the increasingly turbulent environment, heightened competition, and unpredictable technological changes. Research findings indicate that creativity can contribute not only to the effectiveness of an organisation, but also to its survival (Amabile, 1996; Shalley, Zhou, & Oldham, 2004). Managers are key in supporting and promoting creativity within their organisations, since they are informed of their employees' creative performance, and they have significant influence over the work context and climate in which employees are expected and able to be creative (Amabile & Khaire, 2008; Eyal & Kark, 2004; Mainemelis et al., 2015; Mumford, Hester, Robledo, Peterson, Day, Hougen, & Barrett, 2012). Yet, on the other hand, an inappropriate leadership style may cause this managerial influence over work context and climate to be detrimental to creativity.

It is well known that a leader's effectiveness critically depends on, and is even defined by, his or her capability to motivate followers to focus on a shared goal, mission, or vision (Shamir, Zakay, Breinin, & Popper, 1998). In the past two decades, evidence has shown transformational and charismatic leadership to be associated with higher levels of individual and organisational outcomes (e.g. Wang, Law, Hackett, Wang, & Chen, 2005; Wang, Oh, Courtright, & Colbert, 2011), and specifically with employee creativity (e.g. Garcia-Morales et al., 2011; Mumford, Gibson, Giorgini, & Mecca, 2014; Vessey, Barrett, Mumford, Johnson, & Litwiller, 2014). Investigators of transformational and charismatic leadership have widely discussed motivational components as central constructs in their theoretical and research models (e.g. Bass, 1985; Shamir, House, & Arthur, 1993). Moreover, transformational leadership has been specifically defined based on its positive motivational effects on followers (Bass, 1985; Burns, 1978; Kark, Shamir, & Chen, 2003).

Transactional leadership, on the other hand, has been defined by Bass (1985) as leadership which makes clear what actions and roles followers must take to achieve goals. The motivation that is elicited by this leadership style is to do what is expected by the leader, so as to avoid punishment (i.e. management by exception passive; transactional passive), to receive rewards (i.e. contingent rewards) or to prevent corrective action indicating that a mistake is about to be made (i.e. management by exception active; transactional active). While most research on management by exception passive has found a negative or no relationships between it and performance indicators (Bass & Avolio, 1999), management by exception active (transactional active) and contingent reward styles have been found to have positive relationships with different types of performance indicators, for example, with safety (Zohar, 2002; Clarke,

2013). Although recent studies have emphasised the importance of motivation to leadership processes and influence (e.g. Yukl, 2009), there has been less attention directed to the underlying psychological processes and mechanisms used by leaders to motivate followers to be creative.

Developments in motivation theory highlight the role of self-regulatory focus (SRF) as a central component that shapes motivation and behaviour (Higgins, 1997, 1998), and the ability to behave in a creative and innovative manner (Lanaj, Chang, & Johnson, 2012). This theoretical development may help us understand a leader's effectiveness in influencing and motivating followers' creativity through eliciting different self-regulatory foci. Kark and Van Dijk (2007) developed a theoretical framework that links transformational leadership and regulatory focus theory. It posits that followers' situational self-regulatory foci are possible mediators of the relationship between management style and employee work outcomes. While their theory and other theories propose that promotion focus will promote more follower creativity than prevention focus (for review see Lanaj et al., 2012), we claim that a situational prevention focus, elicited by transactional leadership behaviours, will not simply result in less creativity than promotion focus; rather it can actually be detrimental to creativity. In other words, we claim that while transformational leadership primes a promotion SRF in followers and is likely to spur creativity, transactional leadership, especially transactional active leadership, primes a prevention situational SRF, and is more likely to limit exploration and risk-taking behaviours, thus inhibiting followers' tendency to act creatively.

This paper contributes to the current literature in a number of ways. First, as was noted by Amabile (1998), it is much more common for leaders to harm employees' creativity than to foster it. Yet, despite the frequency of detrimental actions that can harm creativity in organisations, most previous studies have mainly concentrated on the positive role of leadership in employees' creativity and largely ignored the negative aspects. This article constitutes a novel attempt to concentrate on how creativity could be either improved or inhibited by leaders' behaviours. Second, while much research has highlighted the importance of leader-follower fit in leadership style and regulatory focus in effecting various outcomes, including creativity (De Cremer, Mayer, van Dijke, Schouten, & Bardes, 2009; Herrmann & Felfe, 2014; Hamstra, van Yperen, Wisse, & Sassenberg, 2011; Kark & Van Dijk, 2008; Stam, van Knippenberg, & Wisse, 2010) there are only a few studies that have empirically tested the mediating role of situational/work regulatory focus in the leadership–creativity relationship (i.e. Neubert, Kacmar, Carlson, Chonko, & Roberts, 2008; Henker, Sonnentag, & Unger, 2015), namely, how leaders create and shape the situational regulatory focus of their followers, which further affects employees' creativity. Moreover, among these few studies, none have focused on the negative effect that prevention focus might have on employees' creativity.

In sum, as positive psychology theories, which focus on antecedents that enhance performance in general and creativity in particular, capture more and more attention in the current leadership literature (e.g. Cameron & Dutton, 2003; Kark, 2011), it seems important to additionally highlight the leadership style and mechanisms that may actually inhibit creativity. In other words, while knowing which leadership style enhances creativity more than others is important (and has been extensively researched, see Lin et al., 2016; Mainemelis et al., 2015), understanding and discussing which styles can be detrimental to creativity and through which mechanisms this occurs is no less important.

THEORY AND HYPOTHESES

Regulatory Focus and Leadership Style

Regulatory-focus theory (Higgins, 1997) asserts that people have two basic self-regulation systems. One system regulates the attainment of positive outcomes and focuses on goals of promotion, while the other regulates the avoidance of negative outcomes and focuses on goals of prevention. *Promotion self-regulatory goals* include aspirations, dreams, and wishes and represent the "ideal self", whereas *prevention self-regulatory goals* refer to duties and obligations, and represent the "ought self". Highly promotion-focused individuals are concerned with self-actualisation needs, growth, and aspirations. They are sensitive to the existence of rewards, use approach strategies to achieve goals, and are risk takers. In contrast, individuals who are attuned mainly to prevention goals are concerned with duties and obligations. They are more likely to be sensitive to punishment and to use an avoidance strategy to pursue their goals (e.g. Brockner & Higgins, 2001; Kark & Van Dijk, 2008; Lanaj et al., 2012).

Regulatory focus is a chronic (personal disposition) characteristic but can also emerge as a situational (context-induced) variable (Higgins, 1997). Momentary situations may induce a promotion focus by emphasising hopes and aspirations, and by providing a perspective of future growth, or they can induce a prevention focus by emphasising negative outcomes or by providing a perspective of protection, safety, and responsibility (e.g. Van Dijk & Kluger, 2004, 2011). In the work environment, situational and contextual cues are of importance since employees seek meaningful information that relates to what is expected from them and what are likely to be the possible consequences of their behaviour (Scott & Bruce, 1994). Along this line, a leader's style of behaviour is a salient contextual cue at work that is likely to induce either a situational promotion or prevention focus among organisational employees (Brockner, Higgins, & Low, 2004; Epitropaki, Kark, Mainemelis, & Lord, 2017; Kark & Van Dijk, 2007). Kark and Van Dijk (2007) have argued that transformational and transactional leaders are likely to evoke their followers'

situational self-regulatory focus, which further will have an effect on various employee outcomes, including creativity.

Transformational leadership has been defined in the literature as distinct from transactional or monitoring types of leadership. While *transactional and monitoring leadership* has been conceptualised in terms of an exchange process, in which rewards are offered for compliance and punishment for non-compliance, *transformational leadership* has been conceptualised based on its influence, namely, transforming the expectations, hopes, and values of followers and inspiring them to perform over and above what they have done in the past (e.g. Jung & Avolio, 1999; Yaffe & Kark, 2011). One way in which transformational leaders may influence followers is by eliciting a promotion focus, whereas transactional leaders may elicit a prevention focus (Brockner & Higgins, 2001; Kark, Katz-Navon & Delegach, 2015; Kark & Van Dijk, 2007).

Leaders who enact transformational behaviours focus on the ability of followers to change and make individual progress (Bass, 1999). Such leaders promote an attractive vision of the future (Judge & Piccolo, 2004) and enable followers to examine existing problems, structures, work procedures and practices from a fresh point of view (Groves & LaRocca, 2011; Zhang, Tsui, & Wang, 2011; Yukl, 2009). This form of leadership encourages followers to suggest novel and creative solutions. Hence, transformational behaviours allow a leader to focus on the "ideal self" of followers. This, in turn, helps followers to heighten their level of promotion focus (Henker et al., 2015; Neubert et al., 2008; Kark & Van Dijk, 2007).

In contrast, transactional leadership focuses on monitoring behaviours and exchange processes using contingent rewards to involve followers and to satisfy their needs (Bass, 1985). The transactional leader sets standards and norms, and highlights obligations, while directing subordinates to perform tasks in the "correct and expected way". This form of leadership promotes compliance and dependency on the leader and on his or her decisions, and does not motivate followers to find novel solutions to existing problems. Under transactional active actions (active management by exception), the leader exerts control over followers and takes immediate counter-active action when deviations from rules and expectations, or mistakes occur. Under transactional passive actions (passive management by exception), the leader takes action only when he or she is aware of serious problems that have arisen, providing negative feedback and punishment to followers. Thus, leaders enacting transactional behaviours, by monitoring followers' actions and focusing on their responsibilities and obligations, direct subordinates to their "ought self". This leadership style is likely to encourage conformity and continuity of the status quo and may elicit a prevention focus among followers (Gorman, Meriac, Overstreet, Apodaca, McIntyre, Park, & Godbey, 2012; Kark et al., 2015; Neubert et al., 2008; Tseng & Kang, 2009). While recent research has begun to show findings consistent with the relationships proposed above, we present the following hypotheses and test them as a basis for our subsequent hypotheses:

Hypothesis 1: Transformational leadership behaviour is positively related to followers' situational promotion SRF.

Hypothesis 2: Transactional leadership behaviour is positively related to followers' situational prevention SRF.

Promotion Focus and Creativity

Creativity involves the process of producing novel ideas or problem solutions (Amabile, 1988; Amabile, Barsade, Mueller, & Staw, 2005; Zhou & Shalley, 2003). A mindset that is characterised by flexibility and the tendency to be playful and take risks is crucial for the process of offering and implementing new ideas that are different from the traditional way (Baer, Oldham, & Cummings, 2003; Tierney, Farmer, & Graen, 1999). The relationship between a promotion focus orientation and creative behaviours has been demonstrated in laboratory (e.g. Crowe & Higgins, 1997; Friedman & Förster, 2001) and field experiments (e.g, Henker et al., 2015; Shin, 2014; Wallace, Butts, Johnson, Stevens, & Smith, 2016). Promotion-focus individuals are likely to be more creative due to their exploratory orientation, abstract thinking and their openness to novel experiences with the potential for gains and rewards (Friedman & Förster, 2001; Higgins, 1997). Promotion focus has been found to elicit more open thinking, which allows generating more distinct ideas, while prevention focus leads to more repetitive and similar ideas (Crow & Higgins, 1997).

In the process of regulating approach goals, a promotion focus stimulates positive emotions (Carver, Sutton, & Scheier, 2000; Higgins, 1997), which also facilitates creative performance (Amabile et al., 2005; Baas, De Dreu, & Nijstad, 2008; Carver et al., 2000). Furthermore, creative endeavours are generally associated with a tolerance for ambiguity and risk-taking (Tegano, 1990), which are compatible with a promotion focus. Therefore, a positive association between promotion focus and creative performance is expected. Under a promotion focus, employees look for ways to improve and develop the environment in which they act (Gorman et al., 2012), and do not remain fixed in the status quo frame. These types of attitudes and behaviours are necessary for innovative and creative behaviours. A recent comprehensive meta-analysis confirmed that in work contexts, a promotion focus was positively related to innovative performance, and this relationship was stronger than the one between prevention focus and innovative performance (Lanaj et al., 2012).

Promotion Focus as a Mediator between Transformational Leadership and Creativity

The leadership literature has consistently conceptualised transformational leadership as leadership aimed at creativity and change (Bass & Riggio, 2006;

Burns, 1978; Tichy & Devanna, 1986; Eisenbeiss, van Knippenberg, & Boerner, 2008; Wang et al., 2011). Transformational leaders envision a challenging future vision. They display behaviours, which are perceived as creative and unconventional and by doing so become role models for innovation (Howell & Higgins, 1990). Transformational leaders provide intellectual stimulation, which encourages followers to think 'outside the box' and to explore novel ways of thinking (Jung, Chow, & Wu, 2003). They emphasise divergent and unique ways to examine old problems and challenge followers to rethink and revise working assumptions. This is likely to foster followers' creativity. Furthermore, by contributing to followers' sense of self-efficacy (Pillai & Williams, 2004) and their intrinsic motivation (Shin & Zhou, 2003), transformational leaders also inspire their followers to become more creative (Eisenbeiss et al., 2008).

Previous studies have shown that transformational leadership is more strongly related to followers' creativity than transactional leadership (e.g. Rickards, Chen, & Moger, 2001). Leaders acting in a transformational manner are role models for promotion-focused behaviours, and thus are likely to evoke a congruent situational SRF among employees, that will in turn encourage creative behaviour (Neubert et al., 2008; Wu, McMullen, Neubert, & Yi, 2008). Recent studies have further supported this relationship (Henker et al., 2015; Kark et al., 2015), showing that transformational leadership elicits a promotion regulatory focus, and that in turn will contribute to innovative and creative behaviours. This suggests that transformational leadership behaviour, which is likely to focus followers on their ideal self and encourage a situational promotion focus among followers, will result in followers' creativity.

Hypothesis 3: Situational promotion SRF will mediate the positive relationship between transformational leadership behaviours and followers' creativity.

Prevention Focus and Creativity

People who are concerned with prevention goals tend to pay attention to and more clearly remember information related to negative aspects, such as loss, cost, punishment, or failure (Higgins & Tykocinski, 1992). They tend to value security and safety and act according to regulations and rules (Kark & Van Dijk, 2007). They perform tasks in a vigilant manner attempting to be accurate (Forster, Higgins, & Bianco, 2003). Furthermore, prevention focus, which relates to a risk-averse processing style, was found to be less related to creativity than promotion focus (Friedman & Forster, 2001). This effect was found when using both situational and chronic measures of prevention/promotion (Friedman & Forster, 2001).

Thus, individuals who are focused on prevention act in a way that attempts to avoid negative consequences and complies with what is expected or accepted according to formal policies (Higgins, Roney, Crowe, & Hymes, 1994; Kark et al., 2015). The accumulating findings regarding the effects of prevention focus suggest that when prevention focus is elicited, people are not likely to take risks or act creatively, but rather act more conservatively (Crowe & Higgins, 1997; Friedman & Forster, 2001). A recent meta-analysis supports this, showing that while promotion is more strongly related to creativity, prevention is more strongly related to safety and to attention-to-detail behaviours (Lanaj et al., 2012). In addition, a new study has found that prevention relates to conformity behaviours (Kark et al., 2015). In accordance with these recent findings, we take this one step further and claim that these conformity and attention-to-detail avoidant behaviours actually hinder creativity. In other words, while promotion is associated with creativity, we aim to understand how prevention is associated with the absence of creativity. In our quest to answer this question, we build on a number of different theoretical directions. First, based on theories relating creativity and emotions, a meta-analysis suggests that one's mood and creativity are related and that emotions associated with prevention focus are likely to harm creativity (Bass et al., 2008). Second, theories regarding the attention scope related to creativity claim that creativity results, among other things, from the exploration of different alternatives (Amabile, Conti, Coon, Lazenby, & Herron, 1996). With a situational prevention regulatory focus emphasising attention to doing things "by the book" and adhering to rules and regulations, it is not only likely that alternative ideas will be discouraged but that they will be prevented to begin with (Lanaj et al., 2012). Finally, theories regarding risk-taking claim that without an atmosphere that encourages taking risks, creativity is unlikely (Amabile et al., 1996; Tesluk, Farr, & Klein, 1997). Thus, if what is encouraged is caution and conformity, people will not only minimise taking risks, but will avoid any such attempts altogether, actually hindering creativity.

Prevention Focus as a Mediator between Transactional Leadership and Creativity

Although the role of organisational leaders in shaping their employees' regulatory focus and encouraging their creativity/innovation, has recently gained some direct empirical examination (e.g. Henker et al., 2015; Kark et al., 2015; Neubert et al., 2008), these studies focused on the effect of *promotion focus* on creativity and did not explore the effects of transactional leadership and *prevention focus* on creativity. Transactional leadership uses a different method of influence and control than transformational leaders, through a formal system of rewards and punishments to achieve followers' compliance (Jung & Avolio, 1999). It emphasises safety and routine issues by signalling to employees that

they must follow rules and regulations to receive positive reinforcement or to avoid negative consequences. While there are perspectives that argue that people are most innovative when they work within constraints and given structures of what they already know (Goldenberg, Lehmann, & Mazursky, 2001), this has been argued in relation to jobs that inherently require creativity such as product development and not with regard to creativity in organisations in which creativity is not the prime task, such as in service or manufacturing organisations. Thus, while transactional leadership can possibly enhance qualitative creativity by providing clear structure and standards (Herrmann & Felfe, 2014), in contexts where creativity is not part of the job definition, such structure and standards may not have the same effect. In other words, in more traditional contexts, under transactional leadership, employees are less likely to be creative and generate high quality and novel ideas, as they are attuned to focus on expectations and regulations.

In addition, autonomy plays a major role in enabling creativity (e.g. Amabile, 1988; Amabile, Schatzel, Moneta, & Kramer, 2004). Thus, close monitoring is likely to have the opposite effect and reduce employees' intrinsic motivation and creativity. Various studies have found that close monitoring of employees by their leaders reduced their creativity (Amabile et al., 2004; Zhou, 2003). Although some earlier research found that certain types of reminders and positive monitoring can have an effective outcome on creativity under certain circumstances, since they are perceived as supportive behaviours (e.g. Amabile et al., 2004; Choi, Anderson, & Veillette, 2009), most studies have found a negative relationship between close monitoring and creativity, due to the limiting of employee autonomy. For example, conscientious employees who were closely monitored by their managers had lower levels of creativity (George & Zhou, 2001).

Another explanation as to the ways in which transactional leadership may contribute to a prevention regulatory focus and hinder creativity is the use of punishment, which is a form of control that has detrimental effects on employees' emotional resources (Carver & White, 1994) and on their creativity (Lin et al., 2016). Punishment behaviour is a strong external signal about what is illegitimate and will not be tolerated, and is very likely to elicit prevention modes of behaviour. While punishment may be focused on the violation of orders, it may be experienced by employees as a sanction on their attempts to be creative. Although punishment itself may not dampen employees' creative behaviour, it may take an emotional toll since it enhances fear and caution which have been found to harm creativity (Zhang et al., 2011; Baas et al., 2008). In addition, punishment may involve the withholding of time, autonomy, and seed money, all of which may decrease creative performance.

Moreover, when leaders respond in a punishing manner they frame the situation for employees as a "loss" or "non-loss" situation. This type of framing is in line with a prevention mode of self-regulation (Brockner & Higgins, 2001).

As we explained above, self-regulation via prevention focus regulates security needs, enhances avoidance tendencies (Higgins, 1997; Higgins & Spiegel, 2004; Scholer & Higgins, 2010), and reduces employees' ability to behave creatively (Kark & Van Dijk, 2007; Lanaj et al., 2012). Finally, punishment and monitoring leadership behaviours can limit employees' relational resources. These behaviours can trigger negative leader-employee interactions, can lower employees' sense of trust and justice, can hinder the communication between the leader and the employee, and limit support, high quality connections and constructive and helpful feedback, which have all been found to contribute to creativity (Amabile et al., 2004; Dutton & Heaphy, 2003; Kark, 2011; Mainemelis et al., 2015). This can contribute to a lower level of psychological safety, hindering employees' creative engagement (Kark & Carmeli, 2009), and can possibly negatively influence the leader's evaluation of the employee's creative performance.

Thus, the behaviours exhibited by transactional leaders, such as the use of punishment, the focus on rules and social demands and the emphasis on loss avoidance, lead to the activation of prevention focus among followers. These transactional behaviours direct attention to obligations or what "ought to be done" (Kark & Van Dijk, 2007), which, as we claimed in the section above, further results in task behaviour that is more vigilant, attentive to details, and less creative and thought provoking. This suggests that transactional leadership behaviour, which is likely to focus followers on their ought-self and encourage a prevention focus among them, will be negatively associated with creativity among these followers.

Hypothesis 4: Situational prevention SRF will mediate the negative relationship between transactional leader behaviours and followers' creativity.

A depiction of our model appears in Figure 1.

METHOD (STUDY 1—AN EXPERIMENTAL STUDY)

Study 1 was conducted as an experiment with two main goals: First, this study aimed to test the first two hypotheses regarding the relationship between leadership style and employees' situational SRF. In this study, leadership style was manipulated in a scenario lab experiment and participants' regulatory focus was measured before and after the leadership manipulation. We conducted this experiment to examine the relationship between leadership style and situational regulatory focus, above and beyond chronic regulatory focus. Secondly, this study gave us an opportunity to examine the mediation hypotheses in a neutral setting before conducting the second study, which took place in the field.

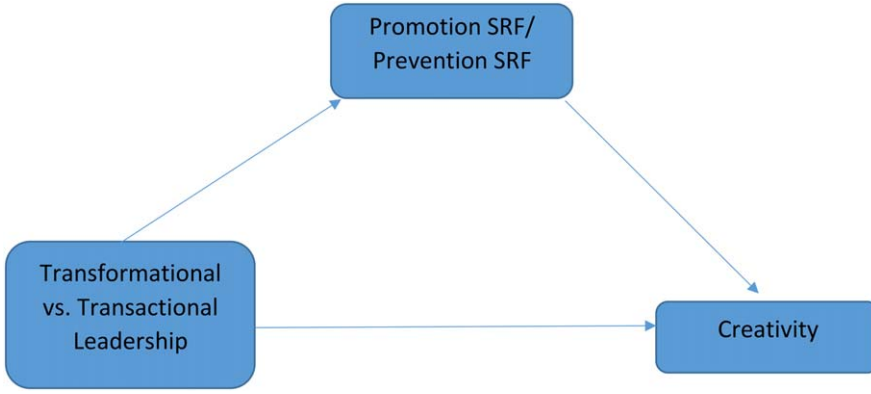

FIGURE 1. Our hypothesised model. [Colour figure can be viewed at wileyonlinelibrary.com]

Sample

A total of 189 undergraduate students majoring in psychology and sociology participated in the study in exchange for course credit (67% females; average age = 25). The participants gave their consent to participate in a two-stage study, and were randomly assigned to one of two conditions of leadership style.

Procedure

In stage 1, a research assistant met the students in their classroom and distributed the questionnaire on chronic SRF and demographic details at the beginning of the class. All participants filled out a consent form prior to their participation. In order to match the questionnaires from stage 1 to stage 2, the students were asked to write the last 4 digits of their social security number on the questionnaires. In Stage 2, two weeks later, the participants were invited to the laboratory and were randomly assigned to one of two conditions. In the laboratory, they randomly received a written scenario describing either a transformational/charismatic or a transactional leader (see the Appendix). Upon completion the students were asked to fill out the situational regulatory focus and creativity measures. Participants were told that the purpose of the study was "to better understand leader-follower relationships". At the end of the experiment the research assistant explained the purpose of the study and debriefed the students. The two written scenarios simulating either a transformational leader or a transactional leader were used, based on the use of scenarios in other leadership studies (e.g. Bass & Avolio, 1997; Deluga, 1990; Tichy & Devanna, 1986). The scenarios described a work situation and focused on the manager's behaviour. The two scenarios were modelled after Kirkpatrick and

Locke (1996) and Bono and Judge (2003). There were several key elements in the content of the transformational scenario: an inspiring and optimistic vision, a focus on moral and ethical considerations, a description of how the leader asks his employees to think "out of the box" and to challenge traditional practices, and finally an expression of the leader's belief in his employees' efficacy. The transactional leadership scenario described a monitoring and controlling leadership style and included several key elements: a clarification of the goals and tasks that are expected from the employees, an emphasis on meeting standards and adhering to rules, a focus on avoiding mistakes and errors, and finally, monitoring employees to detect deviations and anomalies. The two scenarios were the same length (15 lines). It is important to note that in an earlier study we tested the validity of these scenarios. In order to assess content validity, we randomly distributed the scenarios to 32 students who were asked to rank the leaders described in the scenarios on the Multi-Factorial Leadership Questionnaire (MLQ) scales. Results of a *t*-test for unpaired samples demonstrated significant differences between the samples ($t_{30} = 9.55$, $p < .01$ and $t_{23} = -7.50$, $p < .01$ for transformational and transactional leadership, respectively). The students were also asked if they were able to form a vivid image of themselves working as followers of this leader and if they could imagine how they would think, feel, and act. They all reported that they had no problem thinking of themselves in this situation and that the measurements and scales were clear and made sense.

Measures

Chronic Self-Regulatory Focus. Chronic SRF was assessed by the Lockwood et al. (2002) scale with no modifications to the original scale. The Lockwood scale contains 18 items, with nine items for prevention focus (e.g. "In general, I focus on preventing negative situations") and nine items for promotion focus (e.g. "I frequently imagine how I will achieve my hopes and aspirations"). Scales ranged on a 9-point Likert scale from 1 (to a very slight extent), to 9 (to a very large extent). Lockwood's chronic SRF scale was administered two weeks before the participants participated in the experiment (prevention scale alpha = .76; promotion scale alpha = .74).

Situational Self-Regulatory Focus. Situational SRF was assessed by a modified version of Lockwood et al. (2002) which was transformed to measure work-related regulatory focus. We transformed the original questionnaire by adding the following phrase at the beginning of each item: "as an employee under the described supervisor…". Additionally, to emphasise the "situational" aspects instead of the "chronic" ones, we removed phrases such as "In general" or "typically" from the original items and replaced the term "in my life" with the term "in my work". For example, the item "In general, I

am focused on preventing negative events in my life" was changed to "As an employee under the current supervisor, I would focus on preventing negative events in my work". Scales ranged on a 9-point Likert scale from 1 (to a very slight extent), to 9 (to a very large extent). The two scales were reliable with a prevention scale alpha = .83, and a promotion scale alpha = .80. The situational SRF scale was administered after the leadership manipulation.

Creativity. Creativity was assessed using the scale developed by Zhou and George (2001), which contains 13 items on a 7-point Likert scale. The participant was asked to assess the extent to which he/she would be creative if the manager described in the scenario was the manager with whom they were working. Sample items are "To what extent would you suggest new ways to achieve goals or objectives", and "To what extent would you suggest new ways to perform work tasks" (alpha = .96).

Gender. Gender was included so that our effects would be examined above and beyond any gender effect. Previous research has found self-reported creativity to be influenced by gender (Kaufman, 2006).

Analytical Procedure

We conducted two regression analyses. The first was designed to test the effect of the leadership scenario on situational SRF when controlling for chronic SRF (testing H1 and H2). The second regression was conducted to test whether situational SRF mediates the effect of the scenario on creativity (testing H3 and H4). In the second analysis, creativity was the dependent variable and we inserted chronic SRF and leadership in the first step, and in the second step we added the mediators (situational promotion and situational prevention). We conducted a bootstrapping analysis in order to estimate the significance of the mediation effects (Preacher & Hayes, 2008).

RESULTS (STUDY 1)

Table 1 presents the means, standard deviations and correlations among the study variables. As can be seen in this table, gender was not related to any of the study variables. The sample size dropped when we included this variable in all further analyses, with the results staying very much the same. Thus, we did not include gender in the reported subsequent analysis. In order to confirm the random assignment of chronic SRF to the two experimental conditions, we conducted a multivariate analysis of variance (MANOVA) with the two experimental conditions as an independent variable and two chronic-foci as the dependent variable. Results indicated a non-significant effect ($F(1,187) = 1.10$, n.s.), confirming the random assignment.

