Leading innovation in an inter-organizational team together: the moderating role of shared leadership behavior in the transitioning between different phases of the open innovation process

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Abstract

Purpose – This study aims to contribute to the open innovation (OI) literature by investigating the transitions between three phases in the OI process (i.e. idea generation, idea promotion and idea realization) and how these are moderated by different forms of shared leadership (i.e. transactional, and transformational) as perceived by participants in the OI process.

Design/methodology/approach – The authors tested a set of hypotheses using moderated mediation PLS-SEM models on a bootstrapped sample of OI participants (N = 173).

Findings – The authors found a direct relationship between idea generation and realization, as well as indirectly through idea promotion. This study implies that the promotion of ideas by participants can be beneficial in inter-organizational OI teams, as promotion of ideas provides a linkage between the generation of ideas and the idea realization phase. However, while shared leadership has been shown to be beneficial in conventional teams, the authors found evidence that this may not be the case in inter-organizational OI teams. Higher levels of shared transformational leadership from colleagues with whom employees do not share the same organizational background may hamper the promotion of ideas.

Originality/value – In contrast to the mainstream view, the authors found significant evidence that transformational shared leadership negatively moderates the direct relationship between idea generation and the promotion of ideas and the indirect relationship between idea generation and realization via idea promotion.

Keywords Open innovation, Innovative behaviour, Shared leadership, Transactional leadership, Transformational leadership, Structural equation modelling

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1. Introduction

Traditionally, innovation processes exclusively occurred within one single organization's own Research and Development (R&D) department (Chesbrough, 2003). Over the recent decades, however, organizations have increasingly chosen to also collaborate with

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stakeholders outside the organization (Ystrom *et al.*, 2018). Consequently, the "traditional" or "closed innovation approach" has been replaced or complemented with an "open innovation process" (Chesbrough, 2003; Hu *et al.*, 2019). Open innovation (OI) can be defined as "a distributed innovation process that relies on purposively managed knowledge flows across organizational boundaries" (Chesbrough and Bogers, 2014, p. 17). Examples of OI practices include a single organization matching problems with external teams and individuals to leverage expertise and partnerships between two or more organizations and R&D teams (Felin and Zenger, 2014). A specific type of OI entails collaborative innovation, where while participants of different organizational backgrounds work together to share and create new knowledge in the process (Ystrom *et al.*, 2018). Collaborative innovation "combines knowledge inflows and outflows and is thus at the core of open innovation" (Bogers, 2012, p. 1).

The use of this alternative innovation paradigm accelerated tremendously in the recent times (Chesbrough, 2020; Patrucco *et al.*, 2022). However, inter-organizational collaboration between participants in the OI process, such as tournaments, joint ventures and partnerships between organizations, can be challenging as participants may still favor internally created knowledge over external knowledge sources and may be reluctant to share knowledge outside their own organizational borders (de Araújo Burcharth *et al.*, 2014; Hong *et al.*, 2019; Hu *et al.*, 2019). This can cause conflicts among participants (Hu *et al.*, 2019) and stifle ideas within the OI process (Whelan *et al.*, 2011).

Innovation on an organizational level relies heavily on the ideas that are generated by the individuals that work for the organizations (Liu *et al.*, 2017). Even though OI processes distinguish themselves from traditional innovation by welcoming external knowledge sources, it still involves the conception and implementation of novel ideas by participants (Salter *et al.*, 2015; Whelan *et al.*, 2011). Hoch (2013) uses Janssen's (2000) scale of innovative work-behaviors to measure the employees' perceptions of their team's innovative behavior, which distinguishes three distinctive phases. According to Janssen (2000), the first phase comprises the *generation of ideas, techniques, or instruments*; the second phase comprises the *promotion of ideas* throughout the organizational environment to gather support and approval for new ideas within the organization; and the third and last phase relates to the *realization of ideas brought forward in the process that are applicable and beneficial to the organization as a whole*. This involves the transformation of those ideas into useful practices (Janssen, 2000).

The extant literature on OI acknowledges participants' vital roles (Chesbrough, 2003). However, notwithstanding the increasing attention from both scholars and practitioners (Chesbrough and Bogers, 2014), prior OI research predominantly focused on investigating its determinants, processes, outcomes and benefits at an organizational level (Bogers *et al.*, 2018). While these studies provide a good overview of the advantages and disadvantages of OI for individual organizations and their network partners, the "human side of OI" (Gassmann *et al.*, 2010, p. 218) remains little understood (Bogers *et al.*, 2018). From a managerial point of view, R&D managers often focus on idea generation rather than considering all the phases in the OI process through which novel ideas transition (Whelan *et al.*, 2011).

In view of the gaps mentioned above, only limited insight has been gained regarding how the OI process is actually managed by its managers and employees and how this is perceived by individual participants (Bogers *et al.*, 2018; West and Bogers, 2017). However, according to Cattani and Ferriani (2008), this is deemed of major importance for the actual performance innovative efforts. According to Perry-Smith and Mannucci (2017), the participants' perceptions of their surroundings and the process itself can influence their creativeness and ability to move ideas from initial conception to implementation. Accordingly, the success of OI strongly relies on the participants' behavior and their perceptions of their team's ability to transition from ideation to realization (Cattani and Ferriani, 2008; Whelan *et al.*, 2011).

In response to the call to look into participants within the OI process in more detail (West and Bogers, 2017), recently scholars have started to examine *the role of leadership,* such as empowering leadership (Naqshbandi *et al.*, 2019), or the relationship between leadership, openness and innovation performance (Rangus and Černe, 2019). However, more insight is needed into how a wider range of behaviors of participants influence the OI process (Naqshbandi *et al.*, 2019). This tallies with the results of Perry-Smith and Mannucci (2017), who assert that participants in innovative processes benefit from different influential factors depending on the phase of the process. In this regard, it would be interesting to investigate the multiple *types* of leadership behavior (Naqshbandi *et al.*, 2019) that can motivate participants in OI to contribute to the process (West and Gallagher, 2006). For example, transactional leadership can seek to motivate participants *extrinsically* through rewards, whereas transformational leadership can motivate them *intrinsically* by stimulating collaboration and attaining higher morale (cf. Deichmann and Stam, 2015).

