Author Accepted Manuscript (AAM): this is the AAM of a Published Work that appeared in final form in Leadership & Organization Development Journal. To access the final edited and published work see https://doi.org/10.1108/LODJ-02-2022-0073
Date of Acceptance: 25-Apr-2024

Knowledge-oriented leadership and learning

in academic research teams

Daniel Dorta-Afonso
Universidad de las Palmas de Gran Canaria
Department of Economy and Business Management & Instituto para el Desarrollo Tecnológico y la Innovación en Comunicaciones (IDeTIC)
https://orcid.org/0000-0002-9955-1202
e-mail: daniel.dorta@ulgpc.es

José Luis Ballesteros-Rodríguez
Universidad de las Palmas de Gran Canaria
Department of Economy and Business Management & IDeTIC y la Innovación en Comunicaciones (IDeTIC)
https://orcid.org/0000-0002-3934-2679
e-mail: joseluis.ballesteros@ulpgc.es

Nieves L. Díaz-Díaz
Universidad de las Palmas de Gran Canaria
Department of Financial Economy and Accounting
https://orcid.org/0000-0002-8752-6157
e-mail: nieves.diaz@ulpgc.es

Petra de Saá-Pérez
Universidad de las Palmas de Gran Canaria
Department of Economy and Business Management & IDeTIC
https://orcid.org/0000-0002-3945-5454
e-mail: petra.desaaperez@ulgpc.es

Acknowledgements: This work was funded by the Spanish Ministry of Economy and Competitiveness (No. ECO2014-56580-R) and the Spanish Ministry of Science and Innovation (No. PID2020-114550GB-100).

Corresponding author: Daniel Dorta-Afonso can be contacted at: daniel.dorta@ulpgc.es

Abstract

Purpose – This paper analyzes knowledge-oriented leadership (KOL) and its impact on the learning achieved by the members of academic research teams. We study the influence of KOL on learning, both directly and indirectly, through the knowledge sharing that takes place within the team.

Design/methodology/approach – For this purpose, we conducted a survey of 477 researchers belonging to academic research teams. Through partial least squares structural equation modeling (PLS-SEM), our findings show that KOL positively affects both knowledge sharing and learning and that knowledge sharing also enhances learning.

Findings – Our results reveal the existence of a direct and indirect effect of KOL on learning, both significant and in the same positive direction, with a complementary partial mediation of knowledge sharing.

Research limitations/implications – This paper contributes to the literature in that it provides evidence in the academic context of how team leader behavior can influence knowledge sharing and learning.

Originality/value – This is one of the fewer studies that analyzed KOL on academic research teams and the first contribution that empirically shows how the effect of KOL on learning takes place.

Keywords: Knowledge sharing, learning, team leadership, knowledge-oriented leadership, academic research teams

1. Introduction

In the academic context, research teams perform complex knowledge-based tasks because they face difficult and ambiguous situations, dealing with problems related to the know-what, know-when and know-how, to meet their job's demands (Singh et al., 2019). In these situations, team members can address these problems by learning from each other through an internal knowledge-sharing process (Koeslag-Kreunen et al., 2018). However, interaction among team members is not automatic, the leader being a key player in encouraging that process (Zhang et al., 2011). Team leader behaviors can help both individual and group learning by fostering team members' knowledge (e.g., Koeslag-Kreunen et al., 2018). As Edmondson et al., (2007: 273) point out "effective team leaders (surgeons) fostered speaking up in the service of learning by motivating the need for learning and deemphasizing power differences". Thus, in interactive learning environments such as research teams, in which knowledge sharing is crucial for members to understand, integrate, and create complex knowledge, the team leader can create a climate that favors knowledge exchange by promoting a higher level of interpersonal trust among the individuals (Le & Lei, 2019; Park & Kim, 2018). We therefore consider it necessary to study the mechanisms through which team leaders facilitate learning because it is an important antecedent of team performance (Wesselink, 2019).

Research teams operate under a specific structure in which leadership is one of the main factors impacting their effectiveness (Guenter et al., 2017). However, not all team leaders show the same behaviors, and they have been traditionally categorized into two broad categories, task- and relationship-oriented leadership. Task-oriented leadership is characterized by leader behaviors that "[…] emphasize the accomplishment of task objectives via the minimization of role ambiguity and conflict" (Burke, Stagl, Klein et al., 2006, p.292). Relationship-oriented leadership facilitates behavioral interactions, shows