TABLE 1
Study 1: Means, Standard Deviations and Correlations among Study Variables ($n = 189$)

	1	*2*	*3*	*4*	*5*	*6*
1. Leadership Style[a]						
2. Chronic Promotion Focus	0.04	(0.73)				
3. Chronic Prevention Focus	−0.06	0.16*	(0.79)			
4. Situational Promotion Focus	0.25**	0.41**	0.07	(0.87)		
5. Situational Prevention Focus	−0.30**	0.13	0.57**	−0.06	(0.89)	
6. Creativity	0.34**	0.14	−0.15*	0.44**	−0.38**	(0.91)
7. Gender (1 = male, 2 = female)	0.06	0.08	−0.08	0.08	−0.02	0.02
M (*SD*)		6.57 (0.96)	5.01 (1.19)	6.48 (1.18)	5.16 (.39)	5.1 (1.06)

Note: [a] Leadership style: 0 = Transactional leadership; 1 = Transformational leadership; *$p < .05$, **$p < .01$

As can be seen in Model 2 of Table 2, the leadership scenario (0 = transactional, 1 = transformational) had a significant effect on promotion SRF ($b = .57$, $p < .001$) when controlling for both prevention and promotion

TABLE 2
Study 1: The Effect of the Leadership-Style Manipulation on Situational Regulatory Focus, Controlling for Chronic Regulatory Focus ($n = 189$)

	Situational Promotion Focus				*Situational Prevention Focus*			
	Model 1: Control Model		*Model 2: Full Model*		*Model 3: Control Model*		*Model 4: Full Model*	
	Estimate	*SE*	*Estimate*	*SE*	*Estimate*	*SE*	*Estimate*	*SE*
Intercept	3.55***	0.54	3.27***	0.54	1.07	0.68	1.51*	0.65
Chronic Prevention Focus	0.009	0.06	0.02	0.06	0.66***	0.07	0.63***	0.07
Chronic Promotion Focus	0.56***	0.07	0.44***	0.07	0.06	0.09	0.083	0.09
Leadership style[a]			0.57***	0.16			−0.91***	0.20
R^2	0.17		0.22		0.33		0.40	
ΔR^2			0.05***				0.07***	
F(dfs)	18.82 (2,186)***		17.58 (3,185)***		45.52 (2,186)***		40.82 (3,185)***	

Note: [a] Leadership style: 0 = Transactional leadership style; 1 = Transformational leadership style; *$p < .05$, **$p < .01$, ***$p < .001$

chronic regulatory foci, indicating that transformational leadership is related to higher levels of promotion SRF. This model explained 22 per cent of the variance of situation promotion focus. When comparing the control model to the full model, it can be seen that above and beyond an individual's chronic regulatory focus, leadership style is related to SRF adding 5 per cent to the explained variance in situational promotion focus. Indeed, H1 was supported.

As can also be seen in Table 2, the leadership scenario (0 = transactional, 1 = transformational) had a significant effect on prevention SRF ($b = -.91$, $p < .001$) when controlling for both prevention and promotion chronic regulatory foci. The negative coefficient indicated that transactional active leadership is related to higher levels of prevention SRF. The model explained 40 per cent of the variance of situational prevention focus. When comparing the control model to the full model, it can be seen that above and beyond an individual's chronic regulatory focus, leadership style is related to SRF adding 7 per cent to the explained variance in situational prevention focus. H2 was also supported.

In order to test hypotheses H3 and H4, we first showed that leadership style had an effect on participants' self-reported creativity ($b = .69$, $p < .001$; Model 1 Table 3).[1] It is important to note that seven participants did not complete the creativity questionnaire and thus our sample size was reduced to 182. When we

[1] In order to further test our scenarios and verify that the difference between the two leadership conditions, specifically with regard to the leadership effect on creativity outcome, did not stem from specific wording in the transformational leadership scenario (i.e. using words that relate to creativity), we conducted another experiment. An online questionnaire was administered to 209 working students in Business Administration and Psychology, who were randomly assigned to one of three leadership conditions: the original transformational scenario, a new transformational scenario, which did not contain explicit wording of creativity, and the original transactional scenario. At the first stage, participants were asked to read a detailed scenario describing their manager at work. Then, for a manipulation check, they were asked to describe the manager in the scenario on a short MLQ scale. Finally, they were asked to answer a self-reported creativity measure (Zhou & George, 2001). A total of 167 students returned full questionnaires: 61 and 59 students in the original and in the new transformational conditions, respectively; and 47 in the original transactional condition. A one-way ANOVA and a post-hoc Tukey test revealed that there was no significant difference in creativity between the original and the new transformational scenarios ($M = 5.8$, $M = 5.9$, respectively), and a significant contrast effect between the transactional leadership scenario ($M = 4.3$) and the two transformational scenarios ($p < .05$). The same pattern was found with regard to the leadership manipulation check. Specifically, participants in the original and the new transformational scenarios similarly scored the manager in the scenario as high on transformational behaviours ($M = 4.1$, $M = 4.2$; respectively) and low on transactional behaviours ($M = 2.4$, $M = 2.5$, respectively), while participants in the transactional condition scored the manager low on transformational behaviours ($M = 2.9$) and relatively high on transactional behaviours ($M = 3.9$).

TABLE 3
Study 1: Situational SRF as a Mediator of the Effect of Leadership on Creativity ($n = 182$)

	Model 1: Total effect on Creativity		*Model 2: Indirect effect of Situational SRF*	
	Estimate	*SE*	*Estimate*	*SE*
Intercept	4.35***	0.49	3.43***	0.48
Chronic Prevention Focus	−0.11*	0.05	−0.01	0.06
Chronic Promotion Focus	0.13*	0.07	0.03	0.05
Leadership Style[a]	0.69***	0.15	0.34*	0.14
Situational Prevention Focus			−0.23***	0.05
Situational Promotion Focus			0.37***	0.06
R^2	*0.15*		*0.37*	
ΔR^2			*0.22*	
F(dfs)	*10.77(3,178)*		20.35 (5,176)	

Note: [a] Leadership style: 0 = Transactional leadership style; 1 = Transformational leadership style; *$p < .05$, **$p < .01$, ***$p < .001$

inserted SRF into the model (Model 2, Table 3), the leadership effect on creativity decreased significantly ($b = .34$, $p < .05$), whereas the effects of the SRF on creativity were significant (situational prevention focus effect on creativity $b = -.23$, $p < .001$ and situation promotion focus effect on creativity $b = .37$, $p < .001$). This suggests that beyond the previously suggested path between leadership style and performance, explained at least partially by promotion foci, the relationship between the leadership scenario and creativity was also mediated by prevention foci.

Yet, as suggested by Preacher and Hayes (2008), in order to show that this mediation is significant, the bootstrap method is necessary to estimate the indirect effect and bias-corrected 95 per cent confidence intervals based on 5,000 bootstrap samples. This methodology is recommended because it does not require the sampling distribution of the indirect effect to be normal (Preacher & Hayes, 2008). We tested the two paths of leadership to creativity: one path through the situational-promotion focus and one path through the situational-prevention focus, when controlling for chronic prevention and chronic promotion. The bootstrap analysis confirmed the mediation effects. First, the indirect path between leadership and creativity through promotion focus was significant (95%CI = .06, .33) confirming Hypothesis H3. The ratio of this indirect effect to the total effect was 0.25 and the ratio of indirect effect to the direct effect was 0.51. Second, the indirect path between leadership and creativity through prevention focus was significant (95%CI = .08, .33) supporting Hypothesis H4. The ratio of this

indirect effect to the total effect was 0.27 and the ratio of indirect effect to the direct effect was 0.55.

Summary of Findings

Study 1 examined leadership style using scenarios in a laboratory experiment. The results of Study 1 supported our theoretical model. The experimental design enabled us to collect data at two points in time and control for various aspects of the situation, including participants' chronic SRF. However, to further explore our theoretical model, a replication of the findings in a natural organisational setting was still needed. The design of Study 1 allowed each participant to experience only one leadership style: transformational or transactional. In Study 2, we further examined our theoretical model in a field study in an organisational context. This allowed us to test the validity of the research model in an environment that was dynamic and not sterile. Such a context can reflect the more authentic relationships between leaders and followers that develop over time. In addition, in a field study, managers can exhibit both transactional and transformational behaviours, enabling participants (followers) in Study 2 to rank both.

METHOD (STUDY 2—A FIELD STUDY)

Sample

A total of 343 employees who work in a large communication service call-centre and their 75 workgroup managers (workgroup size average was 4.6) took part in the study. The employee sample was composed of 196 (57%) women and 147 (43%) men; the mean age was 27.8 and the average tenure in the organisation was 2.3 years. The manager sample was composed of 29 (39%) women and 46 (61%) men; the mean age was 32.2 and the average tenure was 5 years (compliance rate was 91%).

Procedure

We first obtained organisational consent to collect data from employees and managers in the organisation. Research assistants visited the organisational customer service units and distributed the questionnaires to all the workgroup managers in the organisation. They were supervised during the process. The research assistants obtained informed consent and verified the full completion of the questionnaires on site. The managers filled out the outcome questionnaires on the performance indices (the creativity inventory) of their employees. Then, after collecting the data from the managers, data was collected from the employees who were randomly chosen from a list of employees for each

manager. All employees whose managers filled out outcome questionnaires on their performance indices participated in this stage.[2]

Measures

Questionnaires Completed by the Managers: Employee Creativity. We used the inventory of perceived cognitive style of task performance developed by Miron, Erez and Naveh (2004). This inventory was completed by the managers for each of his or her employees and included 5 items on creativity which were assessed on a scale ranging from 1 "strongly disagree" to 7 "strongly agree" (e.g. likes to do things in an original way).

Questionnaires Completed by the Employees: Manager's Leadership Style. We used the MLQ 5X (Bass & Avolio, 1990) which has 32 items. We extracted the attributed charisma subscale from the transformational leadership scale, since it has been criticised for measuring impact and outcomes instead of behaviours (e.g. Kark et al., 2003; Yukl, 2009). To test the structure of the two independent components of leadership styles (transformational and transactional leadership), we conducted Confirmatory Factor Analysis (CFA) using Amos 18 on the individual level data. Model 1 tested a general model in which all items were loaded on to the same factor (16 items of transformational leadership and 12 items of transactional leadership). The result demonstrated lower than acceptable fit level ($\chi^2(350, N = 341) = 1354.24$, $p < .01$, GFI = .74, NFI = .72, RMSEA = .09). Model 2 was a seven correlated factors model where all MLQ items were loaded on to their original subscales. The results of this model demonstrated acceptable fit level ($\chi^2(328, N = 341) = 706.91$, $p < .01$, GFI = .87, NFI = .85, RMSEA = .06). Next, we built a two-correlated high order factors model, in which the four subscales measuring transformational leadership were loaded on to one factor and the three subscales of transactional leadership were loaded on to the other factor. The results of this model also demonstrated acceptable fit level ($\chi^2(341, N = 341) = 845.22$, $p < .01$, GFI = .84, NFI = .82, RMSEA = .06).

Further inspection of this model's loading revealed that the contingent reward and management by exception active subscales were negatively loaded on the transactional higher order factor. Moreover, the contingent reward subscale had a latent loading of $Est = .77$ ($SE = .06$) on the transformational high order factor (which has previously been found in other research, such as Zohar, 2002). Based on these results we decided to eliminate the contingency reward subscale from further analysis. Thus, in line with previous studies (e.g. Kark

[2] The current study was part of a larger data collection effort. The variables of leadership behaviour and SRF in Study 2 were used to test a different research question (see Delegach, Kark, Katz-Navon, & Van Dijk, 2017).

et al., 2015; Turner, Barling, Epitropaki, Butcher, & Milner, 2002), we tested a higher order 3-factor model in which the transformational items were loaded on the first factor, management by exception active items loaded on the second factor, and management by exception passive items were loaded on the third factor. The results yielded acceptable fit level ($\chi^2(244,\ N = 341) = 574.45$, $p < .01$, GFI = .92, NFI = .90, RMSEA = .06).

Employees' Situational Regulatory Focus. We used the same situational-version of the Lockwood scale that was used in Study 1 (e.g. "as an employee under the current supervisor I focus on preventing negative events. . .").

Demographic data. All participants completed a *biographical questionnaire* including gender and age.

Analytical Procedure

As the data was collected from individuals in 75 different workgroups our analysis employed random coefficient modelling (RCM; Goldstein, 1987). This approach allows for testing the nesting of individuals by workgroups. The advantage of RCM is that by modelling residuals at level 2 (with the individual as the level 1 unit of analysis) such analysis acknowledges that individuals belonging to the same workgroup may be more similar to one another than to individuals belonging to different workgroups (Bryk & Raudenbush, 1992). We analysed our data using the SAS-MIXED procedure as the dependent variables were all continuous. In order to examine the mediation of SRF we followed the procedure suggested by Bauer, Preacher, and Gil (2006) on multilevel mediation with the help of the SAS INDTEST macro.

RESULTS (STUDY 2)

In this study, we adopted the perspective that leadership can be experienced collectively by the members of a workgroup and is not necessarily a unique relationship between a leader and an individual. Leadership behaviours are directed at the group as ambient stimuli that influence the group as a whole as well as individuals within the group (e.g. Carter, Armenakis, Feild, & Mossholder, 2013; Hoffman, Bynum, Piccolo, & Sutton, 2011; Yaffe & Kark, 2011). Moreover, measuring leadership as an aggregation at the team level was based on two considerations. First, the understanding that leadership, when measured as a behaviour (vs. other measurements of leadership that focus not on behaviour, but rather on relationships, emotions, cognitions, etc.), can be observed by all the followers, and thus is likely to have a significant shared component among the group of followers (see also Kark et al., 2003, 2015). Second, treating leadership as a team level variable enables us to limit the same

source bias that is likely to affect the results when all the data is measured at the individual level and is obtained from the single follower. Demonstrating a shared group perception, all three leadership scales exhibited sufficient within-unit agreement (James, Demaree, & Wolf, 1984). Median $r_{wg} = 0.91$ for transformational leadership, Median $r_{wg} = 0.65$ for transactional active, and Median $r_{wg} = 0.70$ for transactional passive. Intra-class correlations (Bliese, 2000) were ICC(1) = 0.34, 0.20, 0.15 and ICC(2) = 0.72, 0.65, 0.69 for transformational, transactional active, and transactional passive, respectively. These results suggest that there was sufficient within-group homogeneity and between-group variance to justify consideration of the scales as shared group level perceptions. Additionally, we conducted analyses of variance (ANOVAs) with leadership style (transformational, transactional active and passive) as the dependent variable, and the workgroup index as an independent variable. These analyses showed a significant difference between followers' perceptions of leadership styles by working groups ($F_{(74,342)} = 3.56$, $p < .01$; $F_{(74,342)} = 2.16$, $p < .01$; $F_{(74,342)} = 1.80$, $p < .01$ for transformational, transactional active, and transactional passive, respectively). Accordingly, we calculated the mean score of each of the three scales for each workgroup by averaging the corresponding employee ratings.

Hypotheses Testing

Table 4 summarises the means, standard deviations, and correlations among the study variables. We first tested the relationships between leadership styles at the workgroup level and situational SRF (potential mediators), controlling for age and gender (see Table 5). The results showed a significant positive main effect of transformational leadership on situational-promotion focus (estimate = 0.40, $p < .05$) and a positive main effect of transactional active on situational-prevention focus (estimate = 0.91, $p < .001$) providing additional support for hypothesis 1 and 2. Transactional passive did not yield any effect on followers' situational SRF. Both full models were significantly better than the control models (Δ-2loglikelihood = 14.9, $p < .001$ when situational-promotion focus was the dependent variable and Δ-2loglikelihood = 29.1, $p < .001$ when situational-prevention focus was the dependent variable).

We then tested the mediation of situational SRF in the relationship between leadership styles and creativity with two steps (see Table 6). In step 1 we regressed followers' creativity level on the control variables (age, gender) and on leadership styles at the workgroup level; and in step 2 we added the situational SRF to the model (see Table 6).

As can be seen in Model 1 of Table 6, the results showed that transactional active leadership style was negatively associated with followers' creativity level (estimate = -0.45, $p < .05$). As can be seen in Model 2 of Table 6 this negative association was further mediated by situational prevention SRF, as predicted

TABLE 4
Study 2: Means, Standard Deviations and Correlations among the Study Variables

	N	*M*	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1. Age	328	27.74	5.80								
2. Gender	333	1.58	0.49	−0.38***							
3. Transformational Leadership	339	3.77	0.52	−0.27***	0.05	(0.92)					
4. Transactional Active	339	3.17	0.49	−0.18***	0.05	0.18***	(0.80)				
5. Transactional Passive	339	2.32	0.45	0.16**	−0.09	−0.63***	−0.05	(0.78)			
6. Situational Promotion Focus	337	7.12	1.26	−0.26***	0.14**	0.24***	0.19***	−0.18***	(0.70)		
7. Situational Prevention Focus	337	4.96	1.49	−0.34***	0.25***	0.06	0.34***	0.003	0.29***	(0.66)	
8. Creativity	321	4.24	1.23	0.16**	−0.25***	0.09	−0.16**	−0.02	−0.10	−0.25***	(0.90)

*$p < .05$, **$p < .01$, ***$p < .001$

TABLE 5
Study 2: The Effect of Team Level Leadership Styles on Individual Level Situational Regulatory Focus ($n = 327$)

	Situational Promotion Focus				*Situational Prevention Focus*			
	Model 1: Control Model		*Model 2: Full Model*		*Model 3: Control Model*		*Model 4: Full Model*	
Effect	*Estimate*	*SE*	*Estimate*	*SE*	*Estimate*	*SE*	*Estimate*	*SE*
Intercept	8.58***	0.33	6.11***	1.07	6.82***	0.41	4.06**	1.25
Age	−0.05***	0.01	−0.03**	0.01	−0.06***	0.01	−0.06***	0.01
Gender	−0.17	0.14	−0.18	0.14	−0.38*	0.17	−0.45**	0.16
Transformational Leadership			**0.40***	0.16			−0.10	0.19
Transactional Active			0.21	0.13			**0.91*****	0.16
Transactional Passive			−0.04	0.18			0.14	0.21
Random Variance group	0.03	0.06	0	.	0.21*	0.12	0	.
−2loglikelihood	1017.4		1002.5		1133.6		1104.5	
Δ-2loglikelihood			14.9***				29.1***	

*$p < .05$, **$p < .01$, ***$p < .001$

(estimate = −0.13, $p < .01$). The bootstrap confidence interval for the indirect effect was LCL = −0.20, UCL = −0.02, confirming Hypothesis 4. The ratio between the indirect and total effect was 0.23.

Thus, our analyses revealed that employees' situational-prevention focus mediated the link between transactional active leadership and employees' creativity. The higher the leader's transactional active score, the higher his/her employees' situational-prevention focus was. Prevention focus, in turn, is negatively related to the individual's creativity level. H3 was not supported in this study as promotion was not found to mediate the leadership-creativity relationship.

Summary of Findings

Study 2 examined the effect of leadership style on employees' creativity through situational SRF in a natural environment within an organisation, using objective evaluations of employees' creativity level. Similar to Study 1, it was found that leadership style significantly relates to situational SRF, such that transformational leadership positively relates to promotion focus and transactional active leadership positively relates to prevention focus. In addition, we found that prevention focus mediated the relationship between transactional active leadership and creativity. These results further strengthen the

TABLE 6
Study 2: Situational Regulatory Focus as a Mediator of the Effect of Team Level Leadership Style on Individual Level Creativity ($n = 310$)

	Model 1: Total Effect Model		*Model 2: Mediation Model*	
Effect	*Estimate*	*SE*	*Estimate*	*SE*
Intercept	3.49*	1.41	3.86**	1.43
Age	0.01	0.01	0.00	0.01
Gender	0.51***	0.15	0.47**	0.15
Transformational Leadership	0.36	0.22	0.36	0.22
Transactional Active	**−0.45***	0.18	−0.33	0.18
Transactional Passive	0.17	0.25	0.18	0.24
Situational Promotion Focus			0.01	0.06
Situational Prevention Focus			**−0.13****	0.05
Random Variance group	0.28**	0.09	0.26**	0.09
−2loglikelihood	957.4		950.2	
Δ-2loglikelihood			7.2*	

*$p < .05$, **$p < .01$, ***$p < .001$

results of Study 1 regarding the role of regulatory foci in the leadership process, and emphasise the negative effect of transactional leadership on creativity through its relationship to prevention focus.

GENERAL DISCUSSION

The current study aimed to understand and examine the role of situational-regulatory foci in the process through which leadership style and employees' creativity are related, using both experimental and field studies. Our first two hypotheses (H1 and H2) were confirmed consistently in both studies. Specifically, the relationships between transformational leadership and promotion focus as well as between transactional leadership and prevention focus were found in a correlational setting (Study 2) as well as in a lab experiment where leadership styles were manipulated (Study 1). The mediation effect of situational SRF was confirmed in both the experimental study and in the field study where creativity levels were measured using managers' reports of employee creativity. Specifically, it was found that transactional leadership negatively affected employees' creativity, through a situational prevention focus (H4).

These results shed light on the underlying mechanism that enables leadership to influence creativity outcomes, namely, through the regulatory focus system. They demonstrate that leadership relates to, and affects, basic motivations of the prevention and promotion systems, which have been widely researched in psychology and conceptualised as reflecting basic human needs

for development and growth versus security and safety. Our study demonstrates that leaders may be able to facilitate followers' motivations by activating a situational prevention or promotion frame, and that at least when it comes to prevention activation these motivational frames further shape followers' outcomes in terms of employees' creativity.

Creativity has been widely researched as a significant component in promoting organisational success. Previous research has suggested that contextual factors, and leadership style in particular, are able to foster followers' creativity. Our findings offer a new way to understand the creativity process, suggesting that while leaders' behaviour relates to employees' motivational self-regulation system, this in turn can at times harm creativity.

Our findings show, in a consistent manner, that transactional leadership behaviours, and specifically transactional active leadership style, relate to employees' situational prevention focus and play a major role in hindering and possibly tempering the tendency of followers to be creative. A transactional active leadership style, which is a monitoring style that focuses on followers' mistakes, deviations and losses, enhances followers' perceptions of their "ought self" focusing their attention on what is expected of them, their obligations, and their duties. Thus, by enhancing the prevention focus, such leadership may undermine followers' ability to "think out of the box", experiment, and take risks. This may ultimately hinder employees' creativity.

It is important to note that transactional passive leadership style was not related to creativity or to situational self-regulatory foci, above and beyond transformational and transactional active styles. It seems that when it comes to prevention regulatory focus, it is the active monitoring and rule setting behaviours that enhance a situational prevention SRF, and that whether a leader punishes his/her employees after a deviation from the rules or regulations has occurred is less relevant for setting such a focus.

To summarise our findings, in line with our expectations, in both the experimental and field study, transactional leadership (i.e. transactional active) was positively related to situational prevention focus, which in turn contributed to the reduction of creativity. It is interesting to note that the positive effect of transformational leadership on creativity via situational promotion was not obtained in the field study. This may suggest that prevention focus has more potential to harm creativity than the potential of the promotion focus to enhance it.

These findings suggest that while both the promotion and the prevention systems may be sensitive to external forces and cues, such as leadership behaviour, their relationship with creativity is more evident when the regulatory system is related to a detrimental effect than the positive effect of the promotion system. Thus, our findings imply that through the system of self-regulation, it may be easier to discourage than to encourage creativity. This can be accounted for, at least partially, by the different nature of the prevention and promotion systems.

First, the promotion focus is based on a more internal mode of motivation and an internal set of ideals focusing individuals on their inner perception of their ideal self as well as their dreams, wishes, and aspirations. The prevention focus, on the other hand, is based on norms and expectations, and is guided by the "ought self", which mirrors the external messages and perspectives toward the individual within their own frame (Higgins, 1998). Indeed, prior research findings showed that promotion is more sensitive to internal cues and more resilient to external effects, threats, and expectations; whereas prevention is more sensitive to external cues (see Itzkin, Van Dijk, & Azar, 2016; Van Dijk, Seger-Guttmann, & Heller, 2013). Similarly, creativity has been shown to have a strong link to intrinsic motivation over and above extrinsic motivation. Transactional leadership enhances external pressures and expectations and increases the prevention focus. When individuals are extrinsically motivated they tend to behave less creatively (Amabile, 1998).

Second, the prevention system has a more basic and primary function than the promotion system, since it is responsible for security and safety (basic needs), whereas the promotion system is responsible for development (higher needs). When there are indications of an impending threat, the prevention system is activated and more resources are directed to avoiding damage. As a result, fewer resources are available for other ongoing goals which are less urgent at the current moment (Van Dijk et al., 2013), such as creativity. Moreover, it was recently found that in general, people allocate more resources to prevention goals (e.g. safety) than to promotion goals (e.g. development), and the more insecure they feel, the more resources they allocate to prevention goals (Schodl & Van Dijk, 2014), leaving fewer resources for creativity.

Third, it may be easier to discourage creativity than to encourage creativity due to a negativity bias. According to contemporary research reviews, "bad" has been shown to have a stronger effect than "good", across a wide range of psychological phenomena (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001). Thus, when there are events that have a negative valence (e.g. losing money, separating from friends, and being criticised), they will have more impact on the individual than similar types of events that have a positive valence (e.g. winning money, making new friends, and receiving appraisal). This has been termed the *Asymmetry Effect* (Peeters, 2002) and *negativity bias* (Rozin & Royzman, 2001) of emotion. Specifically, with regards to affect, the effects of negative affect in organisations is stronger and more nuanced than effects of positive affect (e.g. George, 2011; Kaplan, Bradley, Luchman, & Haynes, 2009; van Kleef, Homan, Beersma, Van Knippenberg, Van Knippenberg, & Damen, 2009). This was also shown for the effect of leadership behaviour (Dasborough & Ashkanasy, 2002; Medler-Liraz & Kark, 2012; Sy, Cote, & Saavedra, 2005).

Thus, our findings suggest that it may be easier to hinder creative behaviours than to encourage creative behaviours, since individuals are more attuned to

negative versus positive messages and to the prevention versus the promotion system. When leaders behave in a monitoring mode, by looking out for mistakes and mishaps, and when they prime prevention, this may have a stronger effect on hindering creativity than the effect of transformational leadership, which supports and encourages followers to follow their aspirations and promotes novel ideas, on encouraging creativity. This finding may shed light on a phenomenon that was noted by Amabile (1998, p. 77), acknowledging that: "When I consider all the organizations I have studied and worked with over the past 22 years, there can be no doubt: creativity gets killed much more often than it gets supported". In addition, as leadership theory has moved towards functionality, introducing instrumental leadership (Antonakis & House, 2014) as a newer full range leadership model, it is important to also emphasise the behaviours/functions that not only do not promote creativity but actually harm them.

Post Hoc Analysis

In their theory on self-regulation and leadership, Kark and Van Dijk (2007) and Sassenberg and Hamstra (2017) presented the idea that regulatory focus serves as both a mediator and a moderator in the leadership dynamic. Specifically, different leadership behaviours encourage diverse self-regulation strategies (or situational regulatory focus). These self-regulation strategies are likely to interact with followers' chronic-regulatory foci (a moderation effect) to affect followers' outcomes (see Sassenberg & Hamstra, 2017). The moderation effect has been demonstrated by Hamstra, Sassenberg, Van Yperen, and Wisse (2014) with regard to employees being valued at work. Specifically, employees felt valued at work under transformational leadership when their chronic promotion focus was high; and under transactional leadership when their chronic prevention focus was high. This perception of being valued is consistent with the feeling of "rightness" that is likely to emerge when people experience regulatory fit (Higgins, 2005; Johnson, Lin, Kark, Van Dijk, King, & Esformes, 2017). In an attempt to learn whether the feeling of "rightness", arising as a result of regulatory fit, is important also for employee creativity, we examined the interaction between leadership and regulatory focus in both studies 1 and 2. We found no such effect in either of our studies. In a model in which both prevention and promotion regulatory focus were entered as moderators of the leadership–creativity relationship, we found no significant interaction. It seems that when it comes to creativity, it is not the fit between leadership and chronic regulatory focus but rather that transformational leadership is necessary irrespectively of chronic regulatory focus because it shapes the situational regulatory focus of the followers and accordingly, their tendency to think and act creatively.

Limitations and Future Research Directions

This study has several strong points. We implemented two different types of research designs and methodologies: an experimental study and a field study. This is in line with several other studies in the leadership field (e.g. Giessner, van Knippenberg, & Sleebos, 2009; Kark et al., 2015; Long, Bendersky, & Morrill, 2011; Norman, Avolio, & Luthans, 2010). This approach allowed for the strengths of one research design to compensate for the weaknesses of the other (Dipboye, 1990). First, Study 1 applied an experimental laboratory design that allowed for a highly controlled context with the ability to demonstrate causal relationships. This type of setting yields results with high internal validity but with comparably low ecological validity (van Dick & Schuh, 2010). However, the second study was conducted in a natural organisational work setting, with "high ecological validity". A potential weakness of Study 1 was that the scenario may have had limited connection to the participants' experiences in actual leadership situations. Study 2, though, was undertaken in a real leader-follower context, in which the leader and followers had worked together for at least 6 months. Second, the exclusive reliance on a student sample in Study 1 was balanced by Study 2 using employees from the workforce context. The fact that, while using varied methods and participant samples, we were able to replicate most of our findings, further gives support to our theoretical model and its validity.

Notwithstanding these strengths, there are some limitations to our research. First, the experimental study results were susceptible to same-source bias as well as a self-perception of one's extent of creativity. However, we were able to lessen this impact by collecting data from both employees and managers in the field study. Thus, employee creativity was assessed by the relevant managers. Furthermore, in the field study, our analysis of leadership style at the group level further mitigated the partial problem of same-source data collection of the independent variable (i.e. leadership style) and the mediators (i.e. employees' SRF) to some extent because this reduces the common variance between these variables (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

Second, creativity plays a more prominent role in some organisations and professions compared to others. Our field study was conducted in service organisations, in which creativity is not a major concern. The organisational culture of these organisations may have affected our results relating to creativity outcomes by limiting the ability to enhance it by transformational leadership. While many creativity studies examine R&D teams and other teams in IT companies, there is a growing amount of research examining creativity in other types of organisations such as manufacturing or service organisations. Unlike R&D employees, manufacturing or service employees are usually not recruited based on their creative skills, and most of their work follows routine procedures that do not involve creative thinking. Yet they too may face problems which need creative solutions.