Importantly, however, not only formal leaders, but also each single individual participant is expected to lead (Du Chatenier *et al.*, 2010). Leadership that emerges from within the team itself, i.e. from its participants, is referred to as shared leadership (Carson *et al.*, 2007; Pearce and Sims, 2002). According to Newman and Ford (2021), it has been vital for employees to work more closely together and take up responsibilities for the success of virtual teams during the pandemic, instead of relying solely on their formal leaders. With many organizations and scholars seeking a future of work that may be more open (Chesbrough, 2020) and remote (Newman and Ford, 2021), this leadership style may only rise in importance in the coming years. Shared leadership may positively influence participants' innovative behavior (Hoch, 2013) and encourage knowledge sharing between team members (Coun *et al.*, 2019; Hoch, 2014) and furthermore it can support the diffusion of the outcomes of innovation by allowing participants from more layers within the organizations to push innovation forward (Currie and Spyridonidis, 2019). For the OI process to be successful, participants to the OI process may be simulated to jointly support the transition of ideas from the ideation phase through to their eventual realization, and therefore they must perceive that others are willing to do so (De Jong and Den Hartog, 2007). Participants' perceptions regarding shared leadership role-taking behaviors are of utmost importance to move from the idea-generation phase to the idea-implementation phase (Axtell *et al.*, 2000; Salter *et al.*, 2015).

To summarize, the aim of this research is to investigate the transitions between three phases in which innovative behavior can potentially take place (i.e. idea generation, idea promotion and idea realization) and to what extent these phases are moderated by different forms of shared leadership as perceived by participants in the OI process. This study's contributions to the scholarly and societal debate on OI are twofold. First, it contributes to the *human side of the OI literature* by examining individual participants' perceptions on inter-organizational innovative behavior when transitioning through the three different innovation phases as distinguished by Hoch (2013), where we investigate the extent to which idea generation relates to idea realization, as well as the mediating role of idea promotion in this relationship. Second, we contribute to the debate on the moderating role of leadership in the OI process (e.g. Naqshbandi *et al.*, 2019; Rangus and Černe, 2019) by focusing on *shared transformational and transactional leadership* in an OI context (Du Chatenier *et al.*, 2010).

This paper is structured as follows. Based on the OI and shared leadership literatures, a set of hypotheses is developed. Subsequently, the study's data and methodology are presented and then we present the results of the study and discuss these in the light of our theoretical framework and methodology. In conclusion, the study's limitations and implications for scholarly research and management practice are presented.

2. Theory and hypotheses development

2.1 Perceptions of the transitions between three phases in the open innovation process

According to Whelan *et al.* (2011), ideas flow through a process of generation and selection, followed by diffusion and eventual exploitation. The participant's perspective is considered to be an important indicator of a team's innovative behavior and its ability to transition ideas through innovation processes (Bogers *et al.*, 2018; Perry-Smith and Mannucci, 2017; De Jong and den Hartog, 2010). Many scholars (Amabile, 1996; Salter *et al.*, 2015) have recognized at least two different phases in the innovation process: one has been typified by the need to generate new ideas, while the other is concerned with their subsequent implementation, where ideas are built into the participants' organizations. However, in addition to these two phases, the need of idea promotion to gain support for the development and implementation of innovative ideas has also been stressed, with novel ideas proving to receive more support if they are suggested by participants who are perceived to be competent (Cattani and Ferriani, 2008; Perry-Smith and Mannucci, 2017), also in an open context (de Araújo Burcharth *et al.*, 2014). While prior studies often combine the dimensions of innovation phases with one particular construct (e.g. Hoch, 2013; Janssen, 2000), the literature suggests that each phase within OI is distinctive (Whelan *et al.*, 2011).

Within the broader OI context, the relationship between idea generation and idea implementation was previously studied by Salter *et al.* (2015). They found that both the broader range of sources of knowledge and participants' openness toward other participants in the OI process directly fostered the transition from idea generation to idea implementation. This increased potential that stems from broader resources (compared to traditional innovation) may well be more challenging to tap into when participants collaborate closely with one another in inter-organizational teams. Participants' increased ambiguity regarding the development of their ideas due to their collaboration with others outside of their own organization may lead to reluctance to share their ideas or to contribute to the realization of ideas that did not exclusively originate from within their own organization (Brunswicker and Chesbrough, 2018; West and Gallagher, 2006). It is thus important to establish the notion within inter-organizational teams that once participants view the idea generation phase to be of higher quality, this will likely support the perceived transition to the idea realization phase. Therefore, we propose the following hypothesis:

H1. Participants' idea generation has a direct and positive relationship with idea realization.

Despite its many cases of success, various examples of failure exist that indicate the need for limitations or boundary conditions if OI is to be successful (Chesbrough, 2019). A possible explanation for these cases of failure could be the challenge that participants in the OI process face when collaborating and sharing ideas with team members from different organizations (Hu *et al.*, 2019; Whelan *et al.*, 2011). Indeed, the OI paradigm demands that participants in the OI process consistently realign with each other to avoid conflict and to optimize their complementary characteristics and knowledge (Du Chatenier *et al.*, 2009). In addition, West and Gallagher (2006) stated that participants in the OI process experience a reluctance that is caused by the ambiguity of contributing to innovation that might be accessible to others. Therefore, it can be argued that the idea promotion phase is crucial in the OI process.

The need for consistent realignment between participants, especially when they represent different organizations, is in line with Hoch's (2013) view that participants need to engage in social activities to find allies, backers and sponsors for the idea, such that they can provide the necessary support for the participants' ideas (Galbraith, 1982). In other

words, ideas must gain internal approval throughout teams and organizations for these ideas to transition through the process successfully, which can be done by igniting enthusiasm for each other's ideas (Hoch, 2013; Janssen, 2000). This indicates that once the perception of the quality of ideas is enhanced, participants are more likely to share the ideas with others (Axtell *et al.*, 2000; Salter *et al.*, 2015). This implies that idea promotion mediates the transition from idea generation to idea realization (Axtell *et al.*, 2000; Hoch, 2013; Janssen, 2000).

The mediating role of idea promotion may be particularly important within an OI context, where ideas must be shared across multiple organizational borders to gain more support and realign the organizations involved (Du Chatenier *et al.*, 2009). Once the generated ideas have transitioned from the idea generation phase to the implementation phase, it could well be that different types of knowledge and skills are needed (Salter *et al.*, 2015; Whelan *et al.*, 2011). Accordingly, it is likely that idea promotion leads to a more positive perception of participants regarding the transition from idea generation to idea implementation, as it enhances interaction with a larger crowd and thus builds on a more diverse set of capabilities and resources (Hoch, 2013). However, it should be noted that idea promotion is also the phase that is most prone to causing failure during the innovation process, due to the perceived ambiguity that arises from the interaction between individuals from different organizations (Hu *et al.*, 2019; West and Gallagher, 2006). Hence, we propose three hypotheses regarding the direct and indirect relationships between the phases in the OI process:

H2a. Idea generation has a direct and positive relationship with idea promotion.