concern and respect for the followers, and expresses appreciation and support (Ballesteros-Rodríguez, Díaz-Díaz et al., 2020). Nevertheless, recent studies have proposed a new style called knowledge-oriented leadership (KOL), associated with knowledge-intensive contexts (Men & Jia, 2021; Naqshbandi & Jasimuddin, 2018; Rehman & Iqbal, 2020; Sadeghi & Rad, 2018; Shariq et al., 2019). KOL style emphasizes followers' empowerment, the encouragement of trust and learning within teams, and interaction among team members, as well as the creation, sharing and codification of knowledge (Donate & Guadamillas, 2011). Therefore, it is not surprising that there has been a proliferation of studies aiming at better understanding the effects of KOL on outcomes which have been carried out across different contexts including hospitality (Shamim et al., 2019; Donate et al., 2022), technology firms (Donate & de Pablo, 2015; Donate & Guadamillas, 2011; N. U. Zia, 2020), pharmaceutical companies (Shariq et al., 2019), and SMEs (Zia, 2020). The findings have supported the positive effects of KOL on innovation (Donate & de Pablo, 2015; Naqshbandi & Jasimuddin, 2018; Sadeghi & Rad, 2018), creativity (Men & Jia, 2021), knowledge management (Jiang et al., 2021; Latif, Afzal, et al., 2020; Shamim et al., 2019; N. U. Zia, 2020), learning orientation (Shariq et al., 2019), and organizational performance (Alneadi et al., 2020; Rehman & Iqbal, 2020). However, despite the assumption that KOL encourages intellectual stimulation and promotes a learning culture within teams, further studies are needed to empirically analyze how this type of leadership can stimulate learning within teams in R&D contexts.

Moreover, as Boak (2014) points out, the relationship between knowledge management and team learning is evident, since sharing, refining, and combining knowledge among team members are important dynamics for learning. In this sense, research team leaders can foster knowledge sharing among team members if they encourage behaviors such as

challenging team members to try new approaches to problem-solving or matching experienced with less experienced people (Carmeli et al., 2013; Wang & Noe, 2010). Likewise, the leader who wants to manage knowledge in teams properly needs to pay particular attention to the social aspect implicit in knowledge exchange by facilitating interactions among team members, as long as these interactions affect their behaviors toward knowledge exchange (Latif, Nazeer, et al., 2020; M.-L. Liu et al., 2020; L. Zhang & Cheng, 2015).

Based on the above considerations, our objective is to analyze the relationship between KOL and the learning achieved by the members of academic research teams. We study the direct and indirect influence of KOL on learning through knowledge sharing within the team. The main reason behind this assumption is that KOL can confront subordinates with challenging situations, tolerates mistakes, and promotes the acquisition and use of new knowledge that will lead to learning. For this purpose, we conducted a survey on 477 researchers belonging to academic research teams. Our findings show that KOL positively affects learning directly and indirectly through knowledge sharing.

This study contributes to the literature by filling some important gaps. The results of this paper extend the literature on the role of KOL by providing evidence in the R&D context of how team leader behavior can influence scientific knowledge sharing and learning in line with previous research (Donate & de Pablo, 2015; Donate & Guadamillas, 2011; Shariq et al., 2019). Moreover, this study also makes an important contribution by analyzing the mediating role of knowledge sharing between KOL and learning. As far as we know, only one study has modeled that relationship (Men & Jia, 2021). We expand on those findings, unlocking the mediating mechanism through which that effect may take place. Besides, this study contributes to the field of knowledge management by extending the literature regarding the role of KOL in the knowledge transfer process from

the individual perspective instead of the organizational one. Finally, this paper examines the role of KOL in academic research groups, which is different from previous works in the context of large and SME firms (Shariq et al., 2018; Zia, 2020). In R&D environments, the team leader style is highly significant, since they can promote values that encourage team/unit members to explore and share new ideas (Naqshbandi & Jasimuddin, 2018; Shamim et al., 2019), and undertake several actions, such as allowing time for debate, encouraging contributions from all team members, and managing differences of opinion constructively (Boak, 2014). Leaders can create a sense of vision and shared purpose that makes all members consider continuous learning as a priority (Chiu et al., 2021).

To achieve the objective, the work is structured into five epigraphs. After the introduction, the second section deals with the theoretical framework and explains the hypothesis. The methodology is then described. In the fourth section, empirical test results are shown and discussed. The fifth and last section gathers the main conclusions, study implications, and future lines of study.