There are different examples of studies conducted on service workers, among them Unsworth, Wall, and Carter's (2005) field study of health-service employees, in which they found that the creativity requirement fully mediated the effects of leadership and role requirements on creativity, and partially mediated the effects of empowerment and time demands on creativity. Similarly, George and Zhou (2007) examined moods and creativity in a field study of employees in an oil-field services company. As George (2007) states in her *Academy of Management Annals* article on creativity, all organisations on the one hand,

> require predictability, control, and reliable performance and are dependent on collective learning whereby solutions able performance and are dependent on collective learning whereby solutions to problems become embedded in organizational routines (or the wheel is not reinvented repeatedly in slightly different forms). On the other hand, organizations face dynamically changing environments, the nature of problems and opportunities change, and creative responses are required. (p. 467)

Thus, while our study falls within this more recent trend of examining creativity in non-creative contexts, future research should attempt to replicate our findings in professions in which creativity is a more central component, as well as in organisational cultures that place a high value on creativity and improvisation, such as advertising and design firms or hi-tech startups.

Third, in the current study, the outcome examined was creativity. SRF has been found to relate to various outcomes, such as safety behaviour, attention to detail, and accuracy. Our study indicates that transactional leadership and prevention foci are not beneficial for encouraging creativity. However, they may be of importance for other types of organisational outcomes and should be addressed in future studies. Furthermore, a recent meta-analysis demonstrated that the stage in time in which the creative process takes place is an important moderator for ways in which leadership styles interact with creativity (Rosing, Frese, & Bausch, 2011). They showed that transformational leadership was more significant and contributed to effectiveness at the initial stages of the creative process, whereas transactional leadership was more significant and effective in later stages of idea implementation. These findings were supported by other studies (e.g. Axtell, Holman, Unsworth, Wall, Waterson, & Harrington, 2000; Kanter, 1988; Mainemelis et al., 2015; Mumford, Connelly, & Gaddis, 2003). Future studies should further investigate how transactional and monitoring leadership styles can foster creativity at distinct stages of the creative process as well as the role prevention focus has at these stages.

Fourth, in our study we used the Lockwood's regulatory focus scale to measure self-regulatory foci. This measurement has been criticised by Summerville and Roese (2008), who argued that the scales of promotion and prevention are

correlated with positive and negative affects respectively. Though we agree with this criticism, the advantages of Lockwood's scale outweigh its disadvantages. First, this is the most prevalent scale that is used to measure regulatory focus (about 40% of the regulatory-focus studies; Gorman et al., 2012), and it predicts the theory-driven hypotheses very well. Second, it is very easy to understand and follow its items, and therefore, it is fit for field studies which involve workers rather than students. Third, it reflects a present focus on ideals and aspirations versus oughts and duties and therefore it fits well to the theory of regulatory focus. Last, recent work demonstrates that Lockwood's scale shows a similar pattern of results to a newly developed measure, which was built according to the components of Higgins's theory (Itzkin et al., 2016).

Finally, potential confounds may have affected the results of the two studies. For example, trust in the leader or affinity and liking of the leader might have affected the perception of the leader; also, in the field study, as in many investigations in the "real" world, contextual and cultural aspects might have affected the level of creativity. Future studies should examine these possible confounds.

Implications for Practice

Leadership has been found to be critical and influential in advancing creative and innovative efforts in organisations (Amabile & Khaire, 2008; Mumford et al., 2012). In general, our findings show that leaders are likely to hinder creativity in the workplace by using transactional leadership and focusing employees on the "ought self". This suggests that organisations that value creativity should attempt to limit these monitoring behaviours, because the urge to be creative may be easily stifled and "killed" (Amabiles, 1998). Therefore, organisations should encourage managers to be sensitive to transactional actions that may hinder creativity.

Although managers' efforts to monitor employee errors and to reduce losses do have some important benefits, organisations should be wary of such behaviours since they may cause a decline in creativity. If managers behave in a controlling and rewarding manner, it may restrain an employee's intrinsic motivation to behave creatively. As previously noted, individuals will be at their best in terms of creativity, when they feel motivated by the interest, curiosity, and the challenge of the work itself, and not by external forces (Amabile, 1998; Deci, Ryan, & Koestner, 1999). Thus, managers should be trained to limit their transactional–monitoring behaviours in contexts where creativity is necessary, or to at least maintain a balance between monitoring and empowering their employees.

Conclusion

Our study breaks new ground in the creativity literature by highlighting the role SRF plays in the ability of leaders to restrict actions that hinder

creativity. We found that leadership style can help channel employees into different modes and frames of self-regulation motivations, and this in turn can relate to creativity, mostly by curtailing it. Our findings suggest that some leaders' behaviours can backfire, limiting employees' ability to behave creatively.

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APPENDIX

Scenarios

Transformational Leadership: Imagine you have been working for three years in a call centre at a cell phone company "The Red Phone". You meet a new worker, David, who has just joined your work team. Since you are a veteran

employee, you are asked to give him professional guidance and help him get started. David asks you to tell him about your boss and this is what you tell him: "His name is John and he has been the team leader for three years. He has a strong presence, an engaging outward manner, and shows confidence and charisma. In the team meetings his tone of voice is always enthusiastic and not dull. He presents an optimistic vision and says that he believes that we can achieve this vision and even beyond. John emphasises the importance of our team work and our ability to contribute to the company as a whole. Before he makes a decision, he considers its ethical and moral implications. Recently, we had a problem of customers complaining about the long waiting time before we could answer. John called the team in for a meeting and encouraged the team members to think about solutions innovatively and creatively. He wanted them to think out of the box and not follow a certain solution only because this was what they had done so far even if this meant changing rules and procedures."

Transactional Leadership: Imagine you have been working for three years in a call centre at a cell phone company "The Red Phone". You meet a new worker, David, who has just joined your work team. Since you are a veteran employee, you are asked to give him professional guidance and help him get started. David asks you to tell him about your boss and this is what you tell him: "His name is John and he has been the team leader for three years. During team meetings he talks to us about our goals and tasks, defines who is responsible for achieving these goals and clarifies his expectations from us. John tries to get involved at work only when he sees a problem that repeats itself systematically and requires his attention. So if he turns to you while you are working, you probably have made mistakes. In this case, John enforces sanctions against those who do not meet the standards. John keeps reports and records of employees, and thus can identify anomalies. Recently, we had a problem of customers complaining about the long waiting time before we could answer. To deal with the problem, John called an emergency staff meeting, emphasised what standard was required, gave tips and tools to improve operations, and stated that he would continue to track and monitor this issue in the future."

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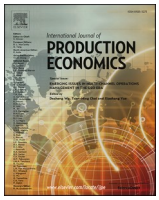

Supply chain leadership and firm performance: A meta-analysis☆

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ABSTRACT

The effect of transformational vis-à-vis transactional supply chain leadership on firm performance has been studied in the existing literature, but results remain mixed. Therefore, it is important to provide a meta-analysis literature review to investigate this relationship. In this study, 32 empirical journal articles published over the past 10 years have been reviewed and evaluated through a meta-analysis. The results reveal that supply chain leadership is positively related to firm performance; specifically, transformational supply chain leadership has a more significant influence than transactional supply chain leadership on firm performance. Further, the effect of leadership varies according to region, industry and performance type. This study provides the first meta-analysis on this relationship.

1. Introduction

As globalisation has rendered supply chain networks more sophisticated (Mokhtar et al., 2019b), a growing number of studies have expanded the scope of leadership research from the individual level to the organisation or supply chain level (Masa'deh et al., 2016; Gosling et al., 2016; Akhtar et al., 2017; Ojha et al., 2018; Wong, 2001). After Defee et al. (2009) first proposed the idea of extending individual leadership to a supply chain level, a growing number of studies tend to focus on the supply chain leadership (SCL). For example, Sharif and Irani (2012) investigated leadership in the context of the supply chain and linked this with improvement in supply chain performance. Birasnav et al. (2015) further extended this viewpoint and illustrated the relationship between leadership behaviour and supply chain performance; they stressed that both transactional and transformational leadership can facilitate information exchange throughout the supply chain and consequently lead to better performance.

Gosling et al. (2016) explored the role of SCL in learning regarding sustainable practices, considering SCL an important factor in developing the sustainable performance of a supply chain. Through the comprehensive case studies of three international companies (Tetra Pak, Nestlé and IKEA), Jia et al. (2018) proposed that companies apply different leadership styles towards suppliers in different tiers of the supply chain for the purpose of implementing or increasing sustainable initiatives in their supply chain, thus promoting the sustainable performance of the supply chain. Birasnav and Bienstock (2019) investigated leadership styles in the supply chain, and found that transactional leadership is related to external integration and transformational leadership is related to internal integration. Akhtar et al. (2017) explored leadership styles in the agri-food supply chain in New Zealand and discovered a correlation between the leadership style of the chain coordinators and the operational and social performance of the supply chain; they further found that by improving operational and social performance, financial performance is also improved.

Although there are dozens of research papers focusing on elaborating the SCL–performance relationship, the measurements of corporate performance are various; thus it remains unclear which leadership style can exert the greatest benefits to certain performance improvement. Therefore, it is necessary to gain a deeper understanding of the correlation between adopted forms of SCL and multiple firm performances (Mokhtar et al., 2019a).

As samples are heterogeneous in existing empirical studies, individual empirical studies lack universality. Meta-analysis can be used to summarize the empirical results of previous studies. The generalized results of meta-analysis are more meaningful than individual empirical studies, because it integrates different samples into a single analysis, which tests different variations of the effect between different sampling groups. The meta-analysis is a statistically reliable method and is less

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subjective (Egger et al., 1997).

We employ meta-analysis (Hunter and Schmidt, 2004) to investigate the relationship between SCL and various firm performance. The benefits of adopting meta-analysis is to deal with the difficulties to achieve effective synthesis in dealing with a large number of research results, as the core idea of meta-analysis is to investigate the effect size of each individual sample to reveal the features of the total population, therefore, solving the problem of studies with large sample sizes having.

Following the introduction, this paper provides a literature review and a research framework, which introduces the meta-analysis method. The findings of the literature review are summarised, and the coding process and results are explained. Then, Sections 3 and 4 respectively present the process for and results of the meta-analysis. Based on the results of the meta-analysis, in the implementation section, theoretical and managerial contributions are proposed. Finally, the conclusion summarises the major results and limitations of this research.

2. Literature review and research framework

2.1. Sampling and literature review

To conduct a review using meta-analysis of the relationship between SCL and firm performance, we searched empirical studies in the English language literature from two databases: Web of Science and Scopus. Web of Science is one of the most authoritative and important databases for obtaining scientific and technological academic information in the world. It contains the most influential core academic journals in various research fields. Scopus is the largest database of peer-reviewed literature in the world, covering more than thirty thousand journals in top-level subject fields.

As over 90% of papers were published in the period 2010–2019, this timespan was chosen as the period for this study. To ensure that our data for the meta-analysis were comprehensive without sacrificing precision, external experts were invited to provide advice to the selected keywords and the inclusion and exclusion criteria to ensure comprehensiveness. Additionally, three categories of search terms were applied to limit the range of articles. The keywords in the first two categories, related to SC or SCL, were based on Mokhtar et al. (2019b). The first category of search terms aimed to identify articles in the supply chain domain. The terms included 'supply chain', 'supply chain management' and 'supplying'. The second category, designed to limit the search to influencers in SCL were based on Gosling et al. (2016) and Defee et al. (2010). These terms included 'leadership', 'transformational leadership', 'transactional leadership', 'inspirational', 'intellectual stimulation', 'individualised consideration', 'idealized influence', 'individualised consideration', 'contingent reward', 'management-by-exception active', 'transformation leadership', 'transaction leadership', 'transformational leadership', 'transactional leadership', 'group leadership', 'focal firm leadership', 'supply chain followership', 'transformational followership', 'transactional followership', 'entrepreneur leadership' and 'collaborative leadership'. The final category was applied to limit the search to articles that analysed impacts on firm performance. Keywords of firm performances were determined according to Geng et al. (2017) and Wang et al. (2018) including 'firm performance,' 'consequence effect', 'performance', 'quality', 'benefit', 'outcome', 'return', 'firm value', 'competitive advantage', 'profit', 'profitability', 'turnover', 'sales growth', 'revenue', 'market share', 'relationship', 'customer satisfaction' and 'customer loyalty' (Wang et al., 2018). The categories of keywords for sampling are presented in Table 1.

Our initial search identified 182 journal papers: 51 articles from Web of Science and 141 articles from Scopus. To ensure the rigidity and the data quality of this research, all of selected articles are peer-review articles and conference papers and working papers are not considered. A further assessment was then applied to manually identify articles reporting a relationship between SCL and firm performance. Next, we set the criteria following the existing meta-analysis literatures (Abreu-Ledon et al., 2018; Yu et al., 2015; Grosse et al., 2015). They include: (1) the paper must comprise an empirical study; (2) the sample size must be reported; (3) a correlation or other reliable statistics must be reported; (4) the approach to collecting data must be reported and (5) no sample data from a different study could be used. Based on these criteria, 32 papers were finally identified for review, including 15 published articles from Web of Science and 17 from Scopus, and the number of reviewed paper satisfies the minimum number requirement for meta-analysis suggested by Hedges and Olkin (2014). The process of the literature review is showcased in Fig. 1.

Table 1
Categories of keywords for sampling.

Category of keywords	Detailed categorization	Keywords
Supply chain		'supply chain', 'supply chain management' and 'supplying'
Leadership related	Transactional leadership and transformational leadership	'leadership', 'transformational leadership', 'transactional leadership', 'inspirational', 'intellectual stimulation', 'individualised consideration', 'idealized influence', 'individualised consideration', 'contingent reward', 'management-by-exception active', 'transformation leadership', 'transaction leadership', 'transformational leadership', 'transactional leadership', 'group leadership', 'focal firm leadership', 'supply chain followership', 'transformational followership', 'transactional followership', 'entrepreneur leadership' and 'collaborative leadership'
Performance related	General performance	'firm performance,' 'consequence effect' and 'performance'
	Financial and operational ability	'quality', 'benefit', 'outcome', 'return', 'firm value', 'competitive advantage', 'profit', 'profitability', 'turnover', 'sales growth', 'revenue' and 'market share'
	Social performance	'relationship', 'customer satisfaction' and 'customer loyalty'

Fig. 2 presents the number of papers relating to empirical research on SCL and firm performance published during the period 2010–2019. The number of articles published each year on the topic was limited to one until 2014, when the number of papers increased to four. Following a drastic decline in 2015 there was significant growth in 2016, in which six papers were published, with the peak number of seven reached in 2019. The growth since 2015 shows that the SCL–performance relationship has increasingly attracted scholars' attention, and it is expected that there will be further empirical research on SCL–performance in the future.

Some studies focused on specific countries or regions. For developing countries, the most commonly studied countries were India (five), followed by Malaysia (two). For developed countries, the US (five) and the UK (two) were the most frequently examined. Five studies collected data from more than one country or region. Fig. 3 displays the distribution across different industries. Among those exploring the SCL–performance relationship within a specific industry, the manufacturing industry was the most common (10), followed by transportation (five) and agriculture (five). The construction, healthcare and service industries were each the subject of one study.

Table 2 summarises the theoretical perspectives and analysis methods of the sample papers. In terms of theoretical perspectives, although nearly one-third of papers did not explicate the adopted theory in their research, we found that leadership theory (22%), institutional

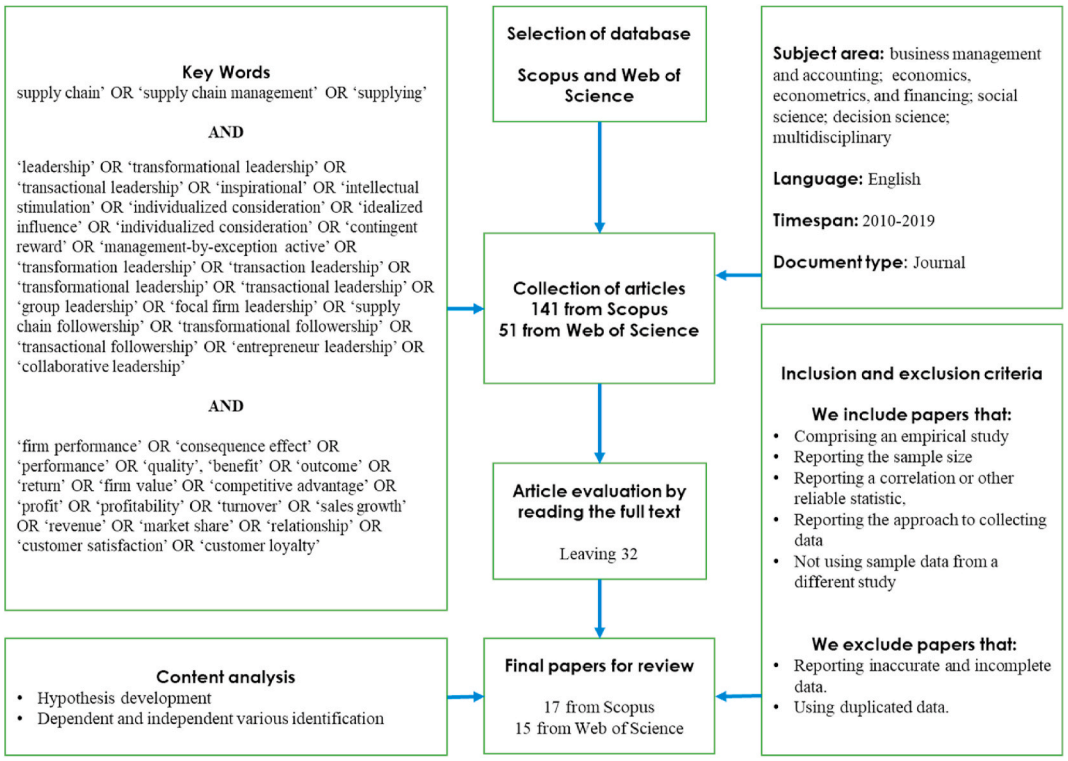

Fig. 1. Search process.

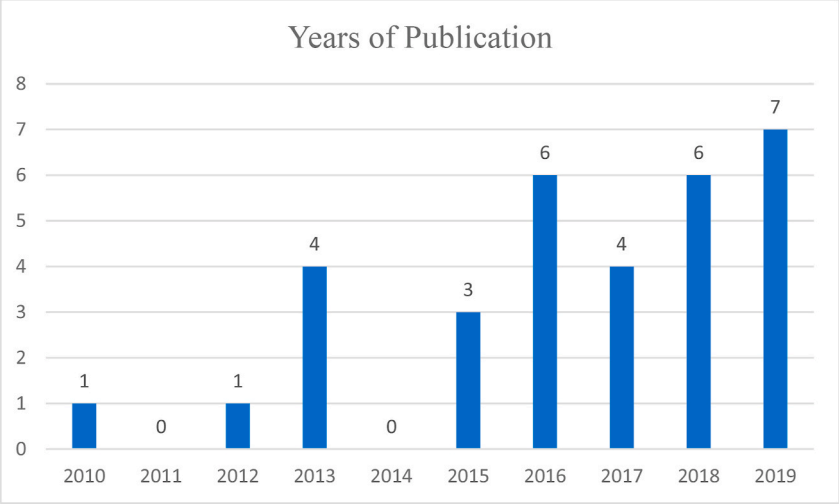

Fig. 2. Number of articles published in each year of publication.

theory (13%) and dynamic capabilities theory (13%) were the most common theories. Structural equation modeling (SEM) was the most common method to evaluate data in this sample (65.6%). Two papers combined SEM with other quantitative methods such as artificial neural networks (ANNs) and interaction effects.

Additionally, based on the literature review, the definition of supply chain leadership is concluded. Defee et al. (2009) has unprecedentedly argued the feasibility of applying individual leadership to supply chain organizations, which show how the supply chain leader organizations interact with other supply chain member organisation. Further, Defee et al. (2010) developed from the concepts of Defee et al. (2009), and proposed the formal definition of SCL.

According to Defee et al. (2010), SCL integrates the classical leadership theory and supply chain management (SCM). It refers to the ability of a firm to influence the actions, behaviour and performance of other organizations in the supply chain. Supply chain leaders usually possess disproportionate power and ability to dominate other supply chain organizations. That is, the exercise of power or lack of power of the supply chain leaders can influence the commitment of the other members on the supply chain. For example, as stated by Hall (2000), the power of channel leaders can influence supplier's sustainable performance. The leader in a supply chain is the party that recognises the necessity for change and creates a vision of a better future for the supply chain (Defee et al., 2010). Nestle is prominent example of supply chain leaders. Nestle realised the importance of sustainable supply chain management and thus make use of their dominant power in the supply chain to ensure suppliers' engagement in the sustainable supply chain initiatives (Jia et al., 2019). For example, Nestle has set up strict dairy

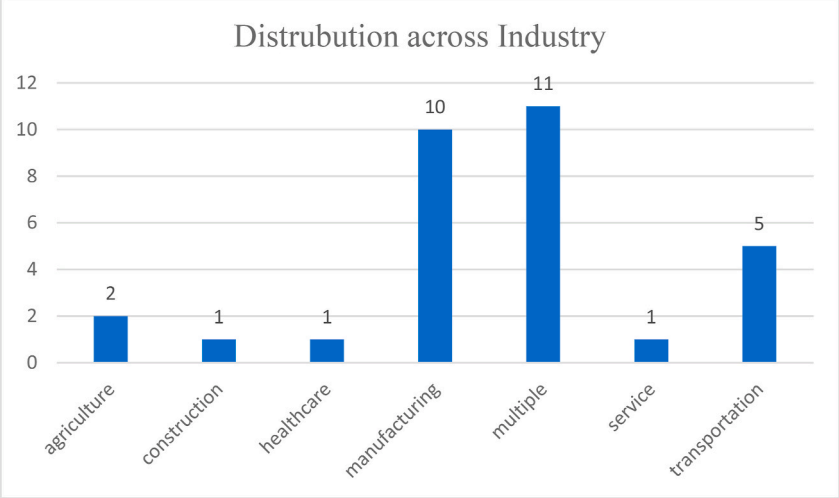

Fig. 3. Number of articles in different industry.

Table 2
Theoretical perspectives and analysis methods in sampled articles.

Theoretical approaches	Number	Percentage (%)	Analysis method	Number	Percentage (%)
dynamic capabilities theory	4	13%	SEM	21	65.6%
goal congruence theory	1	3%	SEM-ANN	1	3%
individual leadership theory	1	3%	PLS-SEM	1	3%
institutional theory	4	13%	factor analysis	1	3%
leadership theory	7	22%	SEM, interaction effects	1	3%
Organisational theory	2	6%	Spearman's correlation analysis	1	3%
Resource-based view	1	3%	polynomial regression	1	3%
Stakeholder theory	1	3%	cross-tabulation	1	3%
Supply chain integration theory	1	3%	two-factor ANOVA	1	3%
Not specified	10	31%	Multiple Regression Analysis	1	3%
			hierarchical regression analysis	1	3%
			covariance-based structural equation modeling	1	3%
SEM	Structural equation modeling				
PLS-SEM	Partial least squares-structural equation modeling				
SEM-ANN	Structural equation modeling-artificial neural network				
ANOVA	Analysis of variance				

purchasing requirements and differentiated purchasing price to encourage suppliers to act sustainably (Jia et al., 2019).

2.2. Coding

We followed Lipsey and Wilson's (2001) method to process the coding. First, to obtain an effective coding result, all authors agreed on the concepts and definitions of each category of SCL, the type of firm performance and the type of each moderator. Specifically, we coded each independent variable in SCL based on the description of leaders' traits, qualities, personalities and behaviours (Mokhtar et al., 2019a). The specified forms of SCL were categorised into transactional leadership and transformational leadership. This is in line with the categorization of SCL in Defee et al. (2010), in which the authors defined the concept of SCL by applying leadership theory developed from the individual level within the organisation to the supply chain level. The authors identified transformational and transactional leadership as two major SCL forms; most forms of SCL in the samples could be mapped onto these two leadership forms.

For example, where there was a value exchange between leaders and employees that led them to contribute to one goal, we coded this as transactional leadership (Kuhnert and Lewis, 1987) (k = 3). Where a leader used their personality to set forth a vision of a mutual goal to employees, inspiring them to serve the greater good, we coded this as transformational leadership (Bass et al., 2003) (k = 17). Where a study did not specify leadership type, gave a blurred description of leadership or showed comprehensive leadership (such as integrative leadership or general leadership) (Zhang et al., 20 18; Mokhtar et al., 2019b), we coded it in the 'others' category (k = 12).

Having agreed on definitions and concepts, two authors worked independently as coders, applying a comprehensive assessment of types of SCL, firm performance type, region and industry to each paper. The two sets of coding results were checked for consistency, and any inconsistent results were reassessed by all the authors. In this study, correlations were chosen to capture effect sizes. For articles that reported t-values, z-values, f-values and beta-coefficients, we used the transfer equations from Wang et al. (2018).

The effect sizes from each paper were unified to correlation if the study did not report the correlation (Wang et al., 2018). Table 3 presents the coding results.

2.2.1. Independent variables

The independent variable of this meta-analysis was SCL. Based on the literature review, there were two types of research focusing on the relationship between SCL and firm performance. Some papers explored SCL and firm performance but did not specify leadership behaviour in their research (Raut et al., 2019; Jermsittiparsert and Srihirun, 2019). Others investigated how a specific leadership behaviour affected firm performance. The most frequently mentioned SCL management behaviours in the literature were transactional leadership and transformational leadership.

For example, Birasnav and Bienstock (2019) stated that

Table 3
Coding results of samples studies.

	Study	Year	Region	Industry	Leadership category	Performance category	Sample size	Effect size
1	Ahmed et al.(1)	2018	developing region	manufacturing	others	environmental	174	0.43
2	Akhtar et al.(2)	2017	global	agriculture	transformational leadership	operational	225	0.49
3	Akhtar & Khan	2015	global	agriculture	transformational leadership	operational	112	0.64
4	Akhtar et al.	2016	global	multiple	transformational leadership	environmental	220	0.62
5	Bag	2018	developing region	manufacturing	transformational leadership	operational	75	0.22
6	Birasnav & Bienstock	2019	developing region	manufacturing	transformational leadership	operational	107	0.75
7	Defee	2010	developed region	multiple	transformational leadership	financial	249	0.36
8	Dubey et al.	2015	developing region	manufacturing	others	operational	358	0.98
9	Goffnett & Goswami	2016	developed region	multiple	transformational leadership	innovative	184	0.76
10	Harun et al.	2019	developing region	transportation	transformational leadership	operational	215	0.17
11	Izquierdo et al.	2015	developed region	multiple	transformational leadership	innovative	149	0.22
12	Jermsittiparsert & Srihirun	2019	global	manufacturing	others	operational	339	0.16
13	Khan et al.	2019	developing region	multiple	transformational leadership	social	248	0.21
14	Kharub & Sharma	2016	developing region	multiple	others	operational	215	0.82
15	Loke et al.	2012	developing region	manufacturing	others	innovative	202	0.9
16	Luu	2017	developing region	manufacturing	others	innovative	844	0.65
17	Mokhtar et al.	2019a	developing region	manufacturing	transactional leadership	operational	190	0.32
18	Noruzy et al.	2013	developing region	manufacturing	transformational leadership	innovative	280	0.56
19	Ojha et al.	2018	developed region	multiple	transformational leadership	innovative	128	0.83
20	Overstreet et al.	2013	developed region	transportation	transformational leadership	innovative	158	0.62
21	Prasad et al.	2018	developing region	manufacturing	others	financial	145	0.37
22	Raut et al.	2019	developing region	manufacturing	others	innovative	316	0.13
23	Reyes et al.	2016	global	transportation	others	innovative	175	0.24
24	Roman	2017	developed region	multiple	transformational leadership	operational	206	0.46
25	Saini et al.	2017	developed region	construction	transformational leadership	operational	56	0.5
26	Sinha et al.	2016	developing region	transportation	others	operational	120	0.6
27	Teoman & Ulengin	2018	developing region	multiple	transformational leadership	operational	158	0.88
28	Ul-Hameed et al.	2019	developed region	transportation	transactional leadership	operational	150	0.18
29	Yoon et al.	2016	developed region	healthcare	transformational leadership	operational	272	0.58
30	Youn et aul	2013	developed region	multiple	others	operational	142	0.56
31	Zhang et al.	2018	developing region	multiple	others	operational	236	0.47
32	yee et al.	2013	developed region	service	transactional leadership	social	1840	0.66

transformational leadership exhibited in top-level management is positively related to external supply chain integration and supply chain performance. This argument was supported by Harun et al. (2019), who found that transformational leadership in the supply chain can influence SCM and improve supply chain operational accuracy. Ul-Hameed et al. (2019) found a relationship between transactional leadership and supply chain performance in the manufacturing industry in the UK.