H2b. Idea promotion has a direct and positive relationship with idea realization.

H2c. Idea promotion (partly) mediates the relationship between idea generation and idea realization.

2.2 The moderating role of shared leadership in the open innovation process

Leadership is an important influential factor in the OI process (Mumford and Licuanan, 2004). Pearce and Sims (2002) distinguished two origins of leadership behavior: vertical leadership, which stems from an appointed leader who exercises leadership and control over a group of subordinates and shared leadership, which denotes distributed leadership behavior from within the team, in this case, from the participants in the OI process. According to Hunter *et al.* (2018), organizations might deliberately choose a shared leadership approach to innovation to effectively manage the many varying responsibilities that arise during the dissemination of innovation.

While finding its roots in Greenleaf's (1970) work on servant leadership, several definitions of shared leadership have been proposed by different scholars over the past years (e.g. Carson *et al.*, 2007; Pearce and Sims, 2002). Zhu *et al.* (2018) identify three common characteristics in those definitions: (1) shared leadership concerns lateral influence among participants; (2) shared leadership emerges within teams; and (3) roles and influence are distributed among the participants within a team. Our choice to adopt Pearce and Sims's (2002) (Appendix) definition of "distributed influence from within the team" (p. 172) results from the affirmation that it includes of all these characteristics. In addition, this definition enables us to test the moderating role of different leadership behaviors (Zhu *et al.*, 2018) throughout the various phases of the OI process, as opposed to evaluating the general perceptions of participants to their peers assuming leadership responsibilities (Carson *et al.*, 2007).

Since participants in OI teams often take up leadership roles themselves during the process (Du Chatenier *et al.*, 2010), shared leadership might be the most appropriate

leadership type to examine in the context of OI. For shared leadership may be dispersed across different participants from different units (Hoch, 2013) who approach complex challenges and freely share information differently and should be open toward each other's influence (Carson *et al.*, 2007). Shared leadership may positively relate to individual innovative behavior in inter-organizational teams, whereby participants proactively share knowledge while trying to solve problems based on their diverse expertise, which in turn helps them to combine knowledge, see problems from different angles and make them more creative (Gu *et al.*, 2018). Similarly, information sharing among participants in the OI process might be enhanced when the level of shared leadership is perceived to be high, as this is expected to positively influence the use of the participants' "diverse information and knowledge backgrounds" (Hoch, 2014, p. 555). Shared leadership may therefore be of increased importance within inter-organizational innovation teams when compared to "traditional" innovation teams in stimulating and capturing the potential of more diverse backgrounds and expertise which drives innovative behavior (Salter *et al.*, 2015).

2.2.1 Shared transactional leadership behavior and innovative behavior in open innovation. Transactional leadership seeks to *extrinsically* motivate employees through the provision of personal and material rewards (Pearce and Sims, 2002). It is known to be especially effective in creating greater clarity in ambiguous environments, such as OI contexts. Chesbrough (2003) acknowledges the value of a reward system for employees who engage in OI to offset the loss of control and ambiguity that can arise from OI (Brunswicker and Chesbrough, 2018). Within OI contexts, shared transactional leadership might be expressed through recognition between participants of each other's contributions and establishing performance metrics that are linked to rewards (Pearce and Sims, 2002). Gerhart and Fang (2015) found that competence rewards and feedback can incentivize participants to create original ideas. In a similar vein, rewarding participants extrinsically in their pursuit of knowledge is a measure that will likely result in the increased sharing of knowledge among individuals (Donnelly, 2019), which is key to OI (Salter *et al.*, 2015).

Extrinsic rewards have shown to be particularly effective in enhancing incremental creativity, which entails small improvements or modifications to existing technology or products, as these may motivate participants to pursue smaller improvements that are less inspirational to work on than radical innovation, which is often driven from intrinsic motivation (Malik *et al.*, 2019). Regarding the transitioning of novel ideas through the various stages of the OI process, Salter *et al.* (2015) showed that participants who are extrinsically motivated produce more ideas that eventually move from the ideation phase to the idea realization phase. In addition, rewarding participants extrinsically to collaborate and cooperate in moving ideas from initial conception to implementation could help in overcoming potential cognitive biases toward externally created knowledge among participants by stimulating relationship building among them (Hong *et al.*, 2019). It could be argued that when these relationships are strengthened that initial distrust toward each other's ideas may wane. Therefore, higher degrees of transactional leadership behavior among participants in which they reward each other with either personal or material rewards could positively moderate the relationship between idea generation and idea realization. In a similar vein, the willingness to share knowledge with one another (Donnelly, 2019) could stimulate novel ideas to transition from the idea generation phase to idea promotion, and eventually to idea realization. Given these arguments, we propose the following hypotheses:

H3a, b, c. The direct relationships between (a) idea generation and idea realization, (b) idea generation and idea promotion and (c) idea promotion and idea realization are all positively moderated by shared transactional leadership, where these relationships are stronger when the degree of shared transactional leadership

behavior is higher compared to lower degrees of shared transactional leadership behavior.

H3d. The indirect relationship between idea generation and idea realization via idea promotion is positively moderated by shared transactional leadership, where this relationship is stronger when the degree of shared transactional leadership behavior is higher compared to lower degrees of shared transactional leadership behavior.

2.2.2 Shared transformational leadership behavior and innovative behavior in open innovation. Transformational leadership behavior has been defined as collaborative leadership behavior which can lead to a higher sense of *intrinsic* employee morale and motivation (Burns, 1978). A study by Tepper *et al.* (2018) asserts that transformational leadership behavior is most effective in situations where the participants have an intrinsic need for this type of leadership behavior. Furthermore, these authors argued that situations where there is a high degree of uncertainty, such as in OI contexts (Du Chatenier *et al.*, 2010), evoke the need for transformational leadership among participants themselves (Tepper *et al.*, 2018). Shared transformational leadership has been shown to enhance team effectiveness as perceived by the participants themselves (Pearce and Sims, 2002). This particularly holds in knowledge-based teams (Pearce, 2004), as it facilitates knowledge sharing (Coun *et al.*, 2019). It could be argued that shared transformational leadership behavior fits the uncertain environment of OI and helps to establish a collective vision among participants (Pearce, 2004; Pearce and Sims, 2002), which in turn can support the transition from ideation to implementation (Perry-Smith and Mannucci, 2017; Whelan *et al.*, 2011). Knezović and Drkić (2020) assert that transformational leadership behavior positively moderates the relationship between perceived organizational justice and innovative behavior. Hence, it could be argued that if transformational leadership emerges among participants in OI, this may create a climate in which ideas are generated and shared freely and reduce the possible reluctance to share ideas with peers of different organizational backgrounds (West and Gallagher, 2006).