2. Theoretical framework

2.1 Knowledge-oriented leadership and learning

Learning within teams refers to changes in the behavioral repertoire of the team members, resulting from processes in which members gain, share, and combine their knowledge (Burke, Stagl, Salas et al., 2006). Thus, learning is vital for teams, and according to the literature, experimentation, reflective communication, and knowledge communication must take place for team learning to occur (Gibson & Vermeulen, 2003; S. M. Kim et al., 2021). In this sense, Men and Jia (2021) highlight the fact that learning within teams increases the internal availability of knowledge, skills, and information; encourages coordinated action among members; allows easier adaptation to changing circumstances

and job requirements; and finally, allows team practices and procedures to be refined. For these authors, learning advantages are better materialized in team situations in which highly complex and interdependent tasks are performed.

Although several works have highlighted the relevance of the learning that happens within teamwork (Rebelo et al., 2019), according to Van den Bossche et al. (2006), it is necessary to analyze how learning occurs by focusing on social processes and their interaction. In this sense, there are certain processes that positively influence learning, such as knowledge sharing, but there are also others that can have a negative influence, such as defensive routines, through which individuals try to protect themselves from the embarrassment or fear of exposing their thinking (Rebelo et al., 2019). Thus, learning is not easy to achieve due to the dynamic complexity that team members face in real-world situations (Raes et al., 2013). In this regard, team leaders can increase team members' confidence in their ability to learn by creating the appropriate climate. They can also foster values which encourage team members to explore and share new ideas (Burke, Stagl, Klein, et al., 2006; Hannah & Lester, 2009; Naqshbandi & Jasimuddin, 2018; Wong et al., 2010). They can also take several actions, including allowing time for discussion, encouraging input from all team members, and constructively managing differences of opinion (Boak, 2014). Leaders can create a sense of vision and shared purpose that makes team members consider continuous learning a priority (Chiu et al., 2021). The leader's behaviors can lead to team members feeling free to speak openly, but they can also guide reflection on project objectives (Wesselink, 2019).

Therefore, the leader who wants to properly manage knowledge in teams needs to pay particular attention to the social aspect implicit in knowledge exchange by facilitating interactions among team members, as long as these interactions move their behaviors toward knowledge sharing (Zhang & Cheng, 2015). In this regard, we consider that KOL

could be the ideal style for enhancing learning in academic research teams because it combines elements of both transformational and transactional styles (Donate & de Pablo, 2015) with other behaviors that encourage interaction among team members such as knowledge diffusion, delegating, support, and consultation (Shamim et al., 2019). As Men and Jia (2021) point out, KOL generates social cues, in the form of motivational and communication settings that lead team members to become involved in team learning. According to these authors, KOL can increase team members' feelings of pride of belonging, which makes them more committed to group-oriented behaviors such as team learning. In addition, KOL tolerates mistakes and does not embarrass team members in their learning behaviors, eliminating members' fears, and promoting psychological safety that positively influences team learning. Considering the above, we state the following hypothesis:

H1: Knowledge-oriented leadership enhances learning in research teams.

2.2 Knowledge-oriented leadership, knowledge sharing and learning

Some researchers have considered that the influence of the leader on variables related to group learning is largely indirect through mechanisms of social team dynamics (e.g., Chiu et al., 2021; E.-J. Kim & Park, 2020). These authors postulate that though leaders can encourage information exchanges and collaborative behaviors among teammates, members' own social interactions also have influence in generating a convergence toward learning. Thus, social interactions, such as knowledge-sharing behaviors, are important mediating mechanisms that can help leaders generate a shared understanding of continuous learning (Chiu et al., 2021),

Knowledge is the crucial element that links knowledge sharing as a social process with team learning (Erhardt, 2011). Shared knowledge is critical for teams to adjust their operations in response to errors and obstacles. This adjustment generates a learning

process but also leads to learning as an outcome. In this sense, Yeo (2020) considers that knowledge sharing leads to collaborative inquiry and practical understanding, as team members question assumptions and learn from each other's experiences. Gerpott et al. (2019) argue that knowledge sharing leads to learning when individuals share knowledge based on a reflection of their own experiences. In this process, the members of the team become aware of the existing knowledge gaps, which leads them to seek more information to generate new knowledge that is integrated with existing knowledge. Knowledge sharing as a reciprocal and formal social exchange allows team members to use their "human and psychosocial capital to participate in collective learning" (Singh et al., 2019: 890). In this way, through knowledge sharing behaviors, team members can help their colleagues with the most specific aspects of a task (knowing what, how, and when to do it) and help them with more challenging and demanding future tasks. According to Raes et al. (2015), team members can adopt different types of sharing behaviors to express their knowledge, motives, and attitudes. These individual contributions become the starting point for team learning, which happens after they have taken place, when the other team members actively process that knowledge to perform teamwork effectively. Thus, for learning processes to take place within a team, knowledge sharing between members is necessary. The sharing of information and ideas will lead to the information processing that, in turn, allows the team to perform (Raes et al., 2013).