The concept of transactional and transformational leadership theory is derived from the full-range leadership theory, which postulated five transformational and three transactional factors (Verlage et al., 2012). The transformational factors include inspirational motivation, idealized influence (attributed), idealized influence (behaviour), intellectual stimulation, and individualised consideration, while the transactional factors are contingent reward, active management-by-exception, management-by-exception passive (Verlage et al., 2012). Based on the factors provided by the full-range leadership theory, the transactional and transformational leadership styles in the supply chain management are more clearly identified.

Transactional leadership is a leadership style in which leaders reward or punish their subordinates based on their performance (Mokhtar et al., 2019b; Yee et al., 2013). It emphasises the contractual exchange between leaders and subordinates (Ul-Hameedet al., 2019). Transactional leaders offer extrinsic rewards, such as financial rewards or promotion, in exchange for subordinates' work efforts (Birasnav and Bienstock, 2019; Mokhtar et al., 2019b).

In contrast, transformational leadership is a leadership style in which leaders stimulate their subordinates to think innovatively, challenging old methods and proposing new solutions (Goffnett and Goswami, 2016). Transformational leadership is therefore often related to creativity and innovation (Goffnett and Goswami, 2016), and, by increasing an organisation's ability to adapt, can help the organisation reach an advanced level of management and operation (Ul-Hameedet al., 2019). It emphasises leading by example, and, because of their personality and character, transformational leaders are role models that are admired, respected and trusted by their subordinates (Defee et al., 2010).

In our sample, 20 out of 32 papers specified SCL type and examined its relationship with firm performance. All 20 papers that specified SCL type discussed the relationship between transformational leadership and firm performance. Three papers simultaneously analysed the effects of transformational leadership and transactional leadership on performance. No paper individually discussed the effects of transactional leadership on firm performance. The remainder did not elaborate type of leadership, simply offering a general discussion on leadership and performance.

2.2.2. *Dependent variables*

The dependent variables of this meta-analysis are factors pertaining to firm performance. From the literature review, it was noted that firm performance contains multiple dimensions. To compare the specific impacts of different SCLs on firm performance, five detailed categories of firm performance were devised. After reviewing the sample papers, we first identified two major dimensions of firm performance: financial and non-financial performance. We found that 30 out of 32 papers investigated how SCL affects non-financial performance, and the remaining two focused on financial performance. After scrutinising non-financial performance, we coded this into four categories: operational, environmental, social and innovative performance. Firm performance in this meta-analysis is defined as the integration of operational performance, environmental performance, social performance, innovative performance and financial performance, as defined below.

Operational performance is measured in terms of the efficiency and accuracy of a firm's operation, quality of product, process transparency, speed and punctuality of delivery, resource utilisation efficiency and customer satisfaction (Harun et al., 2019; Teoman and Ulengin, 2018; Ul-Hameed et al., 2019). Environmental performance is related to green initiatives, including green purchasing and designing, product recycling and reverse logistics (Akhtar et al., 2016; Ahmed et al., 2018; Mokhtar et al., 2019a). It is also concerned with saving energy and reducing

waste and usage of harmful materials (Akhtar et al., 2016). Social performance is characterised by providing a green and safe product to customers (Khan and Wisner, 2019), ensuring the health, safety and satisfaction of employees and customers (Yee et al., 2013; Bag, 2018) and other socially responsible behaviours, such as building schools and hospitals (Khan and Wisner, 2019). Innovative performance mainly refers to the frequency of launching new products or services (Goffnett and Goswami, 2016; Reyes et al., 2016). One indicator of innovative performance is investment in, or adoption of, emerging technologies (Raut et al., 2019). It is also measured by the extent to which the corporation proactively innovates and experiments with new products, services or solutions to deal with market change (Luu, 2017; Ojha et al., 2018). Financial performance is often measured by profit, market share, sales volume (Akhtar et al., 2016) and organisational health (Prasad et al., 2018). There are limited discussions related to the direct relationship between SCL and firm performance. Often, in the sample papers, financial performance was considered a by-product of other performance improvements facilitated by SCL. For example, Ahmed et al. (2018) showed that SCL can have a significant impact on corporate environmental performance through implementing green SCM, which improves financial performance. Table 4 illustrated different types of firm performance and its corresponding measurements.

2.2.3. Moderators

Previous literature has noted that factors related to region or industry type are vital control variables that can moderate the relationship between SCL and firm performance (Camarero Izquierdo et al., 2015; Akhtar et al., 2017; Zhang et al., 2018). When industry changes, the SCL–performance relationship might change (Camarero Izquierdo et al., 2015; Ojha et al., 2018). Based on the sample articles, seven industry types were coded: manufacturing, agriculture, services, transportation, healthcare, construction and miscellaneous industries.

In addition, we coded three economic regions: developing, developed and global. Nine different countries or regions were mentioned in the sample papers. There was only one developing region (South Africa) located outside Asia, with the remaining developing regions (India, Pakistan, Malaysia, Turkey, Vietnam, China, Iran and Bahrain) in Asia. The developed regions included two countries from Europe and North America and two Asian regions (South Korea and Hong Kong). The global region in our sample referred to studies with a wide range of regions from which corporate information was collected. For example, Akhtar et al. (2016), who showed how adaptive leadership influences corporate environmental performance in emerging markets, examined over 10 regions in their research.

Table 4
Firm performance and measurements.

Types of performance	Measurement
Financial performance	It is measured by profit, market share, sales volume and organisational health (Akhtar et al., 2016; Prasad et al., 2018).
Operational performance	It is measured by the efficiency and accuracy of a firm's operation, quality of product, process transparency, speed and punctuality of delivery, resource utilisation efficiency and customer satisfaction (Harun et al., 2019).
Environmental performance	It is measured by green initiatives including green purchasing and designing, product recycling and reverse logistics, saving energy and reducing waste and usage of harmful materials (Akhtar et al., 2016).
Social performance	It is measured by corporate socially responsible behaviours such as providing a green and safe product to customers; ensuring the health, safety and satisfaction of employees and customers; and other socially responsible behaviours, such as building schools and hospitals (Yee et al., 2013; Khan and Wisner, 2019).
Innovative performance	It is measured by the amount of investment in, or adoption of, emerging technologies. It is also measured by the extent to which the corporation proactively innovates and experiments with new products, services or solutions to deal with market change (Reyes et al., 2016; Raut et al., 2019).

2.3. Research framework and hypotheses development

In this section, we propose our hypotheses on the relationship between SCL and firm performance and the differential effects of different forms of leadership. Following a discussion of the meta-analysis approach, we propose hypotheses on the moderating effects of different regions and industries. The research framework is depicted in Fig. 4.

The results of the literature review reveal that there is a correlation between SCL and firm performance (Yee et al., 2013). Gosling et al. (2016) concluded that the role of leadership in the supply chain is important, and stated that if one organisation takes a leadership role, this can reduce risks and prevent chaos in the supply chain. In other words, appropriate SCL can facilitate superior SCM (Youn et al., 2012, which is critical to organisational performance improvement (Jermsittiparsert and Srihirun, 2019).

In addition, some argued that SCL can generate improvement in various firm performance measures (Saini et al., 2018). For example, in terms of operational performance, Harun et al. (2019) discovered that leadership ethics in the supply chain can facilitate the accuracy of operations within the supply chain and improve business performance. For social performance, Khan and Wisner (2019) found that transformational leadership is positively associated with an enterprise's participation in corporate social responsibility (CSR) activities, such as building schools and hospitals, which leads to higher social performance. Studies also elucidated how SCL can advance corporate environmental performance (Khan and Wisner, 2019; Ahmed et al., 2018). SCL is considered an essential motivator for green SCM initiatives (Dubey et al., 2015), encouraging the development of green policies and the implementation of green practices, such as green product design and environmental protection training within the supply chain (Ahmed et al., 2018). Firm innovation performance is also affected by SCL, as complex innovations usually rely on the leadership of management to achieve efficient allocation of resources (Jermsittiparsert and Srihirun, 2019). Goffnett and Goswami (2016) claimed that transformational leadership can inspire followers to be more creative and drive them to engage in innovation behaviours. Moreover, transformational leadership can positively influence knowledge management and organisational learning, and can further lead to better innovative performance (Noruzy et al., 2013).

Based on the above discussion, the first hypothesis is proposed:

H1. Supply chain leadership is positively related to firm performance.

In this study, leadership is categorised into two major forms: transactional leadership and transformational leadership. Transactional leadership is characterised by a contractual exchange between leaders and their subordinates (Camarero Izquierdo et al., 2015), and influences employees' commitment indirectly (Yee et al., 2013). Transformational leadership is characterised by ideological influence, inspirational motivation, intellectual stimulation and individualised consideration (Camarero Izquierdo et al., 2015), and influences employees' commitment directly (Yee et al., 2013). In the context of the supply chain, appropriate SCL can reinforce followers' commitment to firm goals (Defee et al., 2010). Although both forms of leadership can have a positive impact on followers' commitment, Yee et al. (2013) found that in the context of the high-contact service industry, transformational leadership has a greater impact on employee commitment than transactional leadership. Because higher employee commitment usually brings about better firm performance (Tolera, 2018), transformational leadership is more effective in improving firm performance than transactional leadership (García-Morales et al., 2008).

Further, compared with transactional leaders, transformational supply chain leaders are more able to stimulate innovation and

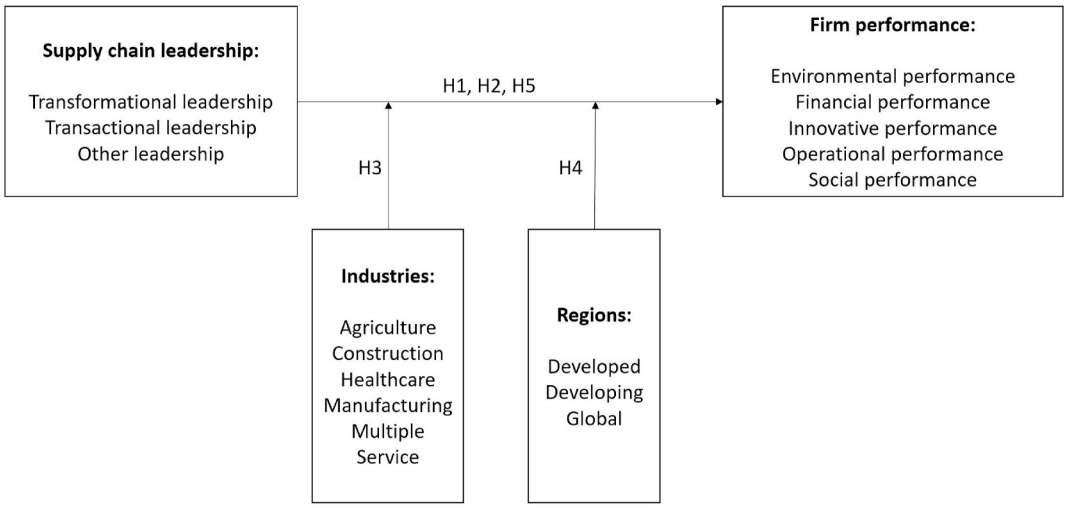

Fig. 4. Research framework.

knowledge management practices among their supply chain partners (Loke et al., 2012; Yoon et al., 2016). From the resource-based view, innovation and knowledge are valuable intangible resources that can contribute to sustaining competitive advantage, thereby enabling firms to obtain a better performance (García-Morales et al., 2008).

Based on the above discussion, the second hypothesis is proposed:

H2. The performance effect of transformational leadership is stronger than that of transactional leadership.

The existing empirical research regarding SCL involves multiple industries (Zhang et al., 2018). It is already known that owing to differences in industry characteristics, such as industrial structure and products, firms in different industries may have different levels of performance under the same leadership form (Camarero Izquierdo et al., 2015; Akhtar et al., 2017). For example, transformational leadership in a fast-moving industry such as electronics tends to generate better innovation performance because firms in such industries may prefer to focus on exploration activities, while in food retail and other more stable industries, transformational leadership can improve operational performance because firms in such industries emphasise exploitation activities (Ojha et al., 2018). Likewise, regional factors may alter the implementation of practices promoted by SCL, and therefore change the effect of SCL on firm performance (Raut et al., 2019). Raut et al. (2019) found that, in developing countries such as Malaysia and India, there are strict policies to enforce corporate sustainable behaviour, and therefore, the impact of transformational leadership on environmental and social performance there is strengthened by regional factors. (Saini et al., 2018) discovered that leadership is a factor in knowledge transfer and operational performance in the UK construction supply chain; however, in other regions, the role of leadership may not be as vital as it is in the UK.

Based on the above discussion, we propose the third and fourth hypotheses:

H3. The observed leadership's effect on firm performance varies by industry type.

H4. The observed leadership's effect on firm performance varies by region.

In this study, firm performance is categorised as financial performance and non-financial performance; non-financial performance is further subdivided into operational, environmental, social and innovative performance. Most studies examined how SCL can affect non-financial performance, and only two focused on the impact of SCL on financial performance (Defee et al., 2010; Prasad et al., 2018). Overall, SCL may facilitate each identified aspect of performance. However, Mokhtar et al. (2019b) argued that SCL is prominent in promoting the operational performance of the supply chain network, while enhanced operational performance may promote financial sustainability. This suggests that the impact of leadership on operational performance is greater than on financial performance.

Based on the above discussion, we propose the final hypothesis:

H5. The observed leadership's impact varies by performance measurement.

3. Research method

3.1. Data analysis

To determine the associations between SCL and firm performance, the first step was to unify effect sizes. Typically, two kinds of effect size are used in meta-analysis: r (Pearson correlation) and d (mean difference). In this study, we chose correlations to capture effect sizes. For articles that reported t-values, z-values, f-values and beta-coefficients, we used the transformation equations from Wang et al. (2018).

Before further analysis of our hypothesis, it is necessary to test the existence of publication bias on the effect size because it would reduce the reliability of the meta-analysis. Publication bias appears when published literature does not represent the whole population systematically (Rothstein et al., 2005). The reason for publication bias may arise is that the published literature usually confirms the research hypothesis; very few papers reject the research hypothesis. Researchers are also more likely to publish significant results (Rosenthal and DiMatteo, 2001). For our study, we used two methods, the funnel plot (Light and Pillemer, 1986) and the fail-safe N (Rothstein et al., 2005), to test for potential publication bias in the sample. Once the sampled data passed two tests, the meta-analysis can be proceeded.

Meta-analysis is used to combine quantitative data from related research to summarize the results for the whole population, from which it estimates the combined effect of the whole population by synthesising the weighted means of the effect size from each empirical study. There are two ways to estimate the model to process the meta-analysis: a fixed-effect model and a random-effect model.

The fixed-effect model operates under the assumption that there is an identical effect size from all sampled studies. Samples from different studies are seen as arising from a single population (Hunter and Schmidt, 2004). Under the fixed-effect assumption where the effect size is fixed and homogeneous, the weight attributed to each study is determined entirely by the information content of the sample set (Borenstein et al., 2010).

The random-effect model operates under the assumption that effect sizes vary among different studies. Populations of different studies are seen as arising from a superior population, and the effect size is not fixed but heterogeneous (Hedges, 1992). Under the random-effect assumption, the combined effect is assessed by the weighted means of effect sizes, and a study with a small sample size can still contribute to the combined effect.

The random-effect model was chosen for our study based on the characteristics of our samples, which cover diverse populations in different regions and different industries and exhibit different levels of performance.

3.2. Publication bias

Two methods were applied to test if publication bias appeared in our sample selection. First, we used CMA 2.0 software to draw a funnel plot (see Fig. 5). The plots do not take an inverted pyramid form, so publication bias may not appear in our study (Light and Pillemer, 1986).

Second, we ran the classic fail-safe N test on CMA 2.0 to test for publication bias. The fail-safe N is an estimation of the number of unpublished studies that would make the results insignificant. In this case, the estimated number of missing studies that would bring a p-value larger than $\alpha = 0.05$ was 7321 ($p = 0.000$). Based on the formula from Wang et al. (2018), the threshold for publication bias is 170, and thus, this test result implies no significant publication bias.

4. Results of the meta-analysis

4.1. The relationship between supply chain leadership and firm performance

Firstly, based on previous studies (Geng et al., 2017; Cohen, 2013; Triana et al., 2018), we defined the effect size as follows: the estimated effect size is weak if it is 0.10–0.30, medium if it is 0.30–0.50, and strong if it is over 0.50.

The meta-analytic estimations of the aggregated correlations for the supply chain leadership–firm performance relationship are presented in Table 5. The overall supply chain leadership–firm performance relationship is significantly strong, because the effect size is 0.578, with $p = 0.000$. The confidence interval (0.457, 0.677) does not contain 0, which implies moderators are not present (Hunter and Schmidt, 2004). Therefore, the overall effect of SCL on firm performance is confirmed (H1).

The effect for three subgroups of SCL were examined. The estimated effect size of transformational leadership was 0.563, with $p = 0.000$, while the estimated effect size of transactional leadership was 0.414, with $p = 0.039$. The confidence intervals were (0.444, 0.662) and (0.022, 0.686), neither of which contains 0. As the effect size of transformational leadership was strong and that of transactional leadership was medium, H2 is supported. We note that under the 'others' category, the effect was significantly strong ($r = 0.632$, $p = 0.000$).

Table 6 presents the results of the moderating effect size of industry. Of seven industry categories, three showed very strong effects: manufacturing ($r = 0.613$, $p = 0.001$), multiple ($r = 0.615$, $p = 0.000$) and services ($r = 0.660$, $p = 0.000$). Strong measurements were found in construction ($r = 0.500$, $p = 0.000$), agriculture ($r = 0.563$, $p = 0.000$) and healthcare ($r = 0.580$, $p = 0.000$). Transportation was the only measurement that was only medium in strength. As the effects varied between different industry types, H3 is supported.

Table 7 presents the effect size analysis results for the moderator of region. Samples were distinguished into developed, developing and global. It was found that the developing region showed a stronger impact ($r = 0.628$, $p = 0.000$) on the leadership–performance relationship than the developed region ($r = 0.552$, $p = 0.000$). For the global region, the impact on the leadership–performance relationship was medium ($r = 0.447$, $p = 0.000$). The findings support H4 that the impacts of SCL vary by region.

Table 8 shows three measurements that indicate a strong leadership–performance relationship: environmental ($r = 0.533$, $p = 0.000$), innovative ($r = 0.610$, $p = 0.000$) and operational ($r = 0.598$, $p = 0.000$). In addition, leadership has a significantly medium impact on financial performance ($r = 0.364$, $p = 0.000$). These four measurements are elements of 0.95 confidence intervals that do not contain 0, respectively. However, the social measurement was not significant (p-value 0.081). The 0.95 confidence interval (−0.062, 0.791), which contains 0, also implies that there might be a hidden moderator in this correlation. Overall, H5, that the impact of leadership varies by performance measurement, is supported by our findings.

5. Discussion

5.1. Theoretical implications

First, this research makes a contribution to the SCL literature. Among the extant studies, only two literature reviews were identified. Gosling et al. (2016) proposed a conceptual model to explain the role of SCL in

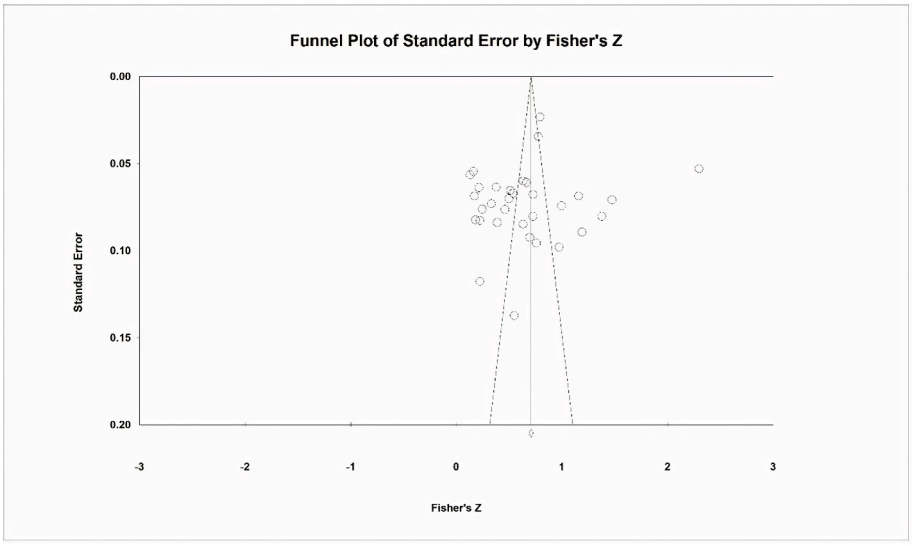

Fig. 5. Funnel Plot of the sample.

Table 5
The supply chain leadership-firm performance relationship.

	Sample Size	*Studies*	*Effect Size (r)*	0.95 CI		*z-value*	*p-value*	*Q-statistics*	I^2	*Standard error*
Total effect										
Leadership	8488	32	0.578	0.457	0.677	7.801	0.000	1755.423	98.234	0.471
Subgroup effect										
Transformational	3042	17	0.563	0.444	0.662	7.826	0.000	310.772	94.852	0.042
Transactional	2180	3	0.414	0.022	0.696	2.063	0.039	80.345	97.511	0.148
Others	3266	12	0.632	0.344	0.811	3.781	0.000	1312.357	99.162	0.230

Table 6
The supply chain leadership-firm performance relationship in various industries.

	Sample Size	*Studies*	*Effect Size (r)*	0.95 CI		*z-value*	*p-value*	*Q-statistics*	I^2	*Standard error*
agriculture	337	2	0.563	0.397	0.693	5.758	0.000	3.607	72.273	0.035
construction	56	1	0.500	0.273	0.674	3.999	0.000	0.000	0.000	0.000
healthcare	272	1	0.580	0.495	0.654	10.865	0.000	0.000	0.000	0.000
Manufacturing	3030	11	0.613	0.288	0.812	3.353	0.001	1282.485	99.220	0.264
multiple	2135	11	0.615	0.449	0.739	6.036	0.000	294.258	96.602	0.071
service	1840	1	0.660	0.633	0.685	33.980	0.000	0.000	0.000	0.000
Transportation	818	5	0.380	0.158	0.566	3.259	0.001	47.982	91.694	0.054

Table 7
The supply chain leadership-firm performance relationship in various regions.

	Sample Size	*Studies*	*Effect Size (r)*	0.95 CI		*z-value*	*p-value*	*Q-statistics*	I^2	*Standard error*
Developed	3534	11	0.552	0.433	0.653	7.691	0.000	170.388	94.131	0.043
Developing	3883	16	0.628	0.402	0.783	4.624	0.000	1413.522	98.939	0.175
Global	1071	5	0.447	0.233	0.620	3.860	0.000	63.265	93.677	0.057

Table 8
The impact of supply chain leadership on various performance.

	Sample Size	*Studies*	*Effect size (r)*	0.95 CI		*z-value*	*p-value*	*Q-statistics*	I^2	*Standard error*
environmental	394	2	0.533	0.323	0.693	4.488	0.000	6.722	85.123	0.050
Financial	394	2	0.364	0.274	0.447	7.507	0.000	0.012	0.000	0.008
innovative	2436	9	0.610	0.411	0.754	5.108	0.000	340.616	97.651	0.101
operational	3176	17	0.598	0.357	0.764	4.275	0.000	1281.407	98.751	0.170
Social	2088	2	0.467	−0.062	0.791	1.746	0.081	72.630	98.623	0.238

learning regarding sustainable practices; however, SCL was not the only focus. Mokhtar et al. (2019b) conducted a systematic literature review of SCL based on content analysis. Therefore, to the best of our knowledge, this paper is the first attempt to provide a meta-analysis in the context of SCL to integrate and analyse the empirical findings of the SCL–firm performance relationship. The results comprehensively conclude that there are benefits to firm performance from applying leadership in the supply chain.

Second, although our study found that both transactional leadership and transformational leadership have positive effects on overall firm performance, the results show that the impact of transformational leadership on firm performance is higher than that of transactional leadership, a conclusion which supports some of the existing research (e.g., Yee et al., 2013; Ul-Hameed et al., 2019). However, there is no study among the sample papers comparing the effect of transactional and transformational leadership on firm performance. Additionally, compared with transformational leadership, transactional leadership is less studied (Ul-Hameedet al., 2019). Therefore, it is possible that an insufficient sample could have interfered with the analysis. The lack of research regarding transactional leadership in the supply chain also reflects the popularity of supply chain transformational leadership. Some authors even ignored transactional leadership, recognising only transformational leadership as a contributor to performance improvement (Noruzy et al., 2013; Overstreet et al., 2013). However, according to classic leadership theory, transformational leadership and transactional leadership should be combined, as they are complementary for superior overall performance; it might be expected that the situation would be the same in the context of SCL (Mokhtar et al., 2019b). As argued by Birasnav and Bienstock (2019), these two leadership forms are not exclusive; transactional leadership is effective in promoting internal integration, while transformational leadership is related to external integration. This research expands current literatures by providing evidence that both leaderships have positive contributions on increasing the firm performance.

Third, our research shows that SCL is related to firm performance in various aspects. This study goes beyond previous literature reviews. Mokhtar et al. (2019b) identified in their literature review that SCL facilitates operational performance, sustainable performance and buyer–supplier relationships. However, in our research, the strong relationship between SCL and corporate innovative performance is further verified. Additionally, the results also show that the impacts of SCL on performance vary with changes in performance measurement. Environmental, operational and innovative performance showed the strongest relationships with SCL, followed by financial performance. The relationship between SCL and social performance was found to be insignificant. There are few studies on the correlation between SCL and environmental, social and financial performance, and therefore future research is required to clarify the relationship via more empirical

evidence.

Fourth, our review of the literature found that the examined performance was either related to the buying firm or the supply chain; few studies concentrated on how SCL can bring about performance improvement for supply chain partners (e.g. suppliers). For example, Mokhtar et al. (2019a) stated that both transactional and transformational SCL can affect suppliers' reverse supply chain performance; however, Bag (2018) found an insignificant correlation between SCL and supplier development and supplier relationship management, which are important supporting factors for supplier performance improvement (Modi and Mabert, 2007). Considering the mixed results regarding how SCL can influence supplier performance, more attention should be paid to justify the role of SCL in affecting supplier performance.

Fifth, via the moderator analysis, our research shows that the impact of SCL on performance is effective in all the categorised regions; however, the impact in developing countries is stronger than that in developed countries and the global region. The reason for this difference might derive from different policies and institutional systems (Raut et al., 2019), which may lead to distinct cultural, economic and operational environments, thus moderating the relationship between SCL and firm performance. This finding may also arise from the fact that firms in the developed region tend to have abundant human and financial resources and stable operational environments (Syed et al., 2012), which may lead to higher performance, yet weaker effects of SCL on firm performance. However, identifying the primary cause for the moderating effect requires further empirical research.

Industry types were categorised in our research and firm performance in each industry proved to be positively related to SCL. The effect of SCL on firm performance was shown to vary by industry type, with the effects in the manufacturing and service sectors stronger than those in other sectors. This finding can be explained by the fact that service and manufacturing industries are more dependent on continuous innovation to maintain competitive advantages, while SCL, especially transformational leadership, can enable innovation, rendering SCL more effective in affecting the performance of the firms in those two sectors (Cheng and Krumwiede, 2010; Kastalli and Van Looy, 2013). In terms of number of studies, only the manufacturing and transportation industries were represented by over five papers, while the other industries had less than or equal to two per industry. Therefore, the SCL–performance relationship in the other industries (i.e. services, healthcare, construction and agriculture industries) and the moderating effect of industry type should be further explored.

5.2. Managerial implementation

Apart from its theoretical contribution, this research also has practical implications for managers in multiple industries with supply chains, such as the manufacturing industry. This meta-analysis reveals significant empirical evidence that SCL can affect various aspects of firm performance, regardless of industry or economic region. The research findings suggest that having supply chain leaders and adopting suitable forms of SCL can lead to better firm performance and supply chain performance (Birasnav and Bienstock, 2019), across multiple dimensions of performance improvement.

The improvement in operational performance is important (Kharub and Sharma, 2016), leading to improved operational accuracy and efficiency, and better quality of service and products (Ul-Hameed et al., 2019). Our results indicate that SCL, especially transformational leadership, can improve corporate innovative performance, by intellectual stimulation, thus encouraging followers to solve problems via new ideas. The improvement in innovative performance is also represented in the fact that SCL can also encourage the adoption of emerging technologies in the supply chain (Raut et al., 2019). The case of Toyota is a great example of supply chain leader use transformational leadership to improve the innovation performance of their followers (i.e., suppliers). Applying intellectual stimulation, Toyota promotes the voluntary learning teams for supplier and encourage its suppliers to be innovative.