Even though transformational leadership behavior is generally shown to have a positive effect on innovative behavior and creativity, some cases have shown negative outcomes (Koh *et al.*, 2019). For example, Basu and Green (1997) found a negative correlation between perceived transformational leadership and followers' innovative behavior, which according to their study could depend on the followers' perceptions of their leader. In a similar vein, Deichmann and Stam (2015) assert that the influence of transformational leadership can vary depending on how well leaders identify with the organization and to what extent leaders share their values with the participants. Therefore, it could be argued that in the case of shared transformational leadership in inter-organizational teams, participants might be less accepting of team members attempting to articulate an energizing vision and goals (Burns, 1978) for their shared innovation efforts owing to the fact that they do not share their organizations' beliefs and values.

It is therefore likely that participants are less accepting of peers engaging in transformational leadership behavior due to the differences in the organizational background of the participants (Deichmann and Stam, 2015). Nevertheless, it can be expected that higher degrees of shared transformational leadership could positively influence the participants' perceptions of their team's innovative behavior, based on the collaborative nature of transformational leadership behavior (Burns, 1978), the distributed roles and influence among the participants within an OI team (Whelan *et al.*, 2011; Zhu *et al.*, 2018), and also the need for collaboration if inter-organizational teams are to succeed (Hu *et al.*, 2019). Accordingly, we propose the following hypotheses:

H4a, b, c. The relationships between (a) idea generation and idea realization, (b) idea generation and idea promotion and (c) idea promotion and idea realization are all positively moderated by shared transformational leadership, where these relationships are stronger when the degree of shared transformational leadership is higher compared to lower degrees of shared transformational leadership behavior.

H4d. The indirect relationship between idea generation and idea realization via idea promotion is positively moderated by shared transformational leadership, where this relationship is stronger when the degree of shared transformational leadership is higher compared to lower degrees of shared transformational leadership behavior.

3. Methodology

3.1 Sample

To assess the respondents' perceptions of and experiences regarding shared leadership behavior in the OI process and also the three phases of the OI process, we collected data by means of an online questionnaire sent out via both our personal network and a research agency that was briefed about our selection criteria. Since the academic literature distinguishes between multiple forms of OI (Felin and Zenger, 2014), we particularly targeted employees that had experience with working in inter-organizational teams, that is to say, teams that consist of members across different organizations. In addition, to account for Chesbrough's (2003) claim that OI takes place across industries, we strived for a heterogeneous sample of employees working in inter-organizational teams. Consequently, our respondents comprised individual employees who participated in inter-organizational collaborations across different types of organizations, operating in multiple industries across Europe, such as manufacturing, academia, video-game development and IT. Being part of a larger data collection project on OI (Edelbroek *et al.*, 2019), we specifically selected respondents who collaborated with employees from other organizations to develop new products, processes and/or solutions. An example of an inter-organizational OI project that respondents participated in was a collaboration between employees from a game studio and a film studio with the objective to develop a new video game. Another example concerns respondents who were working for an engineering team in the energy sector, and who collaborated with employees from a manufacturing firm to design and develop bespoke energy transformers. In addition to the selection criterion "participation in an inter-organizational collaboration project" in our questionnaire, we also included a description of how OI was defined for the purpose of this study to ensure that our respondents clearly understood that our survey questions related to how they evaluated and experienced their inter-organizational collaboration activities and their perceptions of leadership in this context.

We obtained 280 responses, of which 173 were considered valid for inclusion in the sample. Invalid responses were excluded from the sample due to missing data or incompatibility with our desired selection criteria. We assured the participants that their data would be handled confidentially and would only be used for research. Descriptive analysis was then conducted in which continuous variables were placed in categories to present a more detailed view of the sample (see Table 1). The procedure that we used for categorizing the variables is the multigroup analysis (MGA) (Hair *et al.*, 2014; Sarstedt *et al.*, 2011).

Construct	Frequency	Percentage (%)	Mean	Std. deviation
Gender				
Male	84	48.60	5.26	0.09
Female	89	51.40	4.86	1.11
Total	173	100.00		
Age				
Under 21	6	3.50	4.81	0.59
21–24	33	19.10	5.14	0.64
25–34	46	26.60	5.40	0.75
35–44	19	11.00	4.82	0.96
45–54	32	18.50	4.17	1.29
55–64	32	18.50	4.90	1.11
65-above	5	2.90	6.10	0.43
Total	173	100.00		
Education				
High School	13	7.50	5.09	0.70
IVE*	36	20.80	4.67	1.16
Bachelor of Applied Sc.	39	22.50	5.33	0.77
Bachelor of Sc.				
Master's Degree	27	15.60	5.15	0.94
Other	52	30.1	4.80	1.04
	6	3.5	4.69	1.50
Total	173	100.00		

Note(s): *Intermediate Vocational Education
Source(s): Table by author

Table 1.
Descriptive overview of the sample

3.2 Measures

This section includes descriptions of all the constructs and their reflective multi-items scales that were included in our model. The scales measuring the participant's perception of their team's innovative behavior in each of the phases in the OI process were calculated using items from Janssen's (2000) validated innovation questionnaire, which focused on employees' perceptions of their team's innovative behavior (Hoch, 2013). We used an adapted version of the scales that included two items for each subscale (idea generation, idea promotion, and idea realization) which were the most relevant in the inter-organizational context. In the survey, we introduced respondents to the concept of OI, before filling in the related questions, including the context of generating, promoting and realizing ideas, while drawing on and contributing to knowledge sources from within and beyond the organizations' borders. The questions specifically referred to innovative behavior within the team, since we were interested in examining the participants' perceptions regarding their OI teams' innovative behavior and therefore they refer to those whom the participants themselves considered to be peers in the OI process. The subscales and items adopted are the following:

Idea generation

"Our team searches out new working methods and techniques."

"Our team creates new ideas concerning solutions for difficult problems."