As we have argued above, leaders' behaviors could enhance interactions among team members, as they can encourage knowledge sharing through an appropriate work environment (Latif, Nazeer, et al., 2020; Xue et al., 2011). Team leaders promote the sharing of knowledge between followers when they act as facilitators by promoting a healthy work environment, and a climate of good communication and trust among team members (Yang, 2007; Zboralski, 2009). They can also behave as mentors, showing team

members how to communicate with others and solve problems collaboratively. Moreover, they can be a reference to other team members when they share their knowledge, showing that they are supporting knowledge-exchange activities within the team (E.-J. Kim & Park, 2020; Srivastava et al., 2006; Xue et al., 2011). Thus, KOL acts as a role model that encourages learning by enhancing the intellectual stimulation of employees and providing incentives to develop mechanisms for knowledge sharing (Donate & Guadamillas, 2011; Shamim et al., 2019). Based on these arguments, this study hypothesizes that:

H2: Knowledge sharing mediates the relationship between KOL and learning in research teams.

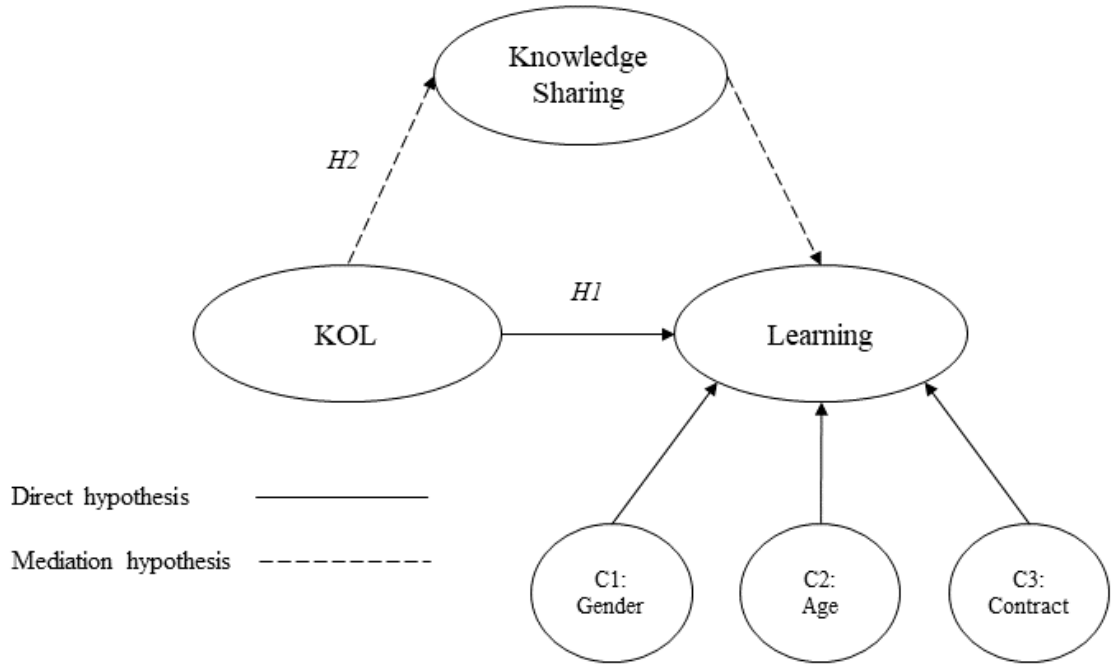

Figure 1. Research Model

3. Methodology

3.1 Sample and procedure

We tested our hypotheses by conducting a quantitative study in which we analyzed self-reported data provided through an online survey by academics from research teams of

Spanish Universities. Our study was focused on teams that had applied for and won competitive funding projects from national programs from 2011 to 2016. In Spain, university research teams are stable groups and consist of a formal scientific leader, several researchers, interns, and technical support staff who collaborate in R&D activities. They usually work together in funding projects for a period of three or four years, during which they must share their knowledge and expertise to learn and achieve the research objectives. We sent emails to the Spanish academic researchers, in which we explained in detail the objective of the study and requested their collaboration if they fulfilled the sample requirements. Finally, we received valid questionnaire responses from 477 academics (56.3% males, 43.7% females) aged between 26 and 76 years old (M = 47.54*;* SD = 9.62).