Moreover, environmental and social performance is improved by SCL, as it can facilitate CSR activities (Khan and Wisner, 2019) and green initiatives, such as green purchasing, green design and reverse logistics (Mokhtar et al., 2019a). In addition, SCL can improve financial performance, because it is related to better financial health (Prasad et al., 2018) and financial sustainability (Akhtar et al., 2016). If practitioners are able to gain a comprehensive understanding of the potential benefits of SCL for firm performance, they are more likely to stress the importance of SCL and adopt SCL concepts to scrutinise and reconfigure their supply chain practices (Mokhtar et al., 2019b).

Although our research shows that SCL leads to overall performance improvement, the performance effect of different leadership forms varies. Transformational SCL has a greater impact on performance than transactional SCL. This conclusion does not suggest that only transformational SCL should be adopted in practice, because there is no single leadership form that is appropriate and effective under all circumstances (Mokhtar et al., 2019b). The optimised SCL form should comprise a combination of both forms for superior performance: for instance, a firm could alternatively or simultaneously utilise transformational and transactional leadership towards different suppliers (Mokhtar et al., 2019b). For example, Toyota applies transformational leadership in their supply chain to encourage supplier's innovative performance, meanwhile, they would leverage tough method, such as economic sanctions to correct supplier's behaviour, which is a typical transactional leadership behaviour. Managers should consider their industry and product characteristics before making decisions on the leadership forms to be adopted in the supply chain (Ojha et al., 2018). As stated by Ojha et al. (2018), transformational leadership and transactional leadership are suitable for different industries, because the type of performance that needs to be improved the most varies between industries. For example, innovative performance is prioritised in fast-moving industries such as electronics, and transformational leadership is appropriate for this industry type, while in relatively stable industries, such as food retail, transactional leadership is recommended to ensure better operational performance.

6. Conclusion

This study conducted a meta-analysis to examine empirical studies reported in 32 peer-reviewed journal articles, in which 8488 sampled companies were examined. We explored the SCL–performance relationship and the impact of control variables (industry and region) on this relationship.

The results indicate that applying leadership in the supply chain can positively affect the firm performance. Specifically, we draw a comprehensive result by conducting a meta-analysis to show that transformational SCL has a more significant influence than transactional SCL on firm performance. The effect of SCL on performance varies with the different performance measurements. The most obvious effect of SCL is observed in environmental, operational and innovative performance, however, the effect of SCL on financial and social performance is less significant than others aspects.

There are several future research directions. First, due to the number of empirical studies on SCL is limited, more empirical studies are expected in the future, and it may be promising to test the proposed hypotheses for robustness with a larger sample size. Second, this study focuses on only transformational and transactional SCL. Other categorization of leaderships should be further examined in future to discuss their impacts on the supply chain performance. Third, meta-analysis can only examine linear relationships between SCL and firm performance; the method is not able to investigate non-linear effects of SCL on performance, which require further study to explore the non-linear relationship between SCl and firm performance. Fourth, future research could conduct more empirical studies of supply chain transactional leadership to further clarify its relationship with firm performance.

Additionally, as most SCL research focuses on either transactional leadership or transformational leadership, the scope of the supply chain leadership style should be further expanded. For example, individual leadership style such as full-range leadership or charismatic leadership and other leadership styles could be taken into account determining its feasibility to be applied in the organisation or the supply chain level. Last, as we find that both transformational and transactional SCL have positive impacts on firm performance, future research should emphasise the adoption of a combination of the two leadership forms in the supply chain and then examine the extent to which the combined SCL influences firm performance.

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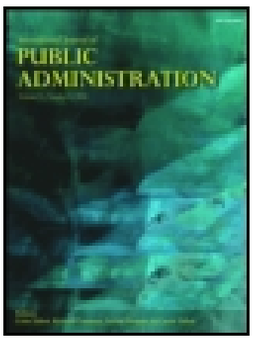

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The Impact of Malaysian Public Sector in the Relationship between Transformational Leadership Styles and Career Development

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ABSTRACT

A systematic succession planning program, couple with solid career development is important to public sector employees. With this in mind, practicing the appropriate leadership strategy may contribute to a good management system. Therefore, this study intends to explore the relationship between leadership styles and career development program. The questionnaires also probed subordinates perceptions of leadership styles and expectations for greater career development. Quantitative research design was employed by distributing survey questionnaires to 576 Malaysian Public Sector government servants. The results of this research offer new insights into the importance of leadership values in the succession planning of government organizations.

KEYWORDS

Career development; leadership styles; public sector; succession planning

Introduction

Public Sector's competitive edge on a global scale is highly dependent on the efficiency and effectiveness of its delivery system. A high-performance workforce that is capable of delivering outstanding service is pertinent for the sector to survive under an environment of extreme uncertainty. The central characteristics of a high-performance workforce include being customer-focused, an emphasis on quality, establishing a high degree of accountability, being effective, and being efficient. Furthermore, during the Twelfth Premier Civil Servicers Dialogue on 23rd March 2011, Former Prime Minister Dato' Sri Najib highlighted the need for changes in public's perception that civil services are bloated and unresponsive. This can be achieved by creating a performance-centric civil service that is highly effective, efficient, productive, innovative, and creative. The available data demonstrated that the Malaysian Public Sector is made of 1.7 million employees, making it the largest organization in the country. This sector is responsible for the administration of the Malaysian government (Public Service Department [PSD]). Following this, government organizations have been seen as subject to political interference with unprofessional employees. Succession planning is seen as one of the important methods in curbing these issues. One of the components of succession planning is a career development program that aims to hone the administrators' leadership skills. Such skill set is important in developing and maintaining a successful organizational leadership.

Moving on, Rothwell (2010) defined succession planning as the process of ensuring the existence of adequate leaders in an organization. A succession program is closely related to a leader's characteristics and failing to create a strong succession plan risk the existence of the organization itself. According to Northouse (2010), leadership values are related to the ability to influence others, for example, when leaders try to influence or lead their followers to achieve institutional goals. Leadership is one of the important factors that can drive an organization forward (Abdulla, Ramdane, & Kamel, 2011). In an institution, leaders are responsible for providing inspiration and maintaining healthy organizational competitiveness. As mentioned by Rothwell (2005), succession planning should encourage everyone in the institution to actively contribute to positive changes in the work community. A way to do this is to chart the employees' career development. This may motivate them to improve their performance, and this may include sharpening their own leadership skills.

Apart from that, most subordinates have a high expectation for their leaders to be the best role models. As such, leaders need to portray exemplary behaviors to

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gain and retain the confidence and respect of their subordinates. In addition, leaders should be able to choose employees who are able to achieve organizational goals. This requires the highest level of integrity and accountability, indirectly becoming an ethics benchmark for the subordinates. Furthermore, good leaders are capable of implementing change positively and successfully. House, Hanges, Javidan, Dorfman, and Gupta (2004) stated that successful leaders are capable of influencing and motivating others to fulfill the needs of an organization. These characteristics are important aspects of succession planning. Grooming new leaders will include informal and formal learning. The candidates for leadership positions should possess leadership and knowledge management skills and be able to demonstrate all the qualities and the fundamental elements of leadership. In similar vein, there is an overwhelming research demonstrating that leadership style has an important bearing on positive employee work outcomes such as a work performance, organizational commitment, and career development (Ali, Ong, & Elsadiq, 2013). Moreover, Bass (1985) mentioned that leadership can only be sustained through the leader's characteristics and organization's commitment. Failure to organize human capital may create an inefficient organization. This is the reason for the succession program is an important mechanism for an executive promotion. Top management or supervisors should, therefore, take the necessary steps in constructing a succession planning program in their institution (McArthur, 2002).

Currently, there are several concepts of leadership influence in an organization. Imran, Ilyas, Aslam, and Ubaid-Ur -Rahman (2016) founded that transformational leadership has shown positive impact towards organizational management process. Meanwhile, Rasool, Arfeen, Mothi, and Aslam (2015) proved that transformational leadership characteristic influencing the doctor performance in the public sector. Conversely, Bass, Avolio, Jung, and Berson (2003) insist that characteristic of transformational leadership occur the viability management operation. While, Geh (2014) in his research cited that by using a transformational tool bring effected learning orientation in the constitution.

Nonetheless, there has been a lack of research on the influence of the leader's style towards the implementation of succession planning program. Founded on these ground, this research intends to understand the perspective of government officers in the public sector towards the implementation of succession planning with regard to the transformational leadership characteristic. Thus, the purpose of this study is to ripen a fresh model of career development process through effective transformational leadership characteristic and succession planning elements having the interactive result of organizational performance.

Theoretical background and research framework

There have been several theories on general leadership style. This study attempts to contribute to succession planning literature by assessing subordinates' understanding and perceptions towards leadership values that influence their career paths. For the purpose of this study, it is assumed that leadership characteristics have a significant influence on the implementation of policies for career development leaders in the public sector in Malaysia. This research focuses on developing a more holistic understanding of the four types of transformational leadership characteristic factors affecting the career leaders in the Malaysian Public Sector.

Transformational leadership

Transformational leadership is based on the idea that charismatic leaders with good intentions can be relied upon by their followers and will always take their followers' needs seriously. Besides has received a fantastic measure of attention in the last few decades and has prominent emerged as one of the most dominant leadership theories (Mhatre & Riggio, 2014). Originated introduce by Burn (1978), and was upgraded by Bass (1985), who came out critical analysis. Burn (1978), the co-founder of the concept of transformational leadership, defined the concept as " … a relationship, mutual stimulation, and elevations that converts followers into leaders and may convert leaders into moral agents".

Previous studies have proven that there are positive correlations between organizations' success and leadership characteristic (Russell, 2013). Since that time, both theoretical as well as meta-analytic theory has benefited reviews (Judge & Piccolo, 2004; Van Knippenberg & Sitkin, 2013), along with an in-depth theoretical and methodological critique. Bennis (1959) argued that transformational leaders are people who possess the ability to touch the hearts of their subordinates. While Bass and Avolio (1990) and Bass and Riggio (2006), leaders are those who encourage and motivate their subordinates by projecting and communicating attractive visions, mutual goals, and configuration-values. Recently, most leaders in public organizations have tried to incorporate transformational leadership in their management style to inspire followers (Mohammad Yasin, Fernando, & Caputi, 2013). This is proven by a research executed by Metcalfe and Metcalfe (2006) which included public sector administrators from higher institutions and government institutions.

Meanwhile, Bass and Avolio (1994) identified four behavioral components in transformational leadership.

Firstly, idealized influence is comprised of conviction and emphasized the importance of determination, dedication and the ethical consequences of decisions made (Boyett, 2006). Idealized influence is embodied by leaders who are exemplary and trusted by their subordinates. These leaders are capable of making decisions that will benefit their organizations. Such behavior promoted the perception that the leaders are powerful, worthy of confidence and are ideal examples to emulate (Abdulla et al., 2011; Yusnita, Aziz, & Shaladdin, 2012).

Another characteristic of leadership style is inspirational motivation. Inspirational motivation is a characteristic of leaders who can motivate their subordinates to accomplish the organizations' visions (Hall, Johnson, Wysocki, & Kepner, 2008). Motivated leaders can also improve the subordinates' skills by focusing on their career development and by encouraging them to challenge themselves at work (Ali et al., 2013). In addition, leaders with inspirational motivation characteristic specify their expectations of the subordinates (Bass, 1985). These characteristics are similar to idealized influence characteristic in the sense that the leaders motivate and inspire people around them by giving associated meanings and challenging tasks. On the other hand, these characteristics differ in their ability to influence the organization with new ideas and to motivate the subordinates in becoming committed members of the organization (Abdulla et al., 2011).

Gennaro (2018) tested transformational leadership in public service to understand the behavior of public leaders working in unpredictable environments. The finding demonstrated that transformational leaders had intrinsic motivations, encouraged public employees to adapt to changes, and constantly motivated the employees. Transformational leaders have a strong grasp of this situation; they are aware that an unmotivated individual will be less likely to perform positively and will cause the public administration to become inefficient (Şahin, Gürbüz, & Şeşen, 2017)

Apart from that, individualized influence characteristic refers to leaders who provide moral support to their subordinates. They also often coach and mentor their followers and are concerned with their subordinates' career path (Boyett, 2006). Meanwhile, intellectual stimulation comprises leaders' efforts to challenge subordinates to become forward-looking and creative by framing problems and approaching conventional issues from new perspectives. Limsila and Ogunlana (2008) also stated that these leaders provide intellectual stimulation to their followers by promoting analytical thinking in an effort to improve their organizations (Hall et al., 2008). Subordinates under this type of leadership characteristic are typically not hesitant to offer their ideas, undertake responsibilities and go an extra mile for the organization (Junaida, Mahadir, & Siti Hajar, 2011).

Succession planning

Succession planning is important in dealing with the issues related to the succession of organizational leaders, and the process is of a high importance (Church, Rotolo, Ginther, & Levine, 2015). Walker (2005) explained that succession planning is designed to provide a smooth transition of organizational leadership. According to McCauley and Wakefield (2006), succession planning is a mechanism that enables management to establish talent management schemes that address the organization's development and future human resource needs. In other words, succession planning is a process to enhance individual employees (LaForest & Kubica, 2010) and is considered to be a practical mechanism. Of the many models utilized to examine succession planning, the model introduced by Rothwell (2005) is the most recognized by researchers. Rothwell (2005) explained that succession planning is a method of recognizing managerial positions; from executives to high-level management positions in the department. Succession planning also provides the flexibility of lateral movement across management positions.

Issues of succession planning were also highlighted in other industry such as nursing, health care, and education. McCallin and Frankson (2009) highlighted that the nursing institutions are facing organizational development issues. The current system put too much focus on educating nurses in postgraduate studies rather than strategizing the fulfillment of senior leadership vacancies. Meanwhile, Lusiani and Langley (2018) also discussed the practices of enabling leadership in health care institution. Their study was an ethnographic study of an Italian's public hospital's planning and project management practices. Using survey and focus group approaches, Renihan (2012) assessed the succession of leadership succession 838 educators based on their readiness for leadership roles in schools.

In the study, Renihan (2012) reported that leaders in school were frustrated with the administrative workload and the lack of support from the senior leadership. Apart from that, the shortage of qualified principals or heads caused by individuals' retirement became an external factor to the troubles. The outcomes indicated that there was a greater emphasis on work-life residue. Specific skills for succession planning in top leadership roles focused on three leadership categories: supervisory leaders, middle managers, and executive leaders (Griffith, Baur, & Buckley, 2019)

Moving on, the characteristics of successful organizations include the organizations' ability to create knowledge, improve skills, maintain staff and provide support for the employees (Malikeh & Mahmoud, 2011). In the Malaysian context, a research on succession planning conducted by Julia (2009) demonstrated relationship between succession planning top leader . It is clear that the succession planning program is not only a mean of grooming future leaders and charting career paths but also as an effective strategy of providing excellent on-the-job training, careful career management, and motivation. Therefore, a human resources leader should be able to build diversified, innovative and skilled workforces in the public sector.

Career development leaders

Good succession planning within an organization is based on the ability of the organization to unlock individuals' potentials for more demanding positions. Industry experts believe that organizations should use performance management as a fundamental mechanism to design a succession plan. One of the dimensions in succession planning is career development leaders. According to Rothwell (2005), replacement planning relates to the immediate filling of a vacant position with someone who is a potential leader. Furthermore, McCauley and Wakefield (2006) defined succession program as a policy that allows top managers to integrate potential leaders into organizational development and future human resource needs. It is important to note that the definition of future leaders may differ among individuals.

For instance, Dessler (2004) argued that the process of finding suitable candidates for current and future senior key posts will be based on the organizational strategy adopted. Therefore, the career paths of individuals can be planned and properly managed, not only to achieve organizational needs but also to fulfill staff aspirations. The identification and selection of potential future leaders must be facilitated by the process that enables them to be identified and selected (Rothwell, 2010). According to Winterton (1999), career coaching from the supervisor and job training are needed for career development. Succession planning will be unsuccessful without a full commitment from the higher-level management (Rothwell, 2010).

Looking from another angle, previous researches have shown that highly successful organization combines leadership development and career development. A study by Adnan and Mubarak (2010), Syeda and Abida (2014) demonstrated that the transformational style is strongly associated with career success. Research conducted on personality leadership characteristics and their impacts on succession planning had shown the importance of leadership behavior on the development of future leaders. Nonetheless, there are organizations that unintentionally replace effective succession planning with replacement planning.

The conceptual framework used in this research is shown in Figure 1 and was adapted from Bass and Avolio (1994). Transformational leadership is comprised of four characteristics, which are idealized influence, inspirational motivation, individualized consideration, and intellectual stimulation. These characteristics are the independent variables, while career development leader is the dependent variable.

All four of transformational leadership dimension has been clearly conceptually and empirically linked to career development. Based on the existing gaps identified above, we propose the following competing hypotheses:

HIa. *Idealize influence assumptions will be positively significant influent on career development.*

HIb. *Motivational influence will have higher significant expectation influence for career developmen*t

HIc. *Idealise influence will have strongly significant expectation influence for career development*

HId. *Intellectual stimulation provide a dominant significant contribution to the career development process in organization*

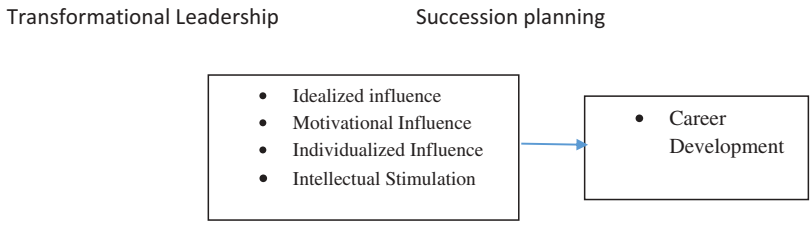

Figure 1. Research Framework.
(Source: Bass & Avolio, 2004)

Methods

Design and sample

The respondents were selected based on their understanding of leaders' career development in succession planning. The respondents were comprised of civil servants from Grades 48 to Grade 54. Using stratified random sampling, 576 participants were chosen from 21 public departments as respondents for this research. Of the distributed questionnaires, 425 were received, and only 394 of the questionnaires were selected to be used for the analysis after multivariate outliers screening was applied on the questionnaires. This displayed a feedback rate of 68.4%. Most of the respondents are between 40 and 55 years of age (67.8%). In addition, 52.3% of the respondents had a master's degree. Most respondents also had 11 to 20 years of working experience.

Instruments

The independent variable in this study was transformational leadership, and the dependent variable was succession planning. There were two sets of instruments used to measure every variable. In addition, a Five-point Likert scale was used on the Multifactor Leadership Questionnaire to measure top management and leadership style as presumed by followers. MLQ was created and developed by Bass and Avolio (2004) and is regularly used in leadership research. In other words, this method has been tested and proven to be suitable for this type of research and the content of leadership dimensions is differ from other leadership questionnaire (Avolio, Gardner, & Walumbwa, 2007) or the Authentic Leadership Inventory (Neider & Schriesheim, 2011). However, there is no conceptual overlap between transformational leadership theory and authentic leadership theory (Walumbwa, Avolio, Gardner, Wernsing, & Peterson, 2008). The followers would expect leader with idealized behavior will be their role model to inspire them in work performance. Therefore, from a conceptual concept and measurement perspective, transformational leadership characteristic and career development seem to be related.

Furthermore, there were 20 items on the instruments with the following ranges; Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4) and Strongly Agree (5). The MLQ was comprised of items representing Idealized influence (8 items), Motivation inspirational (4 items), Individualized influence (4 items) and Intellectual stimulation (4 items). This instrument has been used extensively by many scholars in the fields of organization, business, education and private (Bass & Avolio, 2004). A preliminary study assessing the underlying four dimensions of leadership was conducted to validate the instruments. Furthermore, the Cronbach's alpha reliability fits the scales ranging from .714 to .890, which was an acceptable level of internal consistency (Hair, Anderson, Tatham, & William, 1998). Instruments to measure succession planning were taken from the questionnaire for effective Succession Planning and Management (SP&M) by Rothwell (2005). There were 10 items that represented career development leaders. Again, a Five-point Likert scale was used. The Cronbach's alpha ranged between 0.699 and 0.904, which was an acceptable level of internal consistency (Hair et al., 1998).

Based on transformational leadership literature, to possess more accurate results, demographic items were controlled for age, grade level, education and study experience. However, worked experience and age may effect subordinate assumptions because determining years in working may involve and lead to explicit assumptions regarding leadership style (Pastor & Mayo, 2008). Education level of subordinates may cause an effect on subordinates thinking towards leadership trends. Holton and Lynham (2000) indicated that conventional teaching (e.g. MBA) plays a central function in manager development. Written reports on leadership style have also indicated to the influence institutional elements (e.g. size) on leadership (House & Aditya, 1997).

More precise, previous research (Cogliser & Schriesheim, 2000; Schriesheim & Yammarino, 2000) mentioned that when increases size in workplace will affect the relationships between managers and their staff. Since exposure to the cultures offers individuals the chance to experience a wider range of fashions and values to motivate subordinates (Carpenter, Sanders, & Gregersen, 2001), international experience may induce an issue on leadership styles, and thus, effectiveness.

Findings

Reliability analysis

To measure the internal consistency, alpha cronbach's internal consistency value was applied, and the result is found that maximum scales in between 0.6 and 0.98 which is considered sufficient and acceptable by George and Mallery (2003) regarding internal consistency of construct.

Descriptive statistics

As shown in Table 1 includes means, standard deviations, reliability coefficients, and correlations among all variables in this study. Inter-correlations showed that career development significantly and positively correlated with transformational leadership (Idealise, $r = .26$, $p < .01$,

Motivational, r = .29, $p < .01$, Individual, r = .313, $p < .01$ and Intellectual, r = .296, $p < .296$. Transformational leadership had strong significant positive correlations with intellectual stimulation (r = .29, $p < .01$)

Test of hypothesis

The objective of studying the relationship between transformational leadership characteristic and career development leaders was fulfilled by looking at each contact dimension's influence on leadership. The findings of this study presented relevant analysis for hypothesis H1a, H1b, H1c and H1d. Each analysis in this hypothesis used multiple regression analysis to observe any significant correlation among the variables. Also, base along with the recommendation of Yamamoto (2006), several demographic variables were controlled since this variable might exert certain influences on career development.

The finding of the study was in line with MLQ, as shown in Tables 2 and 3 after taking consideration of the control variable. Table 2 shows that the relationship of four Independent Variables and Dependent Variables was moderate (R = .375). Also, all independent variables could describe 18.9% of the variance in career development. As illustrated in Table 2, R^2 showed a value of 14.1%. This means that this factor accounted for 14.1% of the variance in career development and that the model fits the data and was valid. A beta value was the benchmark for the strongest predictor. (Hair et al., 1998). As portrayed in Table 3, the dependent variable was found to be fit (F = 7.871; sig = .000). The R^2 showed the correlation of ascertainment of the independent variable on the dependent variable.

HIa predicted that leader Idealize influence characteristic assumptions will be positively significant influent on subordinate career development. As an explanation in Table 3, the result shown that the relationship between idealize influence style was not significant (β = .81, sig = .193. Therefore, HIa was not supported. HIb stated that leader with Motivational influence style will have higher significant expectation influence for career development. The result revealed is negatively related to career development with β = .093,

Table 1. Means, standard deviations, and correlations.

	Mean	SD	1	2	3	4	5
Idealized	3.648	.422	.590**				
Motivational	4.028	.508	.457**	.502**			
Individualized	3.844	.532	.525**	.577**	.555**		
Intellectual	3.974	.446	.303**	.362**	.345**	.344**	
Career Development	3.423	.444	.267**	.290**	.313**	.296**	.653**

Notes: $n = 394$. The Cronbach's α's are indicated diagonally. **$p < .05$, **$p < .01$ (two-tailed)

Table 2. Model summary.

Model	R	R^2	Adjusted R^2	Std error of the estimate
1	.111[a]	.012	.002	.443
2	.375[b]	.141	.123	.416

a: Predictor: Idealize influence, Motivation, Individualize, Intellectual
b: Dependent Variable: Career Development

Table 3. Summary of multiple regression analysis: independent variable and future leader.

Independent variable	Standardized beta	t	Sig
Idealized Influence	.081	1.304	.193
Motivational Inspiration	.093	1.409	.160
Individualized Influence	.165	2.718	.007
Intellectual Stimulation	.105	1.633	.103
F Value			7.871
R^2			.141
Adjusted R^2			.123
Sig.			.000

sig = .160. This result contradicts with the previous research. HIb was rejected. HIc predicted leadership who deploy idealized style will have a strongly significant expectation influence for career development. As appeared in Table 3, the result indicated a positive significant and a main effect to implementing succession planning in the public sector (β = .165, sig = .007). The result provides support for HIc. Last, HId predicted that Intellectual stimulation provides a dominant significant contribution to the career development process in the organization. Result shown in Table 3, the relation between intellectual stimulation styles was not significant. (β = .105, sig = .103). Therefore, HId was not supported. As appeared in Table 3, individualized influence which is hypothesis H1c showed the biggest beta value of .165, which was significant at .007 levels and was consistent with the MLQ norm. This result provides empirical evidence that idealized influence variable was the most predictive characteristic of the career development program as perceived by subordinates.

Furthermore, leadership characteristic plays the most important role in predicting the grooming of future leaders. Deploying Idealized influence character, a manager will care and offer personal support to the subordinates for their career paths. They delegate responsibility, passing on authority, retain their followers and are responsive to individual needs (Boyett, 2006). The multiple regression result confirms that leadership has an important method for employees' work outcomes, such as a work performance, career satisfaction, management commitment (Lian & Tui, 2007; Zahari & Shugari, 2012).

The result is consistent with the finding of Shin and Zhou (2003) which was adumbrated in the Asia Countries. In this study, they observed that subordinates

and followers were loyal to a leadership style to persuade them to perform new tasks. Meanwhile, by portraying Individualized characteristics, the leader can persuade the subordinate to emphasize the importance of having a collective sense of mission with positive thoughts. The leaders must delegate authority to the subordinates and fulfill their needs as part of their continuous involvement in the coaching process (Zaidatol Akmalih, Sdeghi, & Habibah, 2011). This finding is supported by previous researches conducted in different disciplines in Malaysia (Sadeghi & Zaidatol Akhmaliah, 2012; Voon, Lo, Ngui, & Peter, 2010). As such, it can be concluded that followers rely on their leaders to provide clear guidance on the ways to utilize the resources available for the progression of their career. In addition, the transformational leadership characteristics and relation's support have been found to exert a strong influence on subordinates' career paths. The model showed that all independent variables (the exception being Idealized influence) were positively associated with satisfaction with cultivating future leaders.

Discussion and conclusion

The increasing recognition of the crucial role of leaders in organizations leads to a higher priority on the development of subordinates. A more systematic, top-down, and highly structured leadership development approach has replaced the original model. This research found that succession planning is affected by the characteristic of leaders. More importantly, there is a need for management developers to place greater focus on the development of a manager with necessary tools and leadership style. It is the perceived reciprocity between leaders and subordinates that lead to cues being formed in the workplace environment. Leaders need to understand that prejudice and subjective performance rating could elicit undesirable responses from subordinates. Therefore, carrying out assessments of subordinates in an objective and honest manner facilitates the grooming of future leaders within the governing body. This is essential to get the desired behavioral and attitudinal work responses from them.

Consequently, every organization should ensure the preservation of its knowledge and existence. A solid talent pipeline must be maintained by matching skills available internally with those possessing higher degrees. This agrees with Spendlove (2007) and Emma, Christina, and Emma (2015) who stated that the success and achievement of individuals and their organization rely on the leadership style. Vincent-Hoper, Muser, and Janneck (2012) also supported this idea, saying that leadership style is an emerging paradigm that highlights the dynamic interaction among leader cultural lifeway, leader–follower relationship, and context. The recommendations offered in this paper should be understood from the social view perspective where subordinates' behavioral and attitudinal responses and reactions are shaped by the stimuli in the work environment that they are in. For top management to get the appropriate responses from their subordinates, they must take into consideration the work environment of their subordinates. From this, subordinates could feel that their contributions in accomplishing better career paths are reciprocated accordingly.

Theoretically, the study has managed to contribute to the growing literature on succession planning based on the most relevant leadership style with good intention and shared understanding. The findings show that grooming subordinates for future leadership roles should be led by charismatic transformational leadership. In addition, the finding implies that preparing subordinates as future leaders should be positively led by charismatic individualized influence of transformational leadership. This observation is in line with Floyd (2010), Lian and Tui (2007) and Ngang (2009). According to Bass and Avolio (1990), a leader who shows a clear vision and facilitates achievement will increase the positive perception of followers in the organization. These findings are consistent with other researches (Voon, Lo, Ngui, & Ayob, 2011; Hinduan, Wilson, Moss, & Scannell, 2009). When a leader coaches a future leader, treats his staffs as individuals, and pays attention to special and specific needs, the leader is positively grooming the future leaders. A great leader helps future leaders in developing the latter's strengths whenever possible by involving them in management activities and ideas. The leaders not only understand what they are doing but are also capable to realize it.