Idea promotion

"In our team, we make each other enthusiastic for innovative ideas."

"In our team, we acquire approval for innovative ideas."

Idea realization

"After we implement ideas, my team evaluates their utility"

"Our team often implements ideas in the work environment."

A seven-point Likert's scale was used for all the variables, where 1 represented "strongly disagree", and 7 represented "strongly agree".

Perceived shared transactional leadership was measured by means of the Personal Reward and Material Reward scales (six items) in the shared transactional leadership questionnaire developed by Pearce and Sims (2002). An example item is: "My team members will recommend that I am compensated well if I perform well".

Perceived shared transformational leadership was measured using one scale which comprised five subscales, including 20 items as presented by Pearce and Sims (2002), namely: performance expectations, vision, idealism, inspirational communication, and intellectual stimulation. We acknowledge the critique on the concept of transformational leadership by Van Knippenberg and Sitkin (2013). However, in the light of the recent support for the construct and discriminant validity of this construct when measured daily (Breevaart and Bakker, 2018), we choose to follow the study by Tepper *et al.* (2018) in our analysis. We utilize "what remains the dominant perspective on what it means for a leader to be transformational" (p. 1362) to investigate the influence of shared transformational behavior on the OI process. An example item is: "My team members provide a clear vision of who and what our team is".

3.3 Procedure

In our study we followed a similar procedure as prior studies on the topic of leadership and employee (innovative) work behavior (Coun *et al.*, 2019, 2022; Edelbroek *et al.*, 2019). Our choice of method for this study was variance-based structural equation modeling (Henseler, 2017), as this method allows for explorative research and estimating the predicting power for structured equation models (Becker *et al.*, 2013; Henseler *et al.*, 2016). This choice is, as also described in Edelbroek *et al.* (2019), is based on the argumentation that among variance-based structural equation modeling techniques, PLS-SEM path modeling is considered to be the most advanced system (Hair *et al.*, 2011). PLS-SEM has been discussed and examined extensively over time (cf. Henseler *et al.*, 2016), with successive contributions and greater robustness of PLS-SEM algorithms, including bootstrap-based tests of the overall model-fit and consistent PLS-SEM to estimate factor models (for an overview, see Henseler, 2017) as a result. The choice to use the SMART-PLS version 3.2.7 (Ringle *et al.*, 2015) was driven by the exploratory nature of our research (Edelbroek *et al.*, 2019). Specifically, we were interested in examining the predicting power of the constructs in our study.

First, we looked into the model's validity. By examining construct validity and convergent validity we can determine the extent to which a construct measures its intended purpose. Construct validity indicates how well the results that were obtained by using the measure fit the theories around which the test was constructed. This is assessed by determining convergent validity, which is confirmed in cases when the scores between two different instruments measuring the same concept are highly correlated. In addition, we analyzed the discriminant validity, which is found when two variables that are predicted to have no correlation based on theory, are indeed empirically proven to have none (Sekaran and Bougie, 2013). We also examined the model's reliability, which concerns the consistency of the results that are produced by the model (Sekaran and Bougie, 2013).

Second, we used the path weighting scheme for the partial least square algorithm. The maximum number of iterations was set at 300 and 10^{-5} was used as stop criterion. A uniform value of 1 was used as the initial value for each of the outer weights (Henseler, 2010).

We deemed sample size acceptable, based on the use of ten times the maximum number of paths aiming at any construct in the outer and inner models (Barclay *et al.*, 1995).

4. Results

4.1 Model characteristics

In line with the approach used in prior studies (Coun *et al.*, 2019, 2022; Edelbroek *et al.*, 2019), we examined the reliability and convergent validity for the outer model evaluation. In accordance with Nunnally (1978), all the scales appeared to be larger than 0.7 and are hence reliable without removing an item (see Table 2). We examined the convergent validity through the use of Fornell and Larcker's (1981) criterion of an average variance extracted (AVE) for each construct above the 0.5 benchmark. As can been seen in Table 2, the AVE for all the constructs were above 0.5 and therefore, the model displayed sufficient convergent validity.

Construct	Theoretical range	Actual range	Mean	SD	Reliability	AVE
Idea Generation	1–7	1.00–7.00	5.03	1.17	0.80	0.83
Idea Promotion	1–7	1.50–7.00	5.15	1.08	0.76	0.81
Idea Realization	1–7	1.50–7.00	4.98	1.12	0.70	0.77
Shared Transactional Leadership Behavior	1–7	1.60–6.83	4.62	1.04	0.87	0.61
Shared Transformational Leadership Behavior	1–7	1.00–6.40	4.74	0.96	0.95	0.51

Source(s): Table by author

Table 2. Reliability and convergent validity scores

Lastly, we checked the discriminant validity by comparing the AVEs of the constructs with the inter-construct correlations and determining whether each latent variable shared greater variance with its own measurement variables or with other constructs (Chin, 1998; Fornell and Larcker, 1981). We then compared the square root of the AVE for each construct with the correlations with all other constructs in the model. Correlations between constructs that exceed the square roots of their AVEs may indicate insufficient discriminant validity (see Table 3). In our study, all constructs were deemed sufficient in terms of validity and reliability, as it was found that the absolute correlations did not exceed the square roots of the AVEs.

	IG	IR	IP	STL	STrL
Idea Generation (IG)	*0.91*				
Idea Realization (IR)	0.69**	*0.90*			
Idea Promotion (IP)	0.72**	0.72**	*0.88*		
Shared Transactional Leadership (STL)	0.37**	0.30**	0.44**	*0.78*	
Shared Transformational Leadership (STrL)	0.50**	0.51**	0.46**	0.71**	*0.72*

Note(s): **significant at the 0.01 level. *: significant at the 0.05 level. 2-tailed)
In italic, square root of average variance extracted (AVE)
Source(s): Table by author

Table 3. Correlation table

4.2 Common-method variance

To account for any systematic feature that might have influenced the collected data in this study, we conducted a test for common-method variance (Podsakoff *et al.*, 2003). Firstly, in accordance with Podsakoff and Organ (1986), we used Harman's (1976) one-factor test. Following this approach, all principal constructs were entered into one principal component factor analysis. Similar to Edelbroek *et al.* (2019), we used SPSS software (SPSS version 22 for Windows), to apply an extraction method, using a principal component of one fixed factor with the non-rotation method. The results showed that one fixed factor explained less than 50% of the variance (38.01%), which provided a first sign that no common-method variance was present. This notion was further strengthened based on the work of Bagozzi *et al.* (1991), which stresses that common-method variance occurs when the highest correlation between constructs exceeds the value of 0.9. As shown in Table 2, the highest correlation between constructs is 0.72 (correlation between *idea realization* and *idea generation*, *idea realization* and *idea promotion*. It therefore appears that no common-method variance was present that influenced the collected data.