3.2 Common method bias

We assessed common method variance (CMV) as we collected data from a one-time survey from a single source (i.e., researchers). Based on extant literature (Kock, 2015; Podsakoff et al., 2003), we applied both procedural and statistical remedies to control for potential CMV. As for procedural techniques, we assured participants of the confidentiality of their answers so that they would respond more honestly. Moreover, we methodologically separated variables by changing the scales under which participants had to rate the items, to minimize their using previous answers for subsequent questions. Additionally, we carefully chose items to avoid abstract concepts and kept statements simple and concise, which reduced CMV arising from not understanding the questions. For statistical procedures, we carried out a full collinearity test estimating variance inflation factors (VIFs) (Kock, 2015; Kock & Lynn, 2012). Estimated VIFs ranged between 2.388 and 2.463, far below the upper threshold of 3.3, providing evidence that CMV was not problematic in our research.

3.3 Variables and measures

We developed a questionnaire to measure the study constructs that we administered online to the researchers. We used measures of participants' perceptions regarding knowledge-oriented leadership, knowledge-sharing behaviors, and learning (see appendix). Because the original scales were in English, the research team first translated the items into Spanish using a back-translation procedure as recommended in the literature (Brislin, 1970). In addition, the translations were discussed by specialized professors to reach consensus.

Knowledge sharing. Knowledge sharing was measured using seven items adapted from other scales (e.g., Chow & Chan, 2008; García-Sánchez et al., 2019; Liu et al., 2011). Participants had to rate seven statements on a 5-point Likert scale (1 = completely disagree; 5 = completely agree). Examples of the items included "the team members shared their research advances with each other" and "the team members exchanged knowledge and experience."

Knowledge-oriented leadership. We asked researchers to assess the leadership style of their research team coordinator on a 5-point Likert scale with five items adapted from previous research (Donate & Guadamillas, 2011). Participants had to rate the extent to which their leaders performed certain behaviors during the development of a research project on a 5-point Likert scale (1 = not at all; 5 = yes, absolutely). Examples of the items included "my team leader positively valued team members who share their knowledge" and "my team leader promoted learning from the experience, tolerating mistakes up to a certain point."

Learning. Learning was measured with five items developed by Hoegl and Gemuenden (2001). Participants had to rate the extent to which they agreed with the statements on a 5-point Likert scale (1 = totally disagree; 5 = totally agree). Examples of the items

included “we were able to acquire important know-how through this project” and “our team learned important lessons from this project”.

Control variables. We controlled for participants age, gender, and type of contract (tenure or assistant). We treated age as a continuous variable and both gender (0= male; 1= females) and contract type (0= tenure; 1= assistant) as dummy variables during our statistical analysis.

3.4 Analyses

We tested our research hypotheses through partial least squares structural equation modeling (PLS-SEM), using SmartPLS software (Ringle et al., 2015). PLS-SEM permits analysis of relationships among latent constructs measured with observable items with explanatory purposes (Cepeda-Carrion et al., 2019) and was thus suitable for our study. An a priori test on G*Power 3.3 software with the following parameters was carried out: effect size = 0.15 (Faul et al., 2007); power test = 0.8 (Cohen, 1988). The test revealed that the minimum sample size required to conduct our analysis with five predictors was 138, thus highlighting that our sample size was well above the required sample size.

4. Results

In this section, we present the results of the analysis carried out to validate the measurement and structural models (Hair et al., 2016).

4.1 Assessment of the measurement model

We followed recent recommendations in order to evaluate the measurement model (Cepeda-Carrion et al., 2019; Hair et al., 2019), examining individual reliability of the items, internal consistency reliability, convergent validity, and discriminant validity.

Concerning the individual reliability of the items, we observed that all indicators loading exceeded the 0.708 threshold, to ensure that all indicators represented at least 50% of the

construct variance (Hair et al., 2019). Next, we evaluated internal consistency reliability observing that Cronbach's alpha, composite reliability (Hair et al., 2019), and Dijkstra-Henseler's rho_A (Dijkstra & Henseler, 2015) were higher than 0.7. Regarding convergent validity, we estimated the Average Variance Extracted (AVE) of each construct, observing that values were higher than 0.5 (Hair et al., 2019) and ensuring that each construct explained a minimum amount of the 50% of the variance of its indicators. Table I shows item loadings, reliability estimates, and AVE values.

Table 1

Item loadings, internal consistency reliability and convergent validity

Construct/Indicators	Loading	Alpha	Rho_A	CR	AVE
Leadership		0.948	0.949	0.960	0.827
KOL1	0.911				
KOL2	0.936				
KOL3	0.917				
KOL4	0.869				
KOL5	0.914				
Knowledge Sharing		0.937	0.941	0.949	0.728
KS1	0.880				
KS2	0.737				
KS3	0.927				
KS4	0.907				
KS5	0.887				
KS6	0.811				
KS7	0.809				
Learning		0.919	0.921	0.939	0.756
LEARNING1	0.840				
LEARNING2	0.853				
LEARNING3	0.874				
LEARNING4	0.881				
LEARNING5	0.897				

KOL: knowledge-oriented leadership; KS: knowledge sharing.