Furthermore, ideas are not only shaped and influenced. Future leaders also require Intellectual capacity in directing and leading the public service sector. This can be embodied by a leader who is highly intellectual in shaping a decision and working on a problem. A wise man is always critical and looking forward to solving problems from different perspectives. Being creative at reaching an intellectual inspire the groups. Transformational leaders should be capable of utilizing top-down and bottom-up management and connecting activities both at horizontal and vertical levels.

Nonetheless, such guidance can only effectively driven by strong supports from transformational leaders. Based on the findings, the attribute of transformational leaders is suitable for high demanding jobs. This is because in these cases, the employees are in the hands of an employer who is willing to provide more support for the employees' career establishment (Bass, 1998). These observations can be implemented in Malaysia's

Public Service Department's succession planning programs and in promoting the effective organization. Nevertheless, the act of leading must be efficiently driven by the firm support provided by transformational leaders. Following this, the attributes of transformational leaders must be emphasized to meet the workplace demands; especially during their career course. This is because subordinates could be requested by the leaders to be more willing to support the organization, in return for the support given in expanding the subordinates' careers (Bass, 1998).

The findings demonstrated that the head of the department's leadership style in public sector associated with succession planning is best practiced. Having the privilege of interacting with participants involved in this study, we have understood how leadership has affected the process of implementing succession planning. Therefore, the Public Service Department may consider crafting relevant ordinance based on this research. In addition, since leaders influence the process of subordinates' career paths, the public sector may consider some investments in human capital training for the managerial level. Eventually, managers will be promoted to enhance networking support, e.g., to consider subordinate innovation and ideas, placing greater confidence in themselves and giving them more autonomy.

Thus, it can be concluded that successful leadership can enhance the mental and intellectual capacity of the public sector as both the management and subordinates embody the cultural attributes that they share. Gould's (1979) research has substantiated that an individual's awareness of self and environment, and the action to set career goals would influence the individual's motivation for career planning. He also mentioned that the involvement strategy would facilitate individual towards the road of success. In other words, career planning is correlated with career strategies and career success.

A competent and capable leader should be able to deliver a strong definite sense of aim, vision and strategic design for the long run. At the same time, they necessitate the power to transmit a sense of imagination and purpose meaningfully to the whole organization. In particular, those with Grades 48 to 54 in this study with at least 10 years working experience agreed that career development requires transformational leadership to ensure the success of the succession plan. As stated by Griffith et al. (2019) based on the Zenger/Folkman database, a potential leader must undergo immersive leadership training after an average of 10 working years. The findings strongly implicate that the selection of the transformational leadership style should be adopted for public sector career development.The findings reveal both theoretical and practical implications that are useful for public management services to promote and plan successful succession planning.

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Transformational leadership and employee performance: The role of identification, engagement and proactive personality

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ABSTRACT

This study investigates the underlying mechanisms and boundary conditions that explain the relationship between transformational leadership and frontline employee performance. Specifically, it explores the mediating role of organizational identification and work engagement in the relationship between transformational leadership and job performance and organization-directed citizenship behaviors. Additionally, it examines whether proactive personality moderates the effect of transformational leadership on identification and engagement. Data from 323 frontline hotel employees were analyzed using partial least square regression. Results show that identification and engagement fully mediate the relationship between transformational leadership and organizational citizenship behaviors, whereas engagement partially mediates the link between transformational leadership and job performance. Results indicate a sequential mediation effect of identification and engagement on employee performance. Finally, findings show that proactive personality strengthens the effect of leadership on identification and engagement. The study provides information for hotel managers about why and under what circumstances employees perform the way they do.

1. Introduction

Due to the importance of frontline employee performance in the competitive hospitality industry, scholars and practitioners have long tried to determine its predictors. Among the different variables investigated in the literature, previous research widely identifies supervisory behavior as playing a key role in affecting the performance of frontline employees. In service- and people-oriented businesses, such as the hospitality industry, the success of an organization largely depends on the role of managers (Terglav et al., 2016), as they influence employees' emotions, attitudes and behaviors (Avolio et al., 2004) and the way they interact with customers (Wallace et al., 2013). Specifically, transformational leadership, defined as a "style of leadership that transforms followers to rise above their self-interest by altering their morale, ideals, interests, and values, motivating them to perform better than initially expected" (Pieterse et al., 2010, p. 610), is currently the most widely accepted paradigm in the leadership literature (Judge and Piccolo, 2004).

Prior studies in the transformational leadership area provide empirical evidence of the positive effects of this variable on frontline employee performance (Fuller et al., 1996; Judge and Piccolo, 2004; Lowe et al., 1996). However, further research is needed regarding the specific mechanisms by which these effects occur, and the boundary conditions under which transformational leadership improves employee performance (Holten et al., 2018; Pan and Lin, 2015; Patiar and Wang, 2016). Therefore, this research aims to provide new insights into why and under what circumstances transformational leadership enhances the performance of frontline employees, including job performance and organizational citizenship behaviors directed at the organization (OCBO), in the context of the tourism and hospitality industry.

In response to these calls for further research, this study draws on social identity theory (SIT) and social exchange theory (SET) to explore the mediating role played by the psychological relationship between the employee and the organization, in terms of the employee's organizational identification and work engagement. Under SIT, organizational identification is a form of social identification "where the individual defines him or herself in terms of their membership in a particular organization" (Mael and Ashforth, 1992, p. 105). Although many researchers underline the importance of this psychological bond, as Tse and Chiu (2014) posit, few studies have investigated how the identity orientations of followers influence the impact of transformational leadership. Hence, it is critical to understand how employees'

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perceptions of belongingness to the organization may mediate the relationship between transformational leadership and frontline employee performance (i.e. job performance and OCBO). Drawing on SET (Cropanzano and Mitchell, 2005), we further explore the mediating role of work engagement. Work engagement reflects "a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption" (Schaufeli et al., 2002, p. 74). Researchers and practitioners have stressed the importance of this variable in the success of service organizations (Bakker and Demerouti, 2008; Slåtten and Mehmetoglu, 2011); however, recent calls highlight the need to further explore the role of work engagement in the hospitality literature (Karatepe and Olugbade, 2016; Lee and Ok, 2016). Therefore, this study also explores whether transformational leadership affects followers' performance and makes them go above and beyond their roles by enhancing their level of engagement. Furthermore, we investigate whether the relationship between transformational leadership and performance might be sequentially mediated by both organizational identification and work engagement.

In addition, this study investigates the boundary conditions that may moderate the relationship between transformational leadership and employees' organizational identification and work engagement. Although managers and their leadership styles are key determinants of employee performance, individual frontline employees' characteristics, such as their personality traits, are also relevant in shaping their attitudes and influencing followers' behaviors. Previous research has identified proactive personality as one of the most important personality traits that fosters employees' in-role and extra-role behaviors (e.g., Bakker et al., 2012; Bergeron et al., 2014; Crant, 2000; Fuller and Marler, 2009; Thomas et al., 2010). Extant research also shows that this trait "explains unique variance in criteria over and above that accounted for by the Big Five personality factors" (Bakker et al., 2012, p. 1360). Nevertheless, little is known about whether this personality trait, defined as a "stable disposition to take personal initiative in a broad range of activities and situations" (Seibert et al., 2001, p. 847), strengthens the influence of transformational leadership on the mediating variables explored in this study. Thus, given this limited evidence, this study examines whether proactive personality moderates the relationship between transformational leadership and employees' organizational identification and work engagement.

This study provides several contributions to the academic literature and to managerial practice. First, it responds to calls for more research examining the intervening mechanisms that explain how transformational leadership might affect employee performance (Pan and Lin, 2015; Patiar and Wang, 2016). In particular, it investigates the mediating effects of two mechanisms: organizational identification and work engagement. Second, as noted by Walumbwa and Hartnell (2011), limited research has explored whether multiple mediators sequentially mediate the effects of transformational leadership on employee performance. Therefore, to address this gap, this research also examines whether both organizational identification and work engagement sequentially mediate this relationship. In sum, by investigating these mediation effects in a single study, this research offers valuable and useful insights into the transformational leadership literature. Third, as recently noted by Lu et al. (2018, p. 187), "in current organizational and management research, one of the main missions is to delineate boundary conditions of a certain theory or studied phenomenon." Previous research in the leadership area has advocated the investigation of how personality traits influence followers' perceptions and responses to different leadership styles (Antonakis et al., 2012; Zaccaro, 2012). However, to our knowledge, no previous studies have investigated whether proactive personality amplifies the effects of transformational leadership. Therefore, by examining the moderating role of proactive personality, this research enriches our understanding of the conditions under which transformational leadership influences employee performance. Finally, the results of this study allow organizations in the hospitality industry to gain insights into why and under what circumstances employees perform the way they do, enabling them to make informed decisions on their human resource management strategies.

2. Literature review and research hypotheses

2.1. The effect of transformational leadership on job performance and OCBO

Transformational leadership refers to an approach by which leaders motivate followers to identify with organizational goals and interests and to perform beyond expectations. Transformational leadership plays a critical role in causing changes necessary for effective management. As suggested by Kim (2014, p. 398), "transformational leaders have the ability to transform organizations through their vision for the future, and by clarifying their vision, they can empower the employees to take responsibility for achieving that vision." These leaders typically display four different behaviors: idealized influence, inspirational motivation, intellectual stimulation and individualized consideration (Bass, 1985, 1990). Briefly, idealized influence, or "charisma," refers to leaders that demonstrate high standards of moral and ethical conduct. They are confident, are held in high personal regard and act as strong role models for followers. Inspirational motivation involves energizing followers by articulating a motivational and exciting vision. Transformational leaders inspire followers to share a vision and empower them to achieve it. Intellectual stimulation refers to leaders that encourage followers' creativity, presenting challenging new ideas and different ways to solve problems. Finally, individualized consideration involves paying attention to followers' individual needs for achievement and growth, as well as providing coaching and mentoring.

Prior research has linked transformational leadership to different organizational outcomes. In this study, we focus on two performance outcomes: job performance and OCBO. Job performance is an important organizational benefit that derives from transformational leadership. Babin and Boles (1998, p. 82) define this construct as "the level of productivity of an individual employee, relative to his or her peers, on several job-related behaviors and outcomes." Organizational citizenship behavior (OCB) represents "individual behavior that is discretionary, not directly recognized by the formal reward system, and in the aggregate promotes the efficient and effective functioning of the organization" (Organ, 1988, p. 4). In particular, this study explores OCBOs (Williams and Anderson, 1991), behaviors that benefit the organization in general. OCBOs positively relate to different organizational effectiveness measures, such as productivity and profitability and customer satisfaction (Podsakoff et al., 2009). Therefore, it is important to explore these behaviors in the hospitality industry.

Transformational leadership is one of the more effective leadership styles for encouraging positive in-role and extra-role behaviors from employees (MacKenzie et al., 2001). As noted earlier, transformational leaders: encourage followers to rise above their own self-interest; provide feedback; establish high standards of performance; help followers to become more creative and innovative; and pay attention to followers' needs (Bass, 1985; Yukl, 1999). They also "motivate followers to achieve performance beyond expectations by transforming followers' attitudes, beliefs, and values" (Rafferty and Griffin, 2004). As a result, transformational leaders can improve employee performance and encourage OCBO. Several meta-analyses have provided evidence for these positive effects (Fuller et al., 1996; Judge and Piccolo, 2004; Lowe et al., 1996). For instance, Judge and Piccolo's (2004) meta-analysis reported that transformational leadership positively correlated with group and organizational performance. Likewise, Piccolo and Colquitt

(2006) concluded that this leadership style enhances both follower task performance and OCB. Therefore, based on both theoretical and empirical evidence, we propose:

H1. Transformational leadership has a positive effect on job performance of frontline employees in the hospitality industry.

H2. Transformational leadership has a positive effect on OCBO of frontline employees in the hospitality industry.

2.2. The mediating role of organizational identification

Drawing on SIT, Ashforth and Mael (1989, p. 34) conceptualized identification as the "perception of oneness with or belongingness to a group." More specifically, organizational identification is defined as "the degree to which a member defines him- or herself by the same attributes that he or she believes define the organization" (Dutton et al., 1994, p. 239). Organizational identification implies a psychological merging of self and organization (Van Knippenberg and Sleebos, 2006). When identification is strong, the individual's self-concept incorporates a large part of what they believe is unique, central and permanent about the organization (Dutton et al., 1994). Likewise, the greater the identification, the more an employee will act in accordance with group norms and organizational values and goals (van Knippenberg, 2000).

In this study, we posit that organizational identification is one of the main mechanisms by which transformational leaders influence employees' job performance and OCBO. Transformational leadership has been argued to affect followers' identification with a group (Tse and Chiu, 2014) and relational identification (Liang et al., 2017), which is "the extent to which an individual defines himself or herself in terms of the leader–subordinate role relationship" (Sluss and Ashforth, 2007, p. 32). Interestingly, a review of empirical studies by Van Knippenberg et al. (2004) describes the importance of the self-concept and identity constructs to the understanding of how leadership influences followers' behaviors. Transformational leaders change followers' views of themselves and build social identification. These leaders connect followers with the objectives and mission of the organization. As noted by Bass (1985, 1990), transformational leaders focus on employees' needs and individual development, act as mentors and motivate employees to transcend their self-interest in the interest of the organization. This leadership style is also characterized by the inspiring vision of the supervisor, which enhances employees' pride and attachment to the organization. As such, in line with previous empirical studies that provide evidence of the relationship between transformational leadership and employees' identification with their organization (Epitropaki and Martin, 2005; Kark et al., 2003) or work unit (Walumbwa et al., 2008), we expect that transformational leadership enhances organizational identification.

Organizational identification, in turn, will positively predict job performance and OCBO, for two reasons. First, employees who strongly identify with their organizations have positive attitudes toward them (Dutton et al., 1994). SIT states that the perception of oneness with, or belongingness to, a group such as an organization arises in part to increase self-esteem (Hogg and Turner, 1985; Tajfel, 1978). In this sense, higher levels of self-esteem may result in greater employee efforts (Walumbwa et al., 2008). Identification also motivates employees to act in support of the organization's interests (van Dick et al., 2008). In sum, these greater efforts and motivation help employees to focus more effectively on their tasks and increase their individual performance (Walumbwa et al., 2008, 2011). Previous research has shown that employees' identification relates to outcomes such as in-role behavior and job performance (Riketta, 2005; Riketta and Van Dick, 2005; Smidts, et al., 2001; Walumbwa et al., 2008, 2011). Second, individuals who perceive themselves as belonging to an organization see the collective's interests as self-interest, which motivates behaviors in support of the collective (Tse and Chiu, 2014; Van Dick et al., 2008; Van Knippenberg, 2000). As noted by Van Dick et al. (2006), employees who identify more with their organizations are more likely to engage in behaviors that go beyond basic role prescriptions. More recently, Zhang et al. (2017) found a positive relationship between organizational identification and supervisor-rated OCB, including individual OCB, OCB directed to co-workers and OCBO. Thus, based on the above arguments, we expect organizational identification to mediate the relationship between transformational leadership and job performance and OCBO. Therefore, we postulate:

H3. Organizational identification positively mediates the relationship between transformational leadership and job performance of frontline employees in the hospitality industry.

H4. Organizational identification positively mediates the relationship between transformational leadership and OCBO of frontline employees in the hospitality industry.

2.3. The mediating role of work engagement

Work engagement has received increasing research interest in recent decades and it remains an extremely relevant and contemporary topic (Karatepe and Karadas, 2015). The construct of work engagement is composed of vigor, dedication and absorption (Schaufeli et al., 2002). Briefly, vigor refers to employees experiencing "high levels of energy and mental resilience while working" (Schaufeli et al., 2002, p. 74). Dedication involves "a sense of significance, enthusiasm, inspiration, pride, and challenge" at work (Schaufeli et al., 2002, p. 74). Absorption is characterized by being "fully concentrated and deeply engrossed in one's work, whereby time passes quickly and one has difficulties with detaching oneself from work" (Schaufeli et al., 2002, p. 75).

We propose that work engagement plays a mediating role between transformational leadership and job performance and OCBO. Extant research suggests a positive relationship between transformational leadership and employee engagement (e.g. Macey and Schneider, 2008). As noted earlier, transformational leaders inspire and intellectually stimulate their employees. They also use ideals and show individualized consideration by paying attention to their employees' needs (Bass, 1990). Based on SET, frontline employees may feel obliged to repay these behaviors with higher levels of engagement. Previous empirical studies support this relationship (e.g. Salanova et al., 2011; Zhu et al., 2009). In their diary studies, Tims et al. (2011) and Breevaart et al. (2014) found a positive relationship between daily fluctuations in transformational leadership and employees' daily work engagement. Similarly, Ghadi et al. (2013) and Kopperud et al. (2014) confirmed that transformational leadership positively influences the level of employees' work engagement.

We also argue that engaged employees perform better and demonstrate OCBO. When employees are engaged they dedicate their resources (e.g. cognitive, emotional and physical) to work roles, thereby contributing to organizational goals (Rich et al., 2010). Thus, engaged employees "work with greater intensity on their tasks for longer periods of time, they pay more attention to and are more focused on responsibilities, and they are more emotionally connected to the tasks that constitute their role" (Rich et al., 2010, p. 620). Therefore, it is more likely that they will positively respond to customer requests and display better job performance. Previous empirical studies suggest that work engagement positively relates to employee performance (e.g. Bakker et al., 2012; Halbesleben and Wheeler, 2008; Rich et al., 2010), including in the hospitality industry (Karatepe, 2013; Karatepe et al., 2014). Citizenship behaviors may also result from work engagement (e.g., Alfes et al., 2013; Babcock-Roberson and Strickland, 2010; Rich et al., 2010). As posited earlier, work engagement implies that employees are physically, cognitively and affectively connected with their workplace (Rich et al., 2010). Engaged employees perform better than nonengaged employees because they display positive emotions (e.g. enthusiasm, joy and happiness) and experience better health (Bakker and Demerouti, 2008). Saks (2006) also suggested that when employees are engaged they have higher trust in their organizations and a better relationship with their employers. Therefore, as these individuals are

more likely to invest themselves in their work, it is to be expected that they will find it worthwhile to make extra effort and exhibit behaviors beyond their job description (Rich et al., 2010). In sum, based on the above reasoning, we propose that work engagement mediates the relationship between transformational leadership and job performance and OCBO. Thus, we postulate:

H5. Work engagement positively mediates the relationship between transformational leadership and job performance of frontline employees in the hospitality industry.

H6. Work engagement positively mediates the relationship between transformational leadership and OCBO of frontline employees in the hospitality industry.

2.4. The sequential mediating role of organizational identification and work engagement

In this study, we further suggest that transformational leaders increase organizational identification, which leads to engagement, which in turn affects frontline employee performance. As discussed earlier, transformational leaders foster followers' organizational identification. Employees who identify with their organizations exhibit positive attitudes and are more attached to their organizations and their jobs (Biswas and Bhatnagar, 2013). Identification with an organization increases employees' job satisfaction and reduces turnover intentions (Van Dick et al., 2004). Likewise, employees with high organizational identification perceive the successes and failures of the company as their own (Ashforth and Mael, 1989), which influences the attention they give to their work assignments. Consequently, employees who notably identify with their organizations are more likely to be engaged with their work. In this sense, Rich et al. (2010) revealed that individuals who perceive congruence between their personal values and those of the organization are more likely to show higher levels of job engagement. Likewise, Biswas and Bhatnagar (2013) found that when the association between employees and the organization is high, the employees are more engaged. More recently, studies have empirically demonstrated a positive relationship between organizational identification and work engagement (He et al., 2014; Karanika-Murray et al., 2015; Zhang et al., 2017). Finally, when employees are engaged, as described earlier, they are more likely to display better job performance (Bakker et al., 2012; Halbesleben and Wheeler, 2008; Rich et al., 2010) and go above and beyond their job roles (Rich et al., 2010). Consequently, we propose:

H7. Organizational identification and work engagement sequentially mediate the relationship between transformational leadership and job performance of frontline employees in the hospitality industry.

H8. Organizational identification and work engagement sequentially mediate the relationship between transformational leadership and OCBO of frontline employees in the hospitality industry.

2.5. The moderating effect of proactive personality

Organizations in the hospitality industry operate in complex, dynamic and unpredictable environments (Madera et al., 2017). To cope with these changing environments and remain competitive, organizations need to adopt proactive, change-oriented behaviors (Fuller and Marler, 2009). Proactive personality refers to "the relatively stable tendency to effect environmental change" (Bateman and Crant, 1993, p. 103). Individuals who are high in proactive personality traits are more likely to take personal initiative to intentionally change their situations. Instead of waiting to respond to elements in their work environment, proactive individuals have an active orientation, search for information, explore the environment and try to anticipate future opportunities (Bateman and Crant, 1993; Crant, 2000; Thomas et al., 2010). In contrast, individuals who are low in proactive personality remain passive and adapt themselves to the circumstances of the situation (Bateman and Crant, 1993; Bergeron et al., 2014). In other words, they are reactive and satisfied with maintaining the status quo within their organization.

Previous research has provided a thorough review of proactive personality literature. For example, using career success as a framework, Fuller and Marler (2009) reported in their meta-analysis that proactive personality relates to objective and subjective career success, job performance, motivation constructs, proactive behaviors and variables related to mobility and adaptability, among others. Likewise, a meta-analysis by Thomas et al. (2010) revealed significant correlations between proactive personality and job performance, affective organizational commitment, work satisfaction and social networking. Prior research has also investigated the link between proactive personality and leadership (e.g. Deluga, 1998). Bateman and Crant (1993) found a positive correlation between students' proactive personality and peer nominations of transformational leadership. Similarly, Crant and Bateman (2000) found that managers who scored themselves as having a proactive personality received a higher rating on a measure of charismatic leadership completed by their bosses. However, to our knowledge, no previous study has explored how employees' proactive personality influences their responses to transformational leadership behavior. In this sense, we argue that proactive personality may, for several reasons, moderate the effects of transformational leadership on organizational identification and work engagement.

First, proactive personality and transformational leadership share several behaviors. As noted earlier, transformational leaders encourage employees to rise above their self-interest and to perform better than initially expected (Bass, 1985; Yukl, 1999). These leaders are engaged with their organizations, feel empowered and believe that they can change their environments (Barbuto and Burbach, 2006). Given that proactive employees also have an active orientation toward the work environment (Bateman and Crant, 1993; Crant, 2000), we argue that when frontline employees have a high level of proactive personality and leaders use a transformational leadership style, this combination may amplify the effects of transformational leadership on organizational identification and work engagement.

Second, as noted by Thomas et al. (2010), proactive employees' recognition of their ability to change their environment may influence the extent to which "they identify with and feel involved in their organizational surroundings" (Thomas et al., 2010, p. 279). In this sense, previous studies (e.g., Chan, 2006; Fuller and Marler, 2009) have shown that proactive personality is significantly correlated to a similar concept, affective organizational commitment, which is an "emotional attachment to, identification with, and involvement in the organization" (Allen and Meyer, 1990, p. 1). Therefore, it can be expected that proactive personality interacts with transformational leadership, helping to develop perceived oneness with the organization.

Finally, proactive employees who change their work environment are likely to become deeply involved in their jobs (Bateman and Crant, 1993) and, therefore, be more engaged (Dikkers et al., 2010; Ghorbannejad and Esakhani, 2016; Hakanen et al., 2008; Li et al., 2017). As argued previously, this might enhance the positive effect of transformational leadership on employees' engagement.

Hence, we postulate:

H9. Proactive personality moderates the relationship between transformational leadership and organizational identification of frontline employees in the hospitality industry, such that the positive relationship will be stronger for those with more proactive personalities.

H10. Proactive personality moderates the relationship between transformational leadership and work engagement of frontline employees in the hospitality industry, such that the positive relationship will be stronger for those with more proactive personalities.

Fig. 1 summarizes the conceptual model.

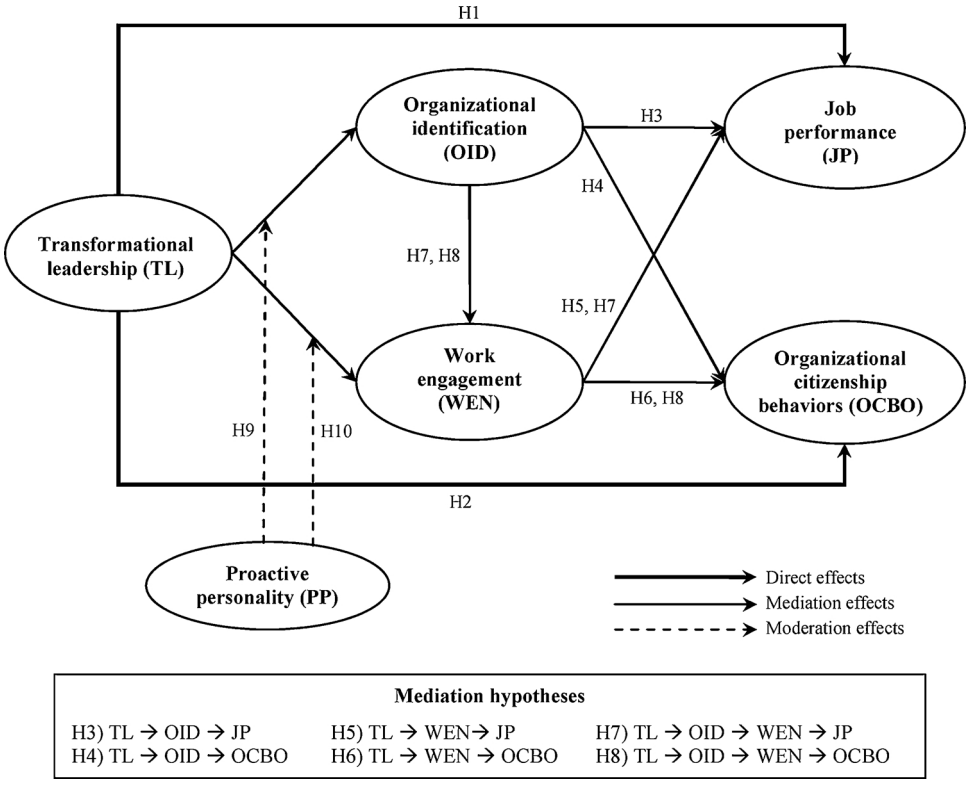


Fig. 1. Theoretical model.

3. Methodology

3.1. Sample and data collection

To test the proposed hypotheses, we undertook an empirical study with frontline hotel employees. The population was composed of 881 three, four and five-star hotels that were part of the 12 major hotel chains in Spain in terms of size (i.e. number of hotels of each group in Spain).

A market research company administered a telephone questionnaire on behalf of the researchers to collect the data. The questionnaire was aimed at frontline employees working at hotel receptions, as these employees represent their organizations and have direct contact with customers. After the purpose of the study was explained, the respondents were asked to answer the questions bearing in mind the hotel where they worked; they were assured of anonymity. Using a quota sampling method, hotels were selected based on the size of the chains and number of hotels of each chain in the Spanish regional communities. Only one front-desk employee per hotel was invited to participate in the study. Therefore, data were gathered from single respondents from different hotels in a one-time survey.

The final sample consisted of 323 employees from 323 hotels. A total of 62.8% of respondents were female. The mean age was 33.45 years, with an average organizational tenure of 7.44 years. The sample was predominantly composed of four-star hotels (69.7%); 20.2% were three-star and 10.1% were five-star. Finally, the average number of rooms was 178.

3.2. Measures

We employed well established scales to measure the study constructs (see Appendix A). The respondents assessed all items on 11-point Likert scales (0 = strongly disagree; 10 = strongly agree) to enhance the functionality and clarity of the telephone questionnaire.

Transformational leadership was measured using Carless et al.'s (2000) scale. Organizational identification was assessed following Smidts et al. (2001). Work engagement was measured using the Utrecht Work Engagement Scale proposed by Schaufeli et al. (2006). Job performance was measured with items from Karatepe (2013), drawing on Babin and Boles (1998). OCBO was assessed following Lee and Allen (2002); Saks (2006) and Karatepe (2013). Finally, proactive personality was measured with items from Bateman and Crant's (1993) scale.

3.3. Common method bias assessment

Since the data for the model's variables came from single respondents in a one-time survey, common method variance bias had to be effectively assessed. We used both procedural and statistical methods to control for potential common method bias (Podsakoff et al., 2003). Considering the procedural methods, we ensured respondents of the confidentiality and anonymity of the information provided. This reduced the possibility that the front-desk employees would respond in an artificial or dishonest way (Podsakoff et al., 2003). Moreover, the model's variables were randomly introduced into the survey to prevent respondents from inferring cause–effect relationships among the constructs. Regarding the statistical procedures, we conducted an exploratory factor analysis, from which seven factors emerged to explain 73.83% of the total variance. The largest factor explained only 20.54% of that variance. In addition, we performed a Harman single-factor test by means of confirmatory factor analysis with EQS 6.1, which established that the presence of common method bias was not a major concern. This test showed that the goodness of fit (GoF) for a measurement model where all the variables loaded on a single latent factor was substantially inferior to the GoF for a model where every item loaded on its corresponding latent variable. Finally, we implemented a full collinearity test based on variance inflation factors (VIFs), following Kock's (2015) and Kock and Lynn's (2012) procedure. This procedure specifies that when a VIF achieves a value greater than 3.3 there will be an indication of collinearity, which suggests the existence of common method bias. Our estimations showed that VIF values ranged from

1.060 to 2.786, thus suggesting, again, that common method bias is not a significant problem in this research.