4.3 Model estimations

Concerning the inner model evaluation and estimates, we analyzed the path coefficients by using bootstrap t-statistics for their significance (Anderson and Gerbing, 1988). 5,000 subsamples were used for this PLS-consistent bootstrapping, with a bias-corrected bootstrap, testing for a two-tailed significance of 95%, similar to prior studies (Edelbroek *et al.*, 2019; Coun *et al.*, 2019, 2021, 2022). The standardized root mean square residual (SRMR) was 0.088, which is in accordance with the criterion of a value lower than 0.09 established by Hu and Bentler (1999). Accordingly, the model showed sufficient model fit. The formulated hypotheses were tested by following a three-step approach: (1) firstly, we calculated R^2 and Q^2 for OI to measure predicting power, where Q^2 measures the ability of the model to reconstruct observed values and evaluates the predictive validity of the structural model; (2) secondly, we calculated the direct effects for the differentiated paths in the model (see Table 4); (3) finally, we tested the predictive power by using Cohen's (1988) f^2 effect size to indicate whether each construct had a weak, average, or strong effect on "the phases in the OI process" (see Table 5).

Table 4. Variances and Stone-Geisser's Q^2 outcomes

Construct	R^2	Adjusted R^2	Q^2
Idea Realization	0.64	0.63	0.45
Idea Promotion	0.51	0.51	0.37

Source(s): Table by author

Table 5. Overview path analysis and f^2 scores

	γ-coefficient	STDEV	T statistics	p values	f^2 values
Idea Generation → Idea Realization	0.36	0.08	4.66	0.000	0.20
Idea Generation → Idea Promotion	0.72	0.06	13.05	0.000	1.06
Idea Promotion → Idea Realization	0.46	0.08	5.73	0.000	0.25
Idea Generation → Idea Promotion → Idea Realization	0.33	0.06	5.53	0.000	

Source(s): Table by author

As a first step, we used the variance of Idea Realization ($R^2 = 0.64$, Adjusted $R^2 = 0.63$) and Idea Promotion ($R^2 = 0.51$, Adjusted $R^2 = 0.51$), with the PLS-consistent algorithm. Second, we applied the blindfolding procedure (Hair *et al.*, 2017) to calculate the Stone-Geisser's Q^2 value (Geisser, 1974; Stone, 1974), which is a criterion of predictive relevance. Strong Q^2 values were found for Idea Realization ($Q^2 = 0.45$) and for Idea Promotion ($Q^2 = 0.37$) [for the thresholds for low, mediate and strong Q^2 values (see Hair *et al.*, 2017)]. Our values indicate a strong predicting power for the two afore-mentioned constructs and the model in general. An overview of the R^2, R^2 adjusted and Q^2 values is provided in Table 4.

Further analysis demonstrated that Hypothesis 1 was supported by the data and we found the relationship between Idea Generation and Idea Realization to be significant with strong prediction power ($\gamma = 0.36$, $p = 0.000$, $f^2 = 0.20$). Hypothesis 2a was also supported by the data, where we found the relationship between Idea Generation and Idea Promotion to be significant with very strong prediction power ($\gamma = 0.72$, $p = 0.000$, $f^2 = 1.06$). Furthermore, Hypothesis 2b was supported by the data, as we found the relationship between Idea Promotion and Idea Realization to be significant with strong prediction power ($\gamma = 0.46$, $p = 0.000$, $f^2 = 0.25$). Finally, in support of Hypothesis 2c, the indirect path Idea Generation → Idea promotion → Idea Realization was found to be significant ($\gamma = 0.33$, $p = 0.000$). Table 5 presents the path analyses and the f^2 scores.

To test Hypotheses 3 and 4, a multigroup analysis (MGA) was conducted (Hair *et al.*, 2014; Sarstedt *et al.*, 2011). First, the sample was divided into two groups: (1) a group scoring relatively high, and (2) a group scoring relatively low on perceived shared transactional leadership and shared transformational leadership, respectively, with the mean as the point of demarcation. Second, a multigroup analysis was run for the models in which we compared the differences between the higher degree group and the lower degree group for each afore-mentioned shared leadership styles independently (see Table 6).

	Higher degree group γ coefficient	Lower degree group γ coefficient	Higher degree group p values	Lower degree group p values	p value difference higher and lower degree group
Shared transactional leadership					
Idea Generation → Idea Promotion	0.60	0.73	0.00	0.00	0.11
Idea Generation → Idea Realization	0.40	0.34	0.02	0.00	0.63
Idea Promotion → Idea Realization	0.29	0.55	0.05	0.00	0.07
Idea Generation → Idea Promotion → Idea Realization	0.17	0.40	0.09	0.00	0.93
Shared transformational leadership					
Idea Generation → Idea Promotion	0.49	0.76	0.00	0.00	0.01
Idea Generation → Idea Realization	0.44	0.31	0.00	0.01	0.80
Idea Promotion → Idea Realization	0.35	0.48	0.00	0.00	0.19
Idea Generation → Idea Promotion → Idea Realization	0.17	0.36	0.00	0.00	0.05

Source(s): Table by author

Table 6. Overview multigroup analyses higher and lower degree groups

No significant differences in direct and indirect effects across groups were found for shared transactional leadership, which means that Hypotheses 3a, b, c and d were not supported. However, for shared transformational leadership, we found a significant difference between the higher degree group and lower degree group in terms of the direct effect of a) Idea Generation on Idea Promotion ($p = 0.01$), and the indirect effect of d) Idea Generation on Idea Realization ($p = 0.05$). However, contrary to our expectations, these relationships were found to be negative. In view of this, no support for Hypotheses 4a, b, c and d was found.

5. Discussion

This study aimed to contribute to the scholarly and societal debates on leadership by participants in an OI process, by investigating the moderating role of shared transactional and transformational leadership behavior on the transitioning of innovative ideas through the OI process as perceived by its participants. The study's theoretical implications are summarized and discussed below.