Next, we analyzed our measurement model discriminant validity following Fornell and Larcker's criterion (Fornell & Larcker, 1981) and the ratio between heterotrait–monotrait correlations (HTMT) (Henseler et al., 2015). Table II provides evidence that the square

root of the AVE of each construct was higher than the correlation among the other constructs, and the HTMT were below 0.85, therefore providing evidence of discriminant validity in our model (i.e., constructs were different from each other).

Table 2
Discriminant validity based on Fornell-Lacker and HTMT

	KOL	KS	Learning
KOL	**0.910**	*0.777*	*0.785*
KS	0.733	**0.853**	*0.770*
Learning	0.734	0.717	**0.869**

KOL: knowledge-oriented leadership; KS: knowledge sharing. Diagonal elements in bold refer to the square root of the AVE. Correlations between construct are placed below the diagonal. HTMT values are placed in italics above the diagonal

Overall, our estimations provided evidence that our measurement model complies with the established standards concerning the individual reliability of the items, internal consistency reliability, as well as convergent and discriminant validity.

4.2 Assessment of the structural model

The structural model evaluation involves assessing collinearity problems by observing VIFs, estimation of the model's predictive accuracy (i.e., examining the magnitude of R^2), predictive power (i.e., observing values of Q^2) (Hair et al., 2019), and evaluation of the path coefficients. No collinearity problems were observed. As for the predictive accuracy of the model, our results provided evidence that it makes good predictions of knowledge sharing (R^2=0.537) and learning (R^2=0.615). Additionally, as the Q^2 values were higher than 0, we confirm the predictive relevance of our model (see Figure 2).

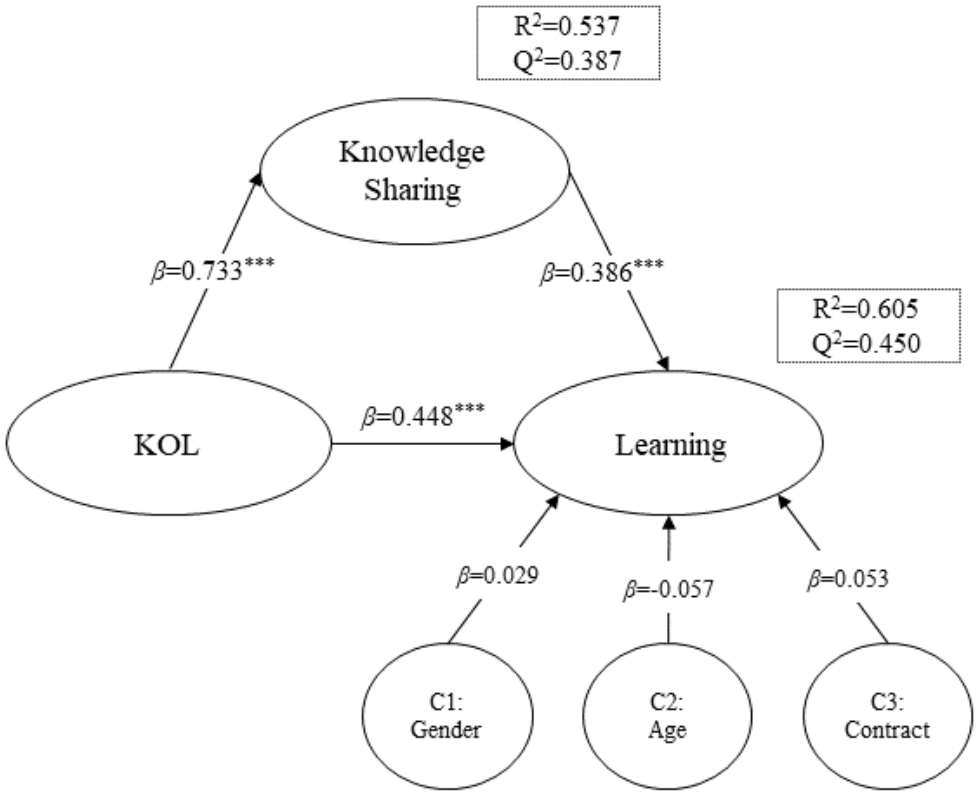

*Figure 2. Path coefficients of the structural relationships among study variables. (*** p-value <0.001).*

Concerning the evaluation of the path coefficients, Table III displays the direct effects among the variables under study in this research. All the path coefficients are statistically significant, except for those corresponding to our control variables. In particular, concerning our control variables, the confidence intervals of the path coefficients include zero in the case of gender (*CI*= -0.020, 0.081), age (*CI* =-0.120, 0.005) and contract type (*CI* =-0.009, 0.115). Consequently, our control variables did not exert any effect on our dependent variable. Thus, analysis of path coefficients allowed us to support Hypothesis 1, which postulated that KOL would positively relate with learning (0.448, p<0.001). These results showed that researchers differing by one unit on their reported KOL

measure would differ 0.448 units on their learning measure. Therefore, our empirical evidence corroborates our Hypothesis 1.