4. Results

The research model was tested using partial least squares (PLS). Specifically, the SmartPLS 3.0 software was used. This methodology is appropriated for predictive applications and theory building in contexts where the phenomenon under study, as in our case, is new or rapidly evolving (Roldán and Sánchez-Franco, 2012). PLS is a distribution-independent method that is also recommended when the conceptual model is complex and includes many indicators and latent variables (Chin, 2010; Hair et al., 2011).

4.1. Measurement model evaluation

The measurement model attempts to confirm whether the theoretical constructs are correctly gauged by the manifest variables. We followed Schaufeli and Bakker's (2004) work engagement (WEN) conceptualization to operationalize this variable as a second-order reflective-reflective construct. It should be noted that some studies have failed to replicate the three-factor structure of work engagement (Shimazu et al., 2008), and that using the overall score for work engagement may sometimes be more useful in empirical research than using the three scores separately (Bakker et al., 2008). Nevertheless, most investigations using confirmatory factor analyses have revealed that the fit of this three-factor structure to the data was superior to others. Although some other previous studies have treated work engagement as a single variable or have included the independent first-order constructs (Schaufeli et al., 2002, 2006), for the purpose of this study we employed a second-order latent construct composed of three first-order latent variables: vigor, absorption and dedication. Given this level of abstraction of the WEN variable, we estimated our model following Wetzels et al.'s (2009) two-step method.

During the initial estimation, all the manifest variables presented individual reliability. In addition, composite reliability (CR) and average variance extracted (AVE) values were greater than 0.7 and 0.5, respectively. Discriminant validity was examined with the heterotrait–monotrait (HTMT) ratios method (Henseler et al., 2015) and Fornell and Larcker's (1981) criterion. All HTMT ratios between the first-order constructs were below 0.85. Similarly, the root-squared values of the AVE were above the correlations between pairs of variables. These results confirm the existence of discriminant validity.

The latent variable scores to be used as indicators of the WEN second-order reflective construct were obtained in the initial estimation. Table 1 reports the results of the second-order final measurement model. To evaluate the adequacy of the measures of this second-order construct model, we again assessed the indicators' individual reliabilities by examining the loadings of the measures on their corresponding latent constructs. All the indicators' loadings exceeded 0.707, suggesting an adequate correlation between indicators and their respective constructs (Wetzels et al., 2009). In addition, all CR ratios are above 0.7. This confirms that the set of variables is consistent with what it was designed to measure. The latent constructs also prove convergent validity as the AVE extracted by the constructs is above 0.5. Consequently, it is confirmed that the amount of variance that a construct captures from its manifest indicators is larger than the amount of variance that is explained by the measurement error. Finally, the findings suggest the existence of discriminant validity among the constructs, since the HTMT ratios are below the suggested threshold of 0.85 (Henseler et al., 2015) and the root squared values of the AVE are above the correlations between pairs of variables (Fornell and Larcker, 1981) (see Table 2).

Table 1
Results of the final measurement model.

Construct	Indicator	Standardized Loading	CR	AVE
Transformational Leadership (TL)	*TL1*	0.892	0.967	0.805
	TL2	0.899		
	TL3	0.895		
	TL4	0.927		
	TL5	0.856		
	TL6	0.904		
	TL7	0.905		
Proactive Personality (PP)	*PP1*	0.865	0.852	0.659
	PP2	0.732		
	PP3	0.833		
Organizational Identification (OID)	*OID1*	0.875	0.954	0.837
	OID2	0.900		
	OID3	0.939		
	OID4	0.944		
Work Engagement (WEN)	*ABS*	0.871	0.926	0.807
	DED	0.921		
	VIG	0.903		
Job Performance (JP)	*JP1*	0.756	0.880	0.711
	JP2	0.869		
	JP3	0.897		
Organizational Citizenship Behavior to Organization (OCBO)	*OCBO1*	0.704	0.770	0.528
	OCBO2	0.775		
	OCBO3	0.700		

4.2. Hypothesis testing: direct effects

We used the bootstrapping nonparametric technique of resampling with 8000 subsamples to test the proposed model. Appendix B presents the complete structural model's results. The results of the estimation of the inner model reveal that it explains 40.3% of the organizational identification variance, 63.2% of work engagement, 42.5% of job performance and 25.2% of OCBO. Complementarily, we used the Stone–Geisser test to confirm the predictive relevance of the model. The results indicated that the Q^2 values are positive, which confirms the predictive relevance of the model in relation to the endogenous variables. In support of hypothesis 1, we found a significant, direct and positive relationship between transformational leadership and job performance ($\beta = 0.253$; t-value = 3.692). On the contrary, the estimation of the structural model offers no support for hypothesis 2. There is a positive but nonsignificant relationship between transformational leadership and OCBO ($\beta = 0.014$; t-value = 0.182). Fig. 2 shows the path estimates and t-values of the model's structural main direct effects between the latent variables.

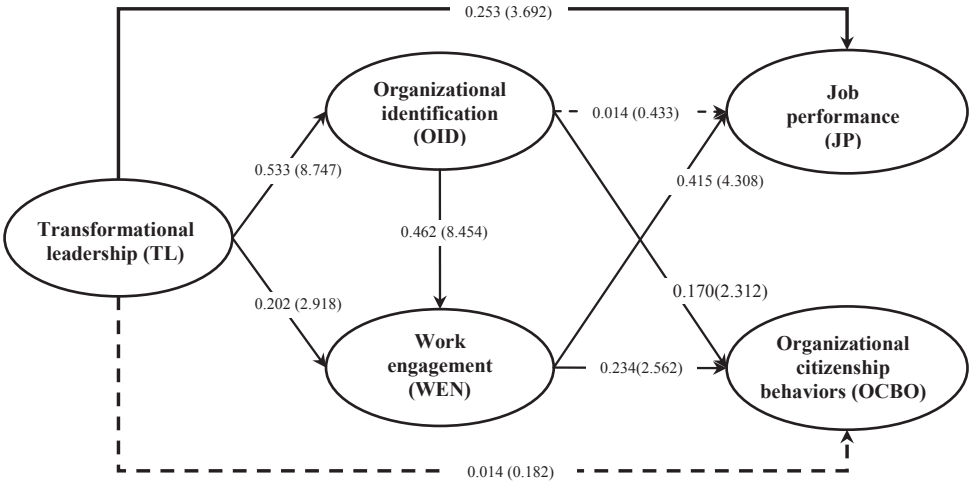
4.3. Hypothesis testing: mediation effects

To test the mediation effects, we employed the procedure suggested by Nitzl et al. (2016) for multi-mediation and complex models. Essentially, these authors suggest applying a bootstrap analysis with a large

Table 2
Discriminant validity.

Construct	TL	PP	OID	WEN	JP	OCBO
TL	**0.897**	0.358	0.624	0.637	0.603	0.422
PP	0.301	**0.812**	0.387	0.662	0.508	0.583
OID	0.595	0.322	**0.915**	0.772	0.551	0.563
WEN	0.588	0.537	0.703	**0.899**	0.729	0.664
JP	0.526	0.347	0.480	0.614	**0.843**	0.518
OCBO	0.307	0.373	0.404	0.463	0.347	**0.727**

Note: Diagonal elements are the root squared AVE values. Elements below the diagonal are the constructs' correlations. Elements above the diagonal represent the constructs' HTMT ratios.



Note 1: Path coefficients and *t*-values (between brackets) are reported.
Note 2: Dotted lines represent nonsignificant paths.
Note 3: Bolder lines represent direct hypothesized paths; medium-bold lines indicate mediating hypothesized effects.

Fig. 2. Summary of the main direct effects of the structural model.

Table 3
Mediation effects.

Hypothesis	β Indirect effect	t-value	Confidence interval (5–95%)
H3: TL → OID → JP	0.008	0.169	(-0.066; 0.082)
H4: TL → OID → OCBO	0.091	2.291**	(0.024; 0.143)
H5: TL → WEN → JP	0.084	2.478**	(0.033; 0.144)
H6: TL → WEN → OCBO	0.047	1.972**	(0.010; 0.088)
H7: TL → OID → WEN → JP	0.102	3.187*	(0.053; 0.158)
H8: TL → OID → WEN → OCBO	0.058	2.176**	(0.016; 0.102)

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

number of subsamples to assess the indirect effect of an independent variable on a dependent variable through a mediating variable. For each bootstrapping subsample, the path coefficients of the mediating relationships are obtained. These path coefficients are subsequently multiplied to create the specific indirect product terms. Next, the standard deviation, equivalent to the standard error (SE) in bootstrapping (Chernick, 2011), is computed for all the indirect effects. Using the SE values of the indirect effects obtained from the bootstrapping procedure, a pseudo *t*-test can be calculated to assess the significance of the indirect effects. In addition to this method, we employed MacKinnon et al.'s (2004) technique to calculate confidence intervals for each specific indirect effect. This method computes confidence intervals for the indirect paths and eliminates extreme cases through a percentile formula. If the confidence interval for a mediating variable does not include the value zero, this means that the indirect effect is significantly different from zero and, therefore, significant.

Table 3 shows the results of the mediation analysis estimations. Contrary to our expectations, organizational identification does not mediate the influence of transformational leadership on job performance (β = 0.008; t-value = 0.169). This result can be explained by the fact that, according to the estimation of the direct paths in Fig. 2, organizational identification does not significantly influence job performance (β = 0.014; t-value = 0.433). On the contrary, organizational identification mediates the influence of transformational leadership in citizenship behaviors (β = 0.091; t-value = 2.291). The direct effect of transformational leadership in OCBO was not significant. Therefore, this result indicates that organizational identification fully mediates this causal relationship. These results lead us to reject hypothesis 3 and to accept hypothesis 4. The model also supports hypotheses 5 and 6. The bootstrapping estimations reveal that transformational leadership indirectly influences job performance (β = 0.084; t-value = 2.478) and OCBO (β = 0.047; t-value = 1.972) via work engagement. The finding that transformational leadership has a direct effect on job performance, but that this influence is nonsignificant in the case of OCBOs, means that work engagement partially mediates the relationship between leadership and job performance and fully mediates the influence of transformational leadership on OCBOs. Finally, estimations indicate a strong partial sequential mediation for the relationship between transformational leadership and its outcomes. Specifically, our findings suggest that the effect of transformational leadership on job performance (β = 0.102; t-value = 3.187) and citizenship behaviors (β = 0.058; t-value = 2.176) is explained by its positive influence on organizational identification, which, in turn, enhances employees' work engagement. In line with these findings, hypotheses 7 and 8 are accepted.

4.4. Hypothesis testing: the moderating role of proactive personality

We used the interaction approach to calculate the moderating effects. This involves creating interaction terms by using the product of the two variables involved in the moderating effect. We specifically employed the two-stage approach (Henseler and Chin, 2010) to analyze these interactions. Results of these interaction estimations are presented in Table 4. According to these estimations, the interaction effect of leadership and proactive personality on identification (β = 0.117; t-value = 1.657) and engagement (β = 0.125; t-value = 2.128) reveals

Table 4
Estimation of the moderating effect of proactive personality.

Hypothesis	β	t-value	Confidence interval (5–95%)
H9: TL * PP → OI	0.117	1.657*	(0.022; 0.231)
H10: TL * PP → WEN	0.125	2.128*	(0.036; 0.220)

Note 1: * $p < 0.05$; (one-tailed Student's *t*-test).

positive and significant paths. Specifically, the results show that the influence of transformational leaders on both organizational identification and work engagement is higher when frontline employees exhibit a more proactive personality. These results lead to acceptance of hypotheses 9 and 10.

5. Discussion

This study explores the underlying mechanisms and boundary conditions that explain why and under what circumstances transformational leadership relates to job performance and OCBO in the context of the tourism and hospitality sector. Specifically, the present study represents one of the first attempts to examine (1) the mediating role of organizational identification and work engagement in the relationship between transformational leadership and employees' work performance in the hospitality industry; and (2) the moderating influence of frontline employees' proactive personality in the relationship between transformational leadership and organizational identification and work engagement.

The results show that transformational leadership directly predicts job performance. As expected, work engagement partially mediates the relationship between transformational leadership and job performance, indicating that this variable is an important mechanism linking this leadership style and employees' job performance. However, organizational identification, on its own, does not mediate this relationship. This result suggests that organizational identification alone does not account for the relationship between transformational leadership and job performance, unless it leads to work engagement.

In addition, the findings reveal that transformational leadership is not directly related to OCBO, but indirectly through a full mediation effect of organizational identification and work engagement. Thereby, both identification and engagement, as mediator variables, govern the underlying mechanism of the relationships between transformational leaders and their followers' behaviors. This finding reinforces the idea that supervisors with inspirational motivation, individualized consideration, idealized influence and intellectual stimulation play a key role in promoting identification and engagement among their employees. Such engaged and identified employees, in turn, are more willing to perform above and beyond their basic role prescriptions. Interestingly, the results also indicate that organizational identification and work engagement sequentially mediate the relationship between transformational leadership and both job performance and OCBO. Thus, transformational leaders are more effective in enhancing frontline employee performance in the hospitality industry because they motivate their followers to identify with their organizations, which, in turn, increases their level of engagement.

Finally, the results reveal an interaction effect of transformational leadership and proactive personality on both organizational identification and work engagement, such that, when proactive personality is stronger, the relationship between transformational leadership and identification and engagement becomes stronger. Based on the findings, theoretical and managerial implications are discussed.

5.1. Theoretical implications

This research contributes to the literature in several ways. First, in response to calls for more research into the different influence processes involved in transformational leadership (Holten et al., 2018; Pan and Lin, 2015; Patiar and Wang, 2016), this study explores the underlying mechanisms that link transformational leadership and frontline employee performance in the hospitality industry. Extant research has found that transformational leadership behaviors predict in-role performance and OCB through different mediators, such as followers' perceptions of core job characteristics (Piccolo and Colquitt, 2006), leader–member exchange (Wang et al., 2005) and role ambiguity and trust in one's manager (MacKenzie et al., 2001). Drawing on SIT and SET, this study extends these previous findings by investigating the importance of frontline employees' organizational identification and work engagement in hospitality companies.

Second, few studies have investigated the potential sequential mediation effects of the mechanisms underlying the link between transformational leadership and employee performance (Walumbwa and Hartnell, 2011). In particular, although past research has suggested a relationship between identification and engagement, empirical evidence for this has only recently been found (e.g. He et al., 2014; Karanika-Murray et al., 2015) and no research has investigated how these two mechanisms function together in explaining the relationship between transformational leadership and frontline employee performance. Our results confirm the presence of this sequential mediation effect in the hospitality industry and extend past research by demonstrating that identification with the organization and work engagement may help explain the relationship between leadership styles and frontline employee performance.

Third, this research explores the boundary conditions that qualify the relationship between transformational leadership and employees' organizational identification and work engagement. Although previous research has underlined the importance of employee proactive personality (e.g., Bakker et al., 2012), to the best of our knowledge researchers have not yet explored the moderating role of proactive personality on the relationship between transformational leadership and these variables. The results show that employee proactive personality is important, as the positive effects of transformational leadership are strengthened when frontline employees have a proactive personality. Thereby, the relationships between a leader's transformational leadership and his/her followers' level of organizational identification and work engagement should not be regarded as constant, since they depend on the employees' personality traits, such as proactive personality. In other words, these relationships are not the same for all employees, but differ depending on the employees' personalities. As such, this study reinforces the idea that personality traits should be considered as means to account for heterogeneity in the relationships between leaders and followers within an organization. Thus, this study contributes to transformational leadership and proactive personality literature and responds to calls for a better understanding of how individual personality traits influence employees' perceptions and responses to different leadership styles (Antonakis et al., 2012; Zaccaro, 2012).

5.2. Managerial implications

This study provides several managerial implications and offers managers in this industry a comprehensive framework by which to understand how frontline employee performance is created. First, the tourism and hospitality industry may benefit from recruiting managers who are high in transformational leadership style. Therefore, hotels should consider type of leadership style when recruiting and when promoting and training supervisors. Managers should, among other behaviors: adopt transformational leadership practices, such as communicating and reinforcing the vision, mission, goals and objectives of the hotel; create supportive organizational cultures; foster both upward and downward communication; act as mentors; pay attention to employees' needs; and use active listening. Of note is the fact that work engagement and organizational identification play a very important mediating role in the relationship between transformational leadership

and frontline employees' performance. This suggests that, in the hospitality sector, transformational leaders can create conditions within the company to encourage employees to go the extra mile and to exhibit discretionary behaviors. Consequently, hospitality managers should be aware of their potential as transformational leaders who can define the organizational climate and culture that lead to the achievement of organizational goals.

Second, customers' perceptions and opinions are very important in the tourism and hospitality industry (Viglia et al., 2014). As frontline employees are the link between the organization and its customers, increasing the identification and engagement of the former is a critical challenge to encourage positive outcomes, such as better performance and behaviors that, although not directly or explicitly recognized by the formal reward system, are essential for the achievement of organizational goals. Therefore, hospitality organizations should create environments that promote work engagement and encourage employees' identification with their organizations. This is especially relevant in the tourism and hospitality industry, in which many employees have poor working conditions, such as low wages and unsocial working hours, which can diminish their energy, enthusiasm and immersion in their work, as well as their identification with their organization. Hotel managers could also periodically monitor identification and engagement levels among their employees, as this may enable them to implement changes before low levels in these aspects result in poor performance or inappropriate behaviors.

Finally, the interactive findings related to the moderating effect of proactive personality also have some practical implications for organizations. Human resource managers should select frontline employees with proactive personalities. It would be valuable to be able to assess the proactive personality of job applicants during selection and promotion processes. For example, organizations that want to foster organizational identification and work engagement may become more successful if they can find the right combination of transformational leaders and highly proactive followers. Hotels should implement strategies to develop and stimulate proactivity among their employees and reward employees that show initiative, seek out opportunities and stimulate meaningful change. Similarly transformational leaders should acknowledge the importance of the proactive personality trait and recognize how it can foster the positive effects of their leadership behaviors. Given that frontline employees with proactive personalities are found to better respond to transformational leadership in the form of higher identification and engagement, organizations should seek to match their supervisors' leadership styles with their subordinates' personalities. This would help organizations enhance their frontline employees' willingness to perform well, exhibit discretionary behaviors and to minimize conflicts between leaders and followers.

5.3. Limitations and suggestions for future research

As with all research, there are limitations to this study. First, the empirical study is cross-sectional. Therefore, longitudinal research could provide more insight into probable causation and facilitate better understanding of the relationships explored in the study. Second, this study relies only on frontline employee self-report measures. Therefore, future research could adopt a dyadic perspective to analyze both managers' and frontline employees' views. In addition, more objective measures could be included to minimize the effects of any response bias, such as social desirability bias. In fact, future research should examine the impact of transformational leadership, organizational identification and engagement in objective measures of job performance by considering the nature of the work outcomes for frontline employees. Therefore, it would be worthwhile to consider the use of more objective indicators related to productivity, efficiency, service quality and service recovery performance (Babakus et al., 2003; Rich et al., 2010). Third, this research focuses on frontline hotel employees in only one country. Further research could consider other countries to provide broader insights into the effects of transformational leadership and proactive personality on employee outcomes.

Despite the limitations, this work reveals why and under what circumstances hotel frontline employees perform the way they do, and informs hotel managers about this process to enable them to make more informed decisions.

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Appendix A. Measurement scales

TRANSFORMATIONAL LEADERSHIP
My supervisor…
TL1….communicates a clear and positive vision of the future
TL2….treats staff as individuals, supports and encourages their development
TL3….gives encouragement and recognition to staff
TL4….fosters trust, involvement and cooperation among team members
TL5….encourages thinking about problems in new ways and questions assumptions
TL6….is clear about his/her values and practices what he/she preaches
TL7….instills pride and respect in others and inspires me by being highly competent

PROACTIVE PERSONALITY
PP1. I am always looking for better ways to do thing
PP2. I excel at identifying opportunities
PP3. I am constantly on the lookout for new ways to improve my life

ORGANIZATIONAL IDENTIFICATION
OID1. I feel strong ties with this hotel
OID2. I experience a strong sense of belonging to this hotel
OID3. I feel proud to work for this hotel
OID4. I am glad to be a member of this hotel

WORK ENGAGEMENT
Vigor
VIG1. At my work, I feel bursting with energy
VIG2. When I get up in the morning, I feel like going to work
VIG3. At my job I feel strong and vigorous
Dedication
DED1. I am proud of the work that I do
DED2. I am enthusiastic about my job
DED3. My job inspires me
Absorption
ABS1. I get carried away when I am working
ABS2. I feel happy when I am working intensely
ABS3. I am immersed in my work

JOB PERFORMANCE
JP1. As employee, I get along better with customers than do others
JP2. I know more about services delivered to customers than others
JP3. I know what my customers expect better than others

ORGANIZATIONAL CITIZENSHIP BEHAVIORS DIRECTED AT THE ORGANIZATION
Concerning my work at this hotel, I…
OCBO1.….attend functions that are not required but that help the organizational image
OCBO2.….offer ideas to improve the functioning of the organization
OCBO3.….take action to protect the organization from potential problems

Appendix B. Results of the complete structural model

Structural paths	β	t-value	Control variables		
TL → JP	0.253	3.692	Relationships	β	t-value
TL → OCBO	0.014	0.182	Age → OID	0.067	0.886
			Age → WEN	0.001	0.010
TL → OI	0.533	8.747*	Age → JP	−0.026	0.346
			Age → OCBO	0.008	0.122
PP → OI	0.159	2.468*	Tenure → OID	0.096	1.458***
			Tenure → WEN	0.029	0.618
TL → WEN	0.202	2.918*	Tenure → JP	0.045	0.662
			Tenure → OCBO	0.006	0.136
PP → WEN	0.322	5.303*	Size → OID	0.041	1.020
			Size → WEN	0.039	1.159
OI → WEN	0.462	8.454*	Size → JP	0.023	0.548
			Size → OCBO	0.033	0.635

OI → JP	0.014	0.433	R^2 (OID) = 0.403; R^2 (WEN) = 0.632
			R^2 (EP) = 0.425; R^2 (OCBO) = 0.252
WEN → JP	0.415	4.308*	Q^2 (OID) = 0.311; Q^2(WEN) = 0.474
OI → OCBO	0.170	2.312**	Q^2 (EP) = 0.272; Q^2 (OCBO) = 0.113
WEN → OCBO	0.234	2.562*	
Moderating relationships			
TL * PP → OI	0.117	1.657*	
TL * PP → WEN	0.125	2.128*	
Mediating relationships			
Mediation paths	β	t-value	Confidence interval (5%-95%)
TL → OID → JP	0.008	0.169	(-0.066;0.082)
TL → OID → OCBO	0.091	2.291**	(0.024; 0.143)
TL → WEN → JP	0.084	2.478**	(0.033; 0.144)
TL → WEN → OCBO	0.047	1.972**	(0.010; 0.088)
TL → OID → WEN → JP	0.102	3.187*	(0.053; 0.158)
TL → OID → WEN → OCBO	0.058	2.176**	(0.016; 0.102)

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Transformational Leadership and Job Performance: The Mediating Role of Work Engagement

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Abstract

This study proposed that transformational leaders use various behaviors to provoke followers' organizationally beneficial behaviors (e.g., better task performance and helping behaviors) through ignition of followers' work engagement. That is, employees who inspired by transformational leadership are more likely to immerse themselves in the work, and, in turn, this is likely to result in better task performance and helping behaviors. In this study, we adopted a multitemporal and multisource research design to reduce the consideration of common method variance. Hypotheses were tested on a sample of 507 nurses working in 44 teams. The hierarchical linear regression analysis showed that, after controlling for several relevant variables (e.g., leader–member exchange [LMX], role-based self-efficacy, and transactional leadership) and several participants' demographic variables (e.g., gender, age, and education), work engagement still mediates the positive relationship among transformational leadership, job performance, and helping behavior. Strengths, limitations, practical implications, and directions for future research are discussed.

Keywords

transformational leadership, work engagement, task performance, helping behavior, motivation

Introduction

To deal with an increasingly complex and fast-changing environment, leaders need organizational members who invest their full attention and energy in achieving the formal job requests documented in the employment contract. Members must also be willing to invest extra effort and exceed formal job expectations. Members must go further, because when tasks are interdependent, job descriptions do not and cannot include all types of behavior needed to perform job requests. For example, the job description cannot specify exactly when and how members ask for help from peers or help others, because this behavior is discretionary (Organ, 1997). Thus, it is important for leaders to understand the antecedent and underlying processes that motivate members to perform their in-role job requests well and make them willing to perform beneficial behavior not included in formal employment contracts.

In the workplace, leaders influence members' behavior, because they are viewed as a representative example of the organization and possess the authority to evaluate members' performance or make decisions pertaining to their promotion. Therefore, leaders' behavior may shape members' behavior. As a prevalent leadership style, all levels of leaders in the organization can exhibit transformational leadership (Fuller et al., 1996; Judge & Piccolo, 2004). Through four behaviors (i.e., idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration), transformational leaders can change members' behaviors, encouraging them to exceed expectations (Bass, 1985). The effectiveness of transformational leadership has been examined in much theoretical and empirical research, which suggests that it enhances and affects members' task performance and helping behavior (e.g., Chun et al., 2016; Dust et al., 2014; G. Wang et al., 2011; W. Zhu et al., 2013). Moreover, the benefits of transformational leadership for members' performance are conveyed through numerous underlying

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mechanisms including self-efficacy (e.g., Hannah et al., 2016) or leader–member exchange (LMX) (Chun et al., 2016; Nohe & Hertel, 2017).

Although prior research examined the underlying processes of the relationships between transformational leadership and beneficial outcomes, few attempted to address how transformational leaders *motivate* their members (Shamir et al., 1993) to help them achieve in-role task requests and exceed expectations (Bass, 1985). Understanding the underlying motivation process is important, because motivation is considered a critical component that molds members' behavior (e.g., Pinder, 2011). Furthermore, prior research highlights the positive relationship between motivation and members' performance (e.g., Cerasoil et al., 2014). However, research examining this motivation process is limited (e.g., Shamir et al., 1993). W. Zhu et al. (2009) suggested work engagement (Kahn, 1990, 1992) as an important but neglected mechanism deserving more attention. Work engagement was proposed as a motivational construct (Kahn, 1990) and describes how employees express themselves physically, cognitively, and emotionally while performing work roles. Moreover, research indicates that enhanced work engagement is related to increased task performance and helping behaviors (Rich et al., 2010). Therefore, in this study, we adopt a motivation perspective and propose an integrated theoretical model, arguing that transformational leaders can enhance members' task performance and helping behaviors by fostering their work engagement.

This study extends several aspects of the extant transformational leadership literature. First, we address the call of previous research to investigate the processes underlying transformational leadership and beneficial work outcomes (G. Wang et al., 2011). Although researchers have progressed in identifying potential mediators, the motivational aspect (i.e., work engagement) of the influence of transformational leadership still needs attention. Work engagement is worthy of investigation for two reasons. One is that because motivation shapes employees' behavior, it is critical that transformational leaders understand how to enhance members' performance through motivation. The other is that in a dynamic environment, leaders always require and ask that members focus their full attention and energy on their tasks. Thus, work engagement could be a possible mediator that transmits the influence of transformational leadership on members' task performance and helping behavior. Second, unlike prior research (e.g., Breevaart et al., 2016; H. Li et al., 2019), this study attempts to clarify the mediation effect of work engagement and rule out alternate mediating mechanisms. Therefore, LMX and self-efficacy were controlled as possible mediators (Chun et al., 2016; Hannah et al., 2016; Nohe & Hertel, 2017), because they increase members' task performance and helping behavior (e.g., Beauregard, 2012; Chun et al., 2016; Martin et al., 2016; Sitzmann & Yeo, 2013). In addition, transactional leadership (i.e., contingent reward; Podsakoff et al., 1990) was controlled, because it is highly correlated with transformational leadership (Judge & Piccolo, 2004) and might influence members' task performance and helping behavior (G. Wang et al., 2011). Controlling these variables better clarifies the relationship between transformational leadership, task performance, and helping behavior, extending this study beyond previous research (e.g., Breevaart et al., 2016; H. Li et al., 2019). Third, we provide concrete practical implications for human resource managers to design personnel selection and training programs for transformational leaders. Finally, regarding methodology, although previous studies examined the relationship between transformational leadership, work engagement, and outcomes (e.g., Salanova et al., 2011; Song et al., 2012), we followed recommendations (N. Li et al., 2013; Y. Zhu & Akhtar, 2014) to address concerns regarding common method variance (CMV; Podsakoff et al., 2012) by adopting a temporal research design and collecting data from two sources: leaders and members. Moreover, unlike experimental investigations (e.g., Kovjanic et al., 2013), our data were collected from a real working situation; thus, the findings of this study are easier to generalize to other organizations.