5.1 Theoretical implications

5.1.1 Innovative behavior across the open innovation process as perceived by participants. Firstly, in line with expectations, significant positive direct relationships were found between the three phases of the OI process, namely: idea generation, idea promotion and idea realization. These results may imply that when participants perceive the idea generation phase in the OI process to be successful in their inter-organizational team, this not only enhances their perception of the implementation phase, but also enhances their perceptions of participants being stimulated to engage in the promotion of the ideas across organizational borders (Hoch, 2013). Furthermore, in line with the literature on the importance of collaboration within the OI process (Du Chatenier *et al.*, 2009; Hu *et al.*, 2019), the positive relationship between promotion and realization shows that when participants experience more approval and enthusiasm for their ideas within their team, this positively influences their perception of how well the team manages to implement the ideas and evaluate their utility for organizations involved in OI (Janssen, 2000). When the inter-organizational team's ability to generate, promote and implement novel ideas is perceived positively by its participants, this will likely enhance the actual transition of ideas through the process (Perry-Smith and Mannucci, 2017). For example, decision makers are likely to support and approve novel ideas when they perceive the abilities of those participants who bring forth the new ideas positively (Cattani and Ferriani, 2008).

Secondly, our analyses showed the relationship between idea generation and idea realization to be partly mediated by idea promotion. This finding is an important contribution for the OI literature, since it stresses the importance of teamwork and collaboration and the importance of the sharing of ideas between the cross-organizational team members who are involved within the OI process (Hu *et al.*, 2019; Whelan *et al.*, 2011). In addition, it contributes to the literature that stresses the importance of participants' perceptions (Cattani and Ferriani, 2008; Perry-Smith and Mannucci, 2017), for when participants perceive support for their ideas, this also enhances their perception of their team's ability to implement ideas and evaluate their utility (Hoch, 2013; Janssen, 2000). While many studies (e.g. Bogers *et al.*, 2018; Salter *et al.*, 2015) have primarily focused on the openness of participants to external knowledge, this finding suggests that future research should also consider participants' perceptions regarding how these new ideas are shared throughout the team and throughout the organizations that are involved in the OI process after their initial conception.

5.1.2 Shared leadership behaviors' moderating effects on phases of innovative behavior in open innovation. The moderation analysis did not find significant differences between the relationships of idea generation and idea promotion with idea realization across groups who

experienced relatively high versus low levels of shared transactional leadership. Furthermore, no significant differences were found between the direct and indirect relationships between idea generation, idea promotion and idea realization across these groups. A possible explanation may be provided by Judge and Piccolo (2004), who revealed that the effect of transactional leadership that focuses on contingent rewards may be dependent on the setting of a study. For example, transactional leadership could have a higher validity in business contexts than in public sector contexts, or in academia. In addition, according to Judge and Piccolo (2004), transactional leadership is also dependent on an organization's access to resources. These authors claim that leaders who do not have many resources at their disposal might find it difficult to successfully provide contingent rewards, as they have difficulty to meet their end of the bargain.

We found significant differences across groups who experienced relatively high versus low levels of shared transformational leadership. Strikingly, however, rather than having a positive moderation effect, we found shared transformational leadership to negatively moderate the paths from idea generation to idea promotion and idea generation to idea realization, respectively, via idea promotion. These insights are important contributions to the literature and shed light on possible circumstances that can cause reluctance in OI participants to collaborate and share knowledge outside organizational borders (de Araújo Burcharth *et al.*, 2014; Hong *et al.*, 2019; Hu *et al.*, 2019; Whelan *et al.*, 2011). Our study's results also contradict the findings of Hoch (2013) and Vandavasi *et al.* (2020), who propose that organizations should facilitate shared leadership to enhance innovative behavior in teams. A possible explanation for these surprising results might be found in the work of Deichmann and Stam (2015), who assert that participants in OI processes display more innovative behavior when they experience transformational leadership from those who reflect the same values and beliefs of *their own* organization. One of the qualities of transformational leadership is idealized influence, which relates to the trust that followers have in their leader (Parry and Proctor-Thomson, 2002). However, in our study, the participants may have been reluctant to diffuse ideas when they experienced higher levels of transformational leadership from those participants in the OI process who are working for another organization, since they hold different values and beliefs (Deichmann and Stam, 2015; Hu *et al.*, 2019). Consequently, participants may be less inclined to trust their teammates in the OI process, since they are afraid of losing control over the trajectory of their own ideas (Brunswicker and Chesbrough, 2018; West and Gallagher, 2006; Zhong *et al.*, 2016). While transformational leadership behavior may create an atmosphere that can support innovative behavior from participants (Knezović and Drkić, 2020), our results suggest that participants in OI teams may be less willing to accept team members from other organizations who attempt to provide a vision and goals for the team's shared innovative efforts. Strikingly, shared transformational leadership can also be a boundary condition that leads more to an environment in which ideas are less promoted by participants and less perceived to be successfully transitioned through the OI process. Our findings, while contrasting those of prior studies (Hoch, 2013; Vandavasi *et al.*, 2020), contribute to a more nuanced view regarding the relationship between shared leadership and innovative behavior. Within inter-organizational teams, shared transformational leadership may hamper the promotion of new ideas. Another possible implication of our findings may be that shared transformational leadership behavior demands vertical leadership, as formal leaders are capable of stimulating commitment to a team vision and emphasize the importance of shared leadership behavior throughout the process (Coun *et al.*, 2019; Pearce, 2004).

5.2 Conclusions

The objective of our study was to investigate the transitions between three phases in which innovative behavior can take place and to what extent these transitions are moderated by

different forms of shared leadership. We found strong correlations between the three phases, as well as surprising results regarding shared transformational leadership. These limitations and avenues for future research and managerial implications are presented in the following section.

5.2.1 Limitations and suggestions for future research. Our findings regarding the perceived transitioning between the distinctive phases and the moderating role of shared transformational leadership in the OI process can be viewed as an important contribution to the literature, as they bridge the current knowledge gaps in the literature regarding the OI process and the influence of transformational leadership by participants in OI (Du Chatenier *et al.*, 2010; Vanhaverbeke *et al.*, 2014). Our findings specifically contributed to furthering knowledge regarding how leadership behavior can create environments that potentially hamper collaboration and the sharing of ideas in OI (Brunswicker and Chesbrough, 2018; Hu *et al.*, 2019) and may underlie OI failures (West and Bogers, 2017). Besides these contributions, however, our study was also subject to some limitations. First, our cross-sectional design does not allow an examination of causality with respect to relationships between the different variables. Future studies could adopt a longitudinal design, as this may provide greater insight into the cause-and-effect relationships of different shared leadership styles and their moderating effects on the participants' perceptions of different phases of the OI process. Additionally, future research may also consider an experimental design in which different leadership styles are measured as interventions over several time-measurements.