Table 3
Structural model assessment

Relationships	Path coefficient (β)	*t* Value	*p*-Value	Confidence interval 5%	Confidence interval 95%	VIF
KOL → Learning (Hypothesis 1)	0.448	8.394	0.000	0.358	0.535	2.181
KOL → KS	0.733	27.606	0.000	0.688	0.776	1.000
KS → Learning	0.386	7.311	0.000	0.300	0.472	2.209
Gender → Learning	0.029	0.952	0.170	-0.020	0.081	1.034
Age → Learning	-0.057	1.495	0.068	-0.120	0.005	1.701
Contract → Learning	0.053	1.402	0.080	-0.009	0.115	1.678

Bootstrapping based on *n* =10,000 samples; KOL: knowledge-oriented leadership, KS: Knowledge sharing.

Regarding Hypothesis 2, which submitted that knowledge sharing would mediate the relationship between KOL and learning, we tested for indirect effects to inferences made about mediation. Table IV shows that the indirect effect of KOL on learning through knowledge sharing was positive and statistically different from zero (0.283, $p<0.001$). Thus, results show that researchers reporting higher levels of KOL within their research teams tend to share their knowledge more, which translates into higher levels of learning.

Table 4
Total effects and unique indirect effects of KOL on learning

Effects	Coefficient	*SE*	*t* value	*p* value	Confidence interval 5%	Confidence interval 95%
Total effects:	0.731	0.027	27.288	0.000	0.685	0.773
Indirect effects through:						
KS (Hypothesis 2)	0.283	0.041	6.962	0.000	0.218	0.352

Bootstrapping based on *n* =10,000 samples; Confidence intervals are statistically significant when they do not include zero; researchers' age, gender and situation as a public servant were controlled. KOL: knowledge-oriented leadership, KS: Knowledge sharing.

Overall, from our empirical results we conclude that KOL positively and directly relates with learning (H1). Moreover, KOL also enhances learning indirectly, by stimulating

knowledge sharing within research teams (H2). Consequently, our empirical evidence fully supports our research hypotheses.

5. Discussion

With this study, we achieved our purpose of analyzing the effects of KOL on learning. Although the KOL literature assumed that this leadership style was associated with a learning climate within teams, the field lacks empirical results to support this fact. Only one previous study showed that KOL and learning were related (Men & Jia, 2021) but not how this effect takes place. We theorized that KOL would affect learning directly and indirectly via knowledge sharing within research teams. Our findings broadly supported our conceptual framework.

Analyzing these relationships broadens our knowledge of leadership within teams in academic institutions as we identified the suitability of KOL to enhance researchers' learning. Our results were consistent with our argument that KOL positively and directly influences learning within research teams. Moreover, examining the various effects of KOL on learning, we revealed that both variables were also indirectly associated. Through our analysis of indirect effects, we disclosed the mediational role of knowledge sharing on the relationship between KOL and learning. This result suggests that KOL also enhances learning indirectly because it contributes to encouraging knowledge sharing within research teams.

Our results extend the findings of previous research. Men and Jia (2021) found that KOL had positive repercussions on team learning via facilitation of communication among team members. We expand those findings emphasizing the key role of knowledge sharing in the KOL–learning relationship. Our results are interesting because of the general assumption that KOL would prompt learning in teams operating in a knowledge-intensive

context, but there is little evidence to support that claim. In summary, the results show a direct and indirect effect, both significant and in the same positive direction, which allows us to affirm that there is a complementary partial mediation (Nitzl et al., 2016). These findings imply relevant theoretical and practical implications.

5.1 Theoretical implications

Our results contribute to team leadership, learning, and knowledge management literatures by extending our understanding of the effects of KOL on learning, both directly and indirectly, through the knowledge sharing that takes place within research teams. First, concerning team leadership, we contribute to the burgeoning research stream on the positive effects of KOL for team outcomes (Donate & de Pablo, 2015; Latif, Afzal, et al., 2020; Naqshbandi & Jasimuddin, 2018). Extant studies had verified the appropriate role of KOL for teams in the IT (Donate & de Pablo, 2015; Donate & Guadamillas, 2011), or pharmaceutical sectors (Shariq et al., 2019). With our study, we generalize the positive effects of KOL for academic research teams, therefore aligning with previous research (Ballesteros-Rodríguez, De Saá-Pérez, et al., 2020; Rehman & Iqbal, 2020).