Theory and Hypotheses

Work Engagement

To maintain high levels of productivity and functional effectiveness, organizations must ensure that their employees are focused and invest their full energy into accomplishing tasks. Kahn (1990) proposed the concept of work engagement to assess the extent of an employee's psychological presence or absence at work. Work engagement refers to "the simultaneous employment and expression of a person's 'preferred self' in task behaviors that promote connections to work and to others, personal presence (physical, cognitive, and emotional), and active, full performances" (Kahn, 1990, p. 700). For example, employees who display a high level of work engagement are psychologically present; fully *there*; and employ and present themselves physically, cognitively, and emotionally throughout their role performance. In contrast, disengaged employees demonstrate withdrawal and defensiveness during role performance. Furthermore, engaged employees are attentive, connected, integrated, and focused on their task performance. They are more open to others, willing to make connections with others at work, and more likely to bring their whole selves to execute their work roles (Kahn, 1992). Moreover, work engagement determines the levels of investment employees are willing to endow during work role performance (Kahn, 1990).

Work engagement comprises three components: *psychological meaningfulness, psychological safety*, and *psychological availability*. Psychological meaningfulness refers to how employees perceive the return on their physical, cognitive, and emotional energy investment in work role performance (Kahn, 1990). When employees feel worthwhile,

useful, and valuable in their current work role, they experience meaningfulness (Kahn, 1990). Psychological safety refers to a safe and trusted situation in which employees can freely express themselves without fears of negative outcomes to their self-image, status, or career (Kahn, 1990). When situations are unsafe or risky, such as by being unpredictable or threatening, employees' work engagement suffers. Psychological availability refers to employees' sense of having enough physical, emotional, or psychological resources to effectively deal with a specific situation (Kahn, 1990). In the workplace, employees are confronted with various challenges and demands, and the availability of resources employees possess or can access affects their degree of work engagement in role performance.

Transformational Leadership and Work Engagement

According to Bass (1985), transformational leadership comprises four dimensions. First, *idealized influence* is the degree to which followers realize leaders' value, confidence, belief, power, and ethical or moral orientation; their willingness to identify with these attributes; and a diversion from self-interest to higher collective goals (Antonakis & House, 2002). Second, *inspirational motivation* describes how leaders articulate visions to inspire and motivate subordinates to reach desired goals (Antonakis & House, 2002). Third is *intellectual stimulation*, which refers to leaders who challenge the status quo and underlying assumptions, encourage followers to do so, and are open to new and creative solutions to problems (Antonakis & House, 2002). The final dimension is *individualized consideration*. Here, like mentors or coaches, leaders provide emotional support and consideration for each follower (Antonakis & House, 2002). Through these four dimensions, transformational leaders engage followers and accomplish significant outcomes (Burns, 1978).

Members' choice regarding when to be fully present and engaged at work is shaped by internal (e.g., meaningful goals and safety feelings) and external (e.g., availability of resources) factors (Kahn, 1992). Through these factors, leaders may influence how followers choose to be present (not necessarily physically present) and engaged. In work teams, transformational leaders provide holistic and challenging but attainable goals, and encourage followers to look beyond their self-interests to achieve collective goals. Transformational leaders infuse these holistic and collective goals with moral purpose and commitment (House & Shamir, 1993; Shamir et al., 1993), and convince members that these goals are more meaningful to pursue than their personal ones. Thus, they deserve the investment of additional energy. Moreover, to emphasize the importance of goals, similar to role models (House & Shamir, 1993), transformational leaders invest their full resources in attaining these goals. House and Shamir (1993) added that transformational leaders increase the intrinsic value of goal accomplishment and foster followers' commitment, attaching a sense of meaningfulness to goals. Thus, both idealized influence and inspirational motivation might make members believe that collective goals are meaningful (i.e., psychological meaningfulness) and attainable, and more willing to present themselves physically, cognitively, and emotionally at work.

Although transformational leaders may successfully divert followers from self-serving to holistic and challenging goals, some difficulties might arise during this process. For followers, challenging and holistic goals imply high risk; thus, unforeseen failures may occur during work role performance. This unsafe feeling and unpredictability of outcomes hinder members' desire to strive for these goals, unless leaders create a safe and supportive environment (Kahn, 1990) in which they can express themselves without fears of negative consequences. Transformational leaders pay personal attention to each member, try to understand their needs, and provide emotional support when they are frustrated at work. These supportive gestures enhance members' feelings of safety and encourage them to present their preferred self when working on tasks. For example, earlier research contended that transformational leadership could increase perceived supervisor support (Liaw et al., 2010). Thus, individualized consideration might make members feel psychological safety and, in turn, increase their willingness to fully present themselves at work (i.e., to be engaged at work).

Transformational leaders not only comfort members when dealing with challenging goals but also enhance members' problem-solving abilities. That is, transformational leaders use intellectual stimulation to encourage members to question the status quo and approaches, and invite their opinions or solutions to improve productivity and conserve resources (e.g., energy). As such, transformational leaders encourage members to effectively use their intelligence or experience, view problems from various angles (Bass, 1985; House & Shamir, 1993), master the problem-solving process, and determine the best solution to improve efficiency. This implies that leaders can offer enough resources (e.g., physical, emotional, or psychological) to members to try new solutions to task-related problems. This might result in psychological availability and enhance members' work engagement.

Thus, this study assumes that transformational leaders provide holistic and collective goals for followers and convince them that these goals are meaningful. Furthermore, acts of individualized consideration support members who fear possible negative outcomes if they present their genuine selves at work. Moreover, the provision of tangible and intangible resources enhances members' desire to be psychologically present at work. In short, this study expects that through the abovementioned four behaviors, transformational leaders can stimulate their members into becoming more engaged in their takes. Prior research (e.g., Chua & Ayoko, 2019; Ghadi et al., 2013; Vila-Vázquez et al., 2018;

W. Zhu et al., 2009) suggests that transformational leaders enhance members' work engagement through these four dimensions. Therefore, this study proposes the following:

Hypothesis 1 (H1): Transformational leadership is positively related to work engagement.

Work Engagement, Task Performance, and Helping Behaviors

Kahn (1990, 1992) argued that once members believe that goals are meaningful and important, their environment is safe, threats of possible negative consequences are absent when they express themselves, and resources will be available when needed, they are more willing to be psychologically present and more inclined to invest their energies into performing their designated work roles. Engaged members concentrate their physical efforts on pursuing desirable goals, and remain focused on tasks and emotionally connected to the role (Ashforth & Humphrey, 1995; Kahn, 1990). Specifically, engaged members deploy themselves to the work role and devote their physical energies to behaviors that directly contribute to accomplishing organizational goals for extended periods (Kahn, 1990, 1992). To achieve organizational goals, they also devote their cognitive energies to behaviors that require vigilance, attention, and concentration (Kahn, 1990). Moreover, the investment of emotional energy promotes emotional connections with coworkers, facilitates the attainment of organizational goals (Ashforth & Humphrey, 1995), and results in better performance. Therefore, engaged members perform better, because they invest more physical energy with greater intensity for a longer period, cognitive energy with greater attention and focus on goal-related behaviors, and emotional energy to connect with work roles.

Role theory (Katz & Kahn, 1978) suggests that work roles comprise task and social roles. Social roles often require extra-role behaviors from members, which are not written in a formal contract but are good for the organization (Van Dyne et al., 1995). Although these behaviors do not link directly to organizational rewards, they benefit the whole team, as they enable members to work more smoothly and effectively together (Organ, 1988). To the extent that engaged members should be more willing to invest their energies and step outside formally defined role behaviors, their wider array of work behaviors (including extra-role behaviors) is more likely to contribute to achieving organizational goals (Rich et al., 2010). Moreover, Van Dyne et al. (1995) suggest that members with high job involvement perform more helping behaviors.

Essentially, earlier studies demonstrated that engaged members are more likely to obtain a higher rating for task performance (e.g., Owen et al., 2015; Rich et al., 2010) and are more willing to help their peers (e.g., Demerouti et al., 2015; Rich et al., 2010). Therefore, this study proposes the following:

Hypothesis 2a (H2a): Work engagement is positively related to task performance.
Hypothesis 2b (H2b): Work engagement is positively related to helping behaviors.

The Mediating Role of Work Engagement

Transformational leadership theory suggests that exceptional leaders have an extraordinary influence on their followers (Shamir et al., 1993). Such leaders transform followers' needs, values, and preferences from self-interest goals to collective-interest goals. Furthermore, they are more likely to engage followers in being committed to these goals, willing to make personal sacrifices for the interest of collective goals, and eventually perform beyond the call of duty. Prior research supports the positive relationship between transformational leadership and members' task performance and helping behavior (e.g., Chun et al., 2016; Dust et al., 2014; G. Wang et al., 2011; W. Zhu et al., 2013). This study suggests that work engagement underlies this positive influence. Specifically, transformational leaders enhance members' work engagement through articulating a meaningful goal, offering a safe and supportive environment, and providing accessible resources. These engaged members are then more willing to invest their physical, cognitive, and emotional energies in performing their work roles. Moreover, because of a wider variety of work behaviors, engaged members are more likely to help their peers. In summary, this study proposes that work engagement will mediate the positive relationship between transformational leadership, task performance, and helping behavior:

Hypothesis 3a (H3a): Work engagement mediates the positive relationship between transformational leadership and task performance.
Hypothesis 3b (H3b): Work engagement mediates the positive relationship between transformational leadership and helping behaviors.

Method

Sample and Procedure

Data were collected from two hospitals in Taiwan. To reduce concerns pertaining to CMV (Podsakoff et al., 2012), we collected data from leaders and members, and adopted a multitemporal research design with three-wave data collection points spaced 3 months apart.

Before administering the surveys, we contacted the head nurses and explained the aims of the study. After obtaining their approval, we visited and showed them how to administer the three-wave questionnaires. In the first wave, nurses rated

the transformational leadership of head nurses and their demographic information (e.g., gender, age, and education). In the second wave, nurses were asked to report their work engagement. In the final wave, nurses' task performance and helping behaviors were assessed by their head nurses. The questionnaires were completed during nurses' morning meetings and returned to us in a sealed envelope. To match each wave of questionnaires, we assigned each nurse and head nurse an identification number written on the questionnaire.

In total, 566 nurses participated in the three-wave data collection; however, after eliminating invalid questionnaires (e.g., missing data), the final sample size was 507 nurses working in 44 teams. Of the participants, 98.9% were female, the average age was 31.43 ($SD = 7.17$) years, and nearly all participants have a junior college diploma (99.1%). In addition, the average work experience was 8.32 ($SD = 6.69$) years and average tenure in the current ward was 3.89 ($SD = 3.03$) years. The average team size was 13 (ranging from 2 to 41). Furthermore, all head nurses are female and have a junior college diploma. Their average age was 41.4 ($SD = 6.91$) years and average work experience 18.58 ($SD = 5.39$) years.

Measures

All measures were rated on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Transformational leadership. In this study, nurses were instructed to rate their perceptions of head nurses' transformational leadership on a 14-item transformational leadership scale (Podsakoff et al., 1990). This scale was also adopted in other studies (MacKenzie et al., 2001). The overall alpha coefficient was .94.

Work engagement. Nurses completed an 18-item work engagement scale (Rich et al., 2010). This scale has been adopted in earlier studies (Alfes et al., 2013). We used the scale to measure nurses' work engagement. The overall alpha coefficient was .93.

Task performance. Head nurses were asked to report each nurse's task performance on a three-item scale (Farh et al., 1991). The scale has been adopted in previous work (A. C. Wang et al., 2013). The alpha coefficient was .90.

Helping behaviors. Head nurses were asked to rate nurses' helping behaviors on a four-item scale (Van Dyne & LePine, 1998), which Chen et al. (2015) adopted in their study. The alpha coefficient was .93.

Control Variables

Prior research indicated that transformational leadership influences follower behaviors through several mechanisms (e.g., LMX and self-efficacy). Therefore, we controlled for participants' LMX (Chun et al., 2016; Nohe & Hertel, 2017) and role-based self-efficacy (Hannah et al., 2016). We used Scandura and Graen's (1984) seven-item scale to measure LMX (the alpha coefficient was .94). To measure role-based self-efficacy, we adopted the seven-item scale developed by Parker et al. (2006) (the alpha coefficient was .92). In addition, for two reasons, we also controlled for transactional leadership, which following prior research (Podsakoff et al., 1990), we defined as contingent reward. The first reason is that transactional leadership is highly associated with transformational leadership (Judge & Piccolo, 2004). Second, it influences members' task performance and helping behavior (G. Wang et al., 2011). We adopted a five-item contingent reward scale (Podsakoff et al., 1990) to measure transactional leadership (the alpha coefficient was .90). Furthermore, consistent with prior research (e.g., Chun et al., 2016; Dust et al., 2014; W. Zhu et al., 2013), we controlled several demographic variables (e.g., age, gender, and education). We also controlled for nurses' work experience and tenure in the current ward, because these variables might influence task performance and helping behavior (Bauer & Green, 1996; Duchon et al., 1986; Ng & Feldman, 2010).

Analysis

Given the nested structure of our data and the potential consideration of nonindependence (Bliese & Hanges, 2004), we conducted a multilevel path analysis (Kaplan, 1998) in Mplus 7.4 (Muthén & Muthén, 1998–2012) to test the hypotheses. We then separately calculated the intraclass correlation coefficient (e.g., ICC1; Bryk & Raudenbush, 1992) for task performance and helping behavior. According to the results, the coefficient of ICC1 for task performance was 0.31, and 0.32 for helping behavior, both larger than the recommended cutoff point of 0.12. This supports the appropriateness of using multilevel modeling to test the hypotheses (Bliese, 2000).

Results

Table 1 presents the mean values, standard deviations, and correlations between the variables employed in this study. In addition, the alpha coefficients are shown on the diagonal.

Before testing the hypotheses, we conducted a series of confirmatory factor analyses (CFA) to ensure the discriminant validity of the measures. In addition, because Table 1 indicates that some control variables (such as LMX and transactional leadership) have high correlations with the main variables (such as transformational leadership), we included these variables in CFA. Table 2 shows that the two-factor model, in which transformational leadership, LMX, role-based self-efficacy, transactional leadership, and work engagement were combined into one factor (reported by nurses) and task performance and helping behavior into another (both reported by head nurses), is better than the null model ($\Delta\chi^2 = 5{,}293.38$; $df = 1$; $p < .001$). Finally, the seven-factor baseline model is better than the two-factor

Table 1. Descriptive Statistics and Intercorrelations Matrix of the Study Variables ($n = 507$).

Variables	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12
1. Gender	1.01	0.11												
2. Age	30.90	7.03	–.03											
3. Education	2.57	0.072	.07	.04										
4. Work experience	7.94	6.48	–.04	.91***	.01									
5. Tenure in the current ward	3.90	3.06	–.01	.31***	.05	.38***								
6. Transformational leadership	3.57	0.60	–.01	–.13***	–.03	–.08	–.04	(.94)						
7. Transactional leadership	3.57	0.67	–.01	–.11*	.01	–.07	–.03	.83***	(.90)					
8. Leader–member exchange	3.49	0.68	.01	–.08	–.01	–.05	–.02	.83***	.82***	(.94)				
9. Role-based self-efficacy	2.98	0.61	.04	.11*	.08	.12*	.10*	.19***	.18***	.28***	(.92)			
10. Work engagement	3.47	0.46	–.04	.15**	.07	.18***	.04	.22***	.19***	.18***	.25***	(.93)		
11. Task performance	3.14	0.54	.05	.30***	.09	.30***	–.02	–.01	–.04	–.01	.07	.18***	(.90)	
12. Helping behavior	3.21	0.56	.08	.31***	.06	.28***	–.07	–.04	–.05	–.03	.04	.16***	.89***	(.93)

Note. Cronbach's alphas appear across the diagonal in parentheses.
*$p < .05$. **$p < .01$. ***$p < .001$.

Table 2. Confirmatory Factor Analysis.

Fit index	Factors	χ^2	*df*	$\Delta\chi^2$ (*df*)	RMSEA	SRMR	NNFI	CFI	AIC
Null model	One factor	11,610.35	1,595		0.12	0.18	0.36	0.39	45,929.34
Baseline model	Seven-factor model	3,166.87	1,567	6,578.55(27)***	0.05	0.06	0.9	0.9	34,545.63
Alternative model	Two-factor model[a]	9,745.42	1,594	5,293.38(1)***	0.11	0.16	0.48	0.5	43,097.24

[a]Two factors: transformational leadership, LMX, role-based self-efficacy, transactional leadership, and work engagement were combined into one factor, and task performance and helping behavior were combined into the other. RMSEA = root mean square error of approximation; SRMR = standardized root mean squared error; NNFI = non-normed fit index; CFI = comparative fit index; AIC = Akaike information criterion.
***$p < .001$.

model ($\Delta\chi^2 = 6{,}578.55$; $df = 27$; $p < .001$). As such, the results of the CFA provide support for the discriminant validity of our measures.

Hypothesis 1 postulated that transformational leadership has a positive relationship with work engagement. The results are provided in Table 3. After controlling for several variables in Model 1, the results significantly relate transformational leadership with work engagement (unstandardized $b = .18$, $SE = .06$; $p < .01$), supporting Hypothesis 1.

In Hypotheses 2a and 2b, we proposed that work engagement is positively related to followers' task performance and helping behavior. For task performance, the results in Table 3 are shown in Model 2. Similarly, after controlling several variables, work engagement was significantly and positively related to task performance (unstandardized $b = .23$, $SE = .07$; $p < .001$). For helping behavior, the results are provided in Model 3, and work engagement was significantly related to helping behavior (unstandardized $b = .24$, $SE = .07$; $p < .001$). Therefore, both Hypotheses 2a and 2b were supported.

In Hypothesis 3a, we postulated that work engagement mediates the relationship between transformational leadership and task performance. The results are provided in Table 3. In model 2, the results indicated that the relationship between transformational leadership and task performance was not significant (unstandardized $b = .12$, $SE = .08$; *ns*), but work engagement was significantly related to task performance (unstandardized $b = .23$, $SE = .07$; $p < .001$). Thus, Hypothesis 3a was supported.

In Hypothesis 3b, we predicted that work engagement mediates the relationship between transformational leadership and helping behavior. The results are reported in Table 3. Similarly, the results showed that transformational leadership was not significantly related to helping behavior (unstandardized $b = .10$, $SE = .07$; *ns*), although work engagement was significantly related to helping behavior (unstandardized $b = .24$, $SE = .07$; $p < .001$). As such, Hypothesis 3b was supported.

We also conducted the Sobel test to analyze the mediation effect. The results of the Sobel test on helping behavior and task performance were both significant ($p < .05$). In addition, Preacher and Hayes (2004) suggest conducting a bootstrapping analysis as a supportive test for the mediating effect of work engagement. The results of the bootstrapping test show that the relationships between transformational leadership, work engagement, helping behavior, and task performance are all significant (for task performance, $ab = .04$, 95% confidence interval [CI] = [0.01, 0.08], $p < .05$; for helping behavior, $ab = .04$, 95% CI = [0.01, 0.09], $p < .05$). Thus, Hypotheses 3a and 3b were supported.

Table 3. Multilevel Structural Equation Modeling of the Meditation Effect ($n = 507$).

	Model 1	Model 2	Model 3
	Work engagement	Task performance	Helping behavior
Control variables			
Gender	−0.14 (0.15)	0.29 (0.13)*	0.38 (0.15)**
Age	0.00 (0.01)	0.00 (0.01)	0.01 (0.01)
Education	0.05 (0.03)	0.03 (0.04)	0.03 (0.03)
Work experience	0.01 (0.01)	0.02 (0.01)	0.01 (0.01)
Tenure in the current ward	−0.01 (0.01)	−0.02 (0.01)	−0.02 (0.01)*
Role-based self-efficacy	0.15 (0.03)***	−0.02 (0.05)	−0.02 (0.06)
Leader–member exchange	−0.07 (0.04)	−0.02 (0.06)	−0.01 (0.06)
Transactional leadership	0.08 (0.05)	−0.07 (0.07)	−0.06 (0.07)
Independent variable			
Transformational leadership	0.18 (0.06)**	0.12 (0.08)	0.10 (0.07)
Mediator			
Work engagement		0.23 (0.07)***	0.24(0.07)***

*$p < .05$. **$p < .01$. ***$p < .001$.

Discussion

This study addressed the influence of transformational leadership on followers' task performance and helping behavior by investigating work engagement as one possible underlying mechanism. Specifically, we propose that transformational leaders exhibit various behaviors to nurture and enhance the psychological states that contribute to members' work engagement. Members fully involved in their current tasks psychologically and physically are more likely to receive higher performance ratings and more willing to help others achieve goals. Therefore, transformational leaders can enhance followers' performance and foster their helping behaviors, because they induce members' work engagement and enable them to exceed expectations. Our findings support these statements and are consistent with earlier research on transformational leadership (e.g., Breevaart et al., 2016; H. Li et al., 2019; Salanova et al., 2011; Song et al., 2012) that examine work engagement as the process underlying the effect of transformational leadership on members' behaviors. However, unlike prior research, this study adopted a more rigorous research design to examine these relationships. Specifically, after controlling several relevant variables and adopting a multitemporal and multisource research design, work engagement still mediates the relationship between transformational leadership and employees' task performance and helping behavior.

Theoretical Implications

The findings of this study make several contributions in terms of expanding previous models of transformational leadership to more prominently explicate the role of motivation in members' beneficial behaviors. The first contribution of this study is that we echo other researchers' appeals (G. Wang et al., 2011) to examine the process underlying the influence of transformational leadership on desirable outcomes. In this study, we argue that transformational leaders could change member behaviors through developing employee work engagement. Transformational leaders offer meaningful goals and switch member concerns from their self-interests to collective goals. They also provide a safe and supportive environment that encourages followers to invest their energy in current tasks. Moreover, transformational leaders provide useful resources members can easily access. When followers are motivated to be engaged at work, they stay focused on their current role and tasks and invest their full energy in behaviors that directly or indirectly contribute to achieving organizational goals. Our findings reveal that after controlling for LMX, role-based self-efficacy, and transactional leadership, work engagement fully mediated the positive relationship between transformational leadership and members' task performance and helping behaviors. Thus, these findings indicate that work engagement is a meaningful and insightful motivation mechanism and worthy of more attention in future research on transformational and other types of leadership.

The second contribution of this study is that we expand previous transformational leadership research (e.g., Salanova et al., 2011; Song et al., 2012; W. Zhu et al., 2009) by including transactional leadership as an important control variable, which is generally highly correlated with transformational leadership (G. Wang et al., 2011). Bass (1998) argues that "transformational leadership styles build on the transactional base in contributing the extra effort and performance of followers" (p. 5), and true transformational leaders should exhibit both types of leadership behaviors. Thus, it is reasonable to consider transactional leadership as a control variable when examining the relationship between transformational leadership and members' outcomes. Our results are consistent with this argument, and reveal the augmentation effect of

transformational leadership on transactional leadership in predicting members' work engagement. That is, compared with transactional leadership, which emphasizes the equity between efforts and rewards, transformational leadership—which emphasizes the inspirational vision and collective goal—could motivate employees to invest more of their energy in becoming fully engaged in their current tasks. These results also indicate the augmentation effect of transformational leadership on employees' performance (e.g., G. Wang et al., 2011) and motivation over transactional leadership. Therefore, when examining transformational leadership, future research should consider transactional leadership as a control variable. Moreover, our results coincide with the idea of Lowe et al. (1996), namely, that lower level leaders are more likely to be perceived as transformational leaders than higher level leaders. Lower level leaders (i.e., head nurses) who interact with members (i.e., nurses) daily have more opportunities to showcase transformational leadership behaviors and thus have a greater influence on work unit outcomes (Lowe et al., 1996).

The third contribution of this study is that after controlling several variables that positively affect employees' task performance and helping behavior, our results reveal that engaged members are more likely to be rated for higher task performance and helping behavior than disengaged members. That is, engaged employees are more likely to invest their full physical, cognitive, and emotional energies in overcoming the difficulties of assigned tasks and to accomplish them. Moreover, because engaged employees possess a wider range of work behavior, they are more likely to willingly offer their assistance to and help peers when requested. These findings are consistent with the statement that motivation shapes employees' behavior (Pinder, 2011).

Practical Implications

For practitioners, the findings of this study provide concrete implications for personnel selection and leadership training. The results suggest that lower level transformational leaders (i.e., ward head nurses) can influence members' (i.e., nurses) performance by enhancing their work engagement. That is, during day-to-day interaction, lower level transformational leaders, who have more contact with members, might have more opportunities to instill in members the organization's vision and collective goals. Moreover, in daily interaction, they can also offer emotional support when members feel frustration or help them overcome difficult tasks with new solutions immediately. Thus, through day-to-day interactions and these behaviors, lower level transformational leaders can increase members' engagement in their tasks. This result is consistent with prior research (Lowe et al., 1996), but may contradict traditional practices. In general, the selection process for hiring a lower level manager focuses on technical expertise and is less concerned with interpersonal ability. Lowe et al. (1996) recommend that human resources include interview questions on transformational leadership experiences. For instance, open-ended questions should focus on the manager's experience of providing subordinates with intellectual stimulation when they encounter difficult tasks or soothing them when they feel frustrated and confused. These interview questions may help practitioners select the right candidate with the potential to be a transformational leader.

For leadership training, research highlights that transformational leadership skills can be learned and developed through training programs (Barling et al., 1996). Through these programs, leaders may enhance their coaching skills including how to set unit goals, communicate with members about these goals, motivate members to achieve goals, invent new methods for problem-solving, and cheer up members when they experience setbacks. Moreover, according to our findings, trained transformational leaders are likely to elevate members' level of work engagement and engage in organizationally beneficial behaviors that directly or indirectly enhance organizational effectiveness.

Strengths, Limitations, and Future Research

An important methodological strength of this study is that unlike prior research that adopted cross-sectional research designs (e.g., N. Li et al., 2013; Salanova et al., 2011; Song et al., 2012; Y. Zhu & Akhtar, 2014), we used a multitemporal data collection design to test our theoretical model. Moreover, our data came from two sources, which may reduce concerns regarding CMV (Podsakoff et al., 2012). The second strength of this study was that unlike prior research (Breevaart et al., 2016; H. Li et al., 2019), we ruled out the possible influences of LMX, role-based self-efficacy, and transactional leadership. Controlling for these variables improves the predictive validity of our theoretical model, which proposed that work engagement mediates the relationship between transformational leadership and followers' behavior.

Despite the strengths, our study is not without limitations. First, we only considered two outcomes. It is important for future research to examine beneficial outcomes. For example, transformational leaders encourage members to challenge the status quo and provide a safe, supportive, and resourceful environment. Thus, engaged followers may be more likely to engage in creative behaviors. In addition, because engaged followers focus their full attention on current tasks, they may be better able to find hidden problems and be more courageous in voicing issues than their disengaged counterparts. Thus, we encourage future researchers to examine various outcomes that may be influenced by work engagement.

The second limitation is the scope of the generalizability of our findings. Although the generalizability of our findings might be better than previous experimental investigations (e.g., Kovjanic et al., 2013) in a real work situation, we only

collected data from one profession, namely, medical staff. This may hinder the validity of our findings when generalizing to other occupational groups and industries. Thus, researchers should be cautious when applying our findings to the effectiveness of transformational leadership in other occupational groups and industries. In addition, because our participants are mostly female, the explanation of our findings should be generalized with caution to other occupations and industries that may not have an unbalanced male–female ratio. Thus, we encourage future researchers to replicate our study and collect data from different occupations and industries.

The third limitation is the research design of our theoretical model. Although we adopted a multitemporal, multisource approach to reduce concerns related to CMV and controlled several variables that might influence members' task performance and helping behavior, our findings should be interpreted with caution. That is, potential contextual variables might impact these variables (e.g., a change in organizational structure or policy). For instance, the performance evaluation policy may change during the sampling period, which could influence how leaders evaluate their members. Thus, we encourage future researchers to consider the potential influence of contextual variables and to reduce them. In addition, we recommend that future studies collect data on these variables at all time points and adopt a longitudinal research design. This would ensure causality among these variables.

Although previous research (Fuller et al., 1996; Judge & Piccolo, 2004) considered transformational leadership a universal leadership style evident in all levels of leaders and that the effectiveness of transformational leadership should not be affected by the hierarchical order of leaders in the organization, we should not overlook possible higher level factors that influence transformational leadership, especially for lower level managers. For instance, as discussed, transformational leaders need sufficient resources to support subordinates and create a safe environment. If lower level transformational leaders develop a good exchange relationship with their supervisors, compared with those who do not, they are more likely to receive tangible and intangible resources from these supervisors (Herdman et al., 2017). Therefore, they will be more capable of supporting their followers and cultivating an environment that motivates members to engage in their tasks. In other words, the positive relationship between transformational leadership and work engagement may be mitigated by a lower exchange relationship between leaders and their supervisors. Thus, future research could consider the contingent effect of relational factors among leaders, such as leaders' LMX, which might influence lower level relationships.

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