The second limitation lies in that we did not follow ideas from idea creation through to implementation. According, we were unable to examine how ideas are generated (divergence) and eventually funneled into applicable implementations (convergence). Future studies could examine the relationship between Janssen's (2000) model of innovative behavior and those models that investigate the transition from divergence to convergence (Milliken *et al.*, 2003) and also to what extent this is influenced by shared leadership behavior.

The third limitation regards the heterogeneity of our sample. While heterogeneity was a deliberate choice to be able to gain insights into OI across different industries, we did not control for potential differences between participants' perceptions depending on industry. Nevertheless, heterogeneity might also provide a possible explanation for the non-significant results regarding transactional leadership in our study, as transactional leadership appears to have a stronger effect in business settings than in other environments (Judge and Piccolo, 2004). Future research would be advised to investigate the differences in perceived shared transactional and transformational leadership and their influence on the OI process in teams within different organizational settings and industries.

Fourth, our study presents contradicting results regarding the moderating influence of transformational leadership on the transitions between the phases in the OI process (cf. Knezović and Drkić, 2020). While transformational leadership behavior in its shared form may hinder the transitions in the innovative process, prior research has indicated that vertical transformational leadership may sustain the shared leadership approach in knowledge work (Hoch, 2013; Pearce, 2004). Future research should examine the interplay of vertical and shared transformational leadership on innovative behavior in OI teams, as well as include the factor of trust between participants (Parry and Proctor-Thomson, 2002) and possibly other additional boundary conditions that influence the transitioning of ideas. The absence of vertical leadership in our model may also explain the non-significant results of shared transformational leadership, because shared transformational leaders still rely on support from their formal managers as ideas progress to the realization phase (Hoch, 2013; Pearce, 2004). Further research on the effect of vertical leadership may provide more understanding of when and from whom transformational leadership behavior is appropriate in OI, to create a collaborative atmosphere and stimulate the transitioning of ideas.

Fifth, our choice of Janssen's (2000) innovative behavior scale was driven by our interest in the transitioning of ideas in the OI process from generation to implementation within inter-organizational teams. However, future studies may consider using an alternative scale. For example, the scale of De Jong and den Hartog (2010), that includes the idea exploration phase, which may be more appropriate when examining alternative models of OI, such as markets and contracts (Felin and Zenger, 2014).

5.2.2 Managerial implications. Our research likely has important implications for practitioners of OI. First, in line with other studies that advocate collaboration between participants to diffuse innovation (Hu *et al.*, 2019; Salter *et al.*, 2015; Whelan *et al.*, 2011), we recommend that participants promote ideas to gather more support and approval within their organizations (Hoch, 2013), as this can stimulate the transitioning of ideas from the idea creation phase to their eventual realization. Second, we advise participants in OI teams to refrain from using shared transactional leadership to encourage innovative behavior, due to its high dependency on available resources and the organizational context (Judge and Piccolo, 2004). Third, as this study finds a negative influence of higher degrees of shared transformational leadership on the OI process, we encourage formal leaders of OI endeavors to provide a clear vision and goals for participants at the start of the innovation process. For by providing a framework in which participants can be creative, this may reduce the need for participants to engage in shared transformational leadership behavior.

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Appendix: Questionnaire

Open Innovation: instructions

This survey is focused on the concept of Open Innovation. Open Innovation is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology. Open Innovation combines internal and external ideas into architectures and systems whose requirements are defined by a business model.

Below you will find six questions about the teamwork within your job. Please rate your answer according to following scale:

(1) Strongly disagree

(2) Disagree

(3) Somewhat disagree

(4) Neutral

(5) Somewhat agree

(6) Agree

(7) Strongly agree

Open innovation

Idea generation

"Our team creates new ideas concerning solutions for difficult problems."

"Our team searches out new working methods and techniques."

Idea promotion

"In our team, we acquire approval for innovative ideas,"

"In our team, we make each other enthusiastic for innovative ideas,"

Idea realization

"Our team often implements innovative ideas in the work environment,"

"After we implement ideas, they evaluate their utility."

Transformational Leadership

Performance expectations

"My team member(s) expects (expect) me to perform at my highest level."

"My team member(s) encourages (encourage) me to go above and beyond what is normally expected of one (e.g. extra effort)."

"My team member(s) expects (expect) me to give 100% all of the time."

Challenge to status quo

"My team member(s) isn't (aren't) afraid to 'buck the system' if he/she (they) thinks (think) it is necessary."

"My team member(s) is (are) non-traditional type(s) that 'shakes up the system' when necessary."

"My team member(s) isn't (aren't) afraid to 'break the mold' to find different ways of doing things."

Vision

"My team member(s) provides (provide) a clear vision of who and what our team is."

"My team member(s) provides (provide) a clear vision of where our team is going."

"Because of my team leader (members), I have a clear vision of our team's purpose."

Idealism

"My team member(s) is (are) driven by higher purposes or ideals."

"My team member(s) has (have) a strong personal dedication to higher purposes or ideals."

"My team member(s) strives (strive) towards higher purposes or ideals."

Inspirational communication

"My team member(s) shows (show) enthusiasm for my efforts."

"My team member(s) approaches (approach) a new project or task in an enthusiastic way."

"My team member(s) stresses (stress) the importance of our team to the larger organization."

Intellectual stimulation

"My team member(s) emphasizes (emphasize) the value of questioning team members."

"My team member(s) encourages (encourage) me to rethink ideas which had never been questioned before."

"My team member(s) questions (question) the traditional way of doing things."

"My team member(s) seeks (seek) a broad range of perspectives when solving problems."

"My team member(s) looks (look) at problems from many different angles."

Transactional leadership

Material reward

"My team member(s) will recommend that I am compensated well if I perform well."

"My team member(s) will recommend that I am compensated more if I perform well."

"If I perform well, my team member(s) will recommend more compensation."

Personal reward

"My team member(s) gives (give) me positive feedback when I perform well."

"My team member(s) commends (commend) me when I do a better-than-average job."

"My team member(s) gives (give) me special recognition when my work performance is especially good."

Source(s): The composition of the questionnaire is the author's own work. Innovative work-behavior questions are based on Hoch's (2013) application of Janssen's (2000) innovative work-behavior questionnaire, and shared leadership behavior questions are courtesy of Pearce and Sims (2002).

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