We also contribute to the knowledge management and learning literatures, as we have identified KOL as a predictor of knowledge sharing among researchers working together on projects and the derived learning outcomes happening within teams. In this sense, knowledge sharing mediates between KOL and learning within teams. Our findings align with extant studies corroborating that KOL had the potential to influence knowledge sharing within teams (Donate & de Pablo, 2015; Latif, Afzal, et al., 2020; Shamim et al., 2019; Shariq et al., 2019). In this line, most of the studies have placed knowledge management practices as a mediator between KOL and innovation (Donate & de Pablo, 2015; Donate & Guadamillas, 2011; Jiang et al., 2021; Naqshbandi & Jasimuddin, 2018;

N. U. Zia, 2020), or performance (Latif, Afzal, et al., 2020; Rehman & Iqbal, 2020), but no study has analyzed the potential role of knowledge sharing between KOL and learning. Only one prior study modeled the relationship between KOL and learning (Men & Jia, 2021). We expand those findings by unlocking the mediating mechanism through which that effect can take place.

5.2 Practical implications

From a practical point of view, we provide valuable insights for team leaders on how to promote learning within a team. Our results suggest that adopting a KOL style is essential for research team leaders to encourage suitable mechanisms within teams. Concretely, under the direction of KOL, researchers will share knowledge with their teammates, which will lead to increasing levels of learning. Our results suggest that universities would benefit from developing their team leaders into knowledge-oriented leaders because they promote followers' learning. To do so, we recommend that higher education institutions offer their team leaders specific training opportunities that promote KOL behaviors (i.e., stimulate knowledge diffusion, be supportive, and delegate). Moreover, research team leaders could also engage in knowledge-oriented behaviors such as assigning researchers new tasks in contexts not previously encountered to encourage knowledge exploration, acquisition, sharing, and use (Shariq et al., 2019).

However, to secure high levels of learning, research team leaders should complement their KOL behaviors with setting a team environment that promotes knowledge sharing among researchers in a team. The main reason is that knowledge sharing has emerged here as an important mechanism for promoting learning and should thus be considered by research team leaders aiming to enhance learning within research teams. We recommend team leaders to maintain high-quality relationships with all team members so that

followers will perceive an environment of equality that will encourage them to share their knowledge with their colleagues (Kim et al., 2021). In addition, extant research pointed out that reducing barriers to knowledge sharing is imperative for promoting those behaviors in higher education institutions (Yeşil & Hırlak, 2013). Consequently, we recommend research team leaders focus on reducing risk perception of knowledge sharing and on increasing trust among team members in order to promote those behaviors within research teams, thereby countering the knowledge-hiding behaviors arising from the increasingly competitive environment in which researchers operate (Ballesteros-Rodríguez, De Saá-Pérez et al., 2020).

5.3 Limitations and future research

Although this is one of the few existing works investigating the relationship between KOL, knowledge sharing, and learning in the context of academic research teams, our study has certain limitations that deserve attention and will open interesting future lines of inquiry.

First, despite our valuable contributions for theory and practice, our research design was cross-sectional in nature. Although our control for common method bias assures the quality of the data (Podsakoff et al., 2003), reverse causality could also explain our results. For example, greater knowledge sharing within a research team could determine researchers' perceptions that their leaders display KOL behaviors. Therefore, we suggest carrying out longitudinal designs and collecting data at several points of time to overcome this limitation.

Second, although we have joined a research stream in its infancy and offer valuable insights into the effects of KOL within research teams, other research designs, such as case studies or experimental designs, could also provide support to the relationships

proposed here (Dorta-Afonso, 2019; Rico et al., 2021). In this sense, future qualitative studies are needed for a detailed, in-depth understanding of leaders and followers' opinions regarding the role of KOL in knowledge management (Liu, Zheng, et al., 2022), and how to encourage managers to adapt this leadership style (Zian, 2020).

Third, although empirical evidence about KOL exists in western (Donate & de Pablo, 2015) and eastern (Men & Jia, 2021) countries, we acknowledge the recognition of context by other researchers when conducting research about leadership behaviors (Kim et al., 2021). Therefore, the relationships found here need further analysis in other countries and across different contexts to investigate whether they hold true. Thus, we recommend conducting similar research designs cross-culturally.

5.4 Conclusion

Notwithstanding the above mentioned limitations our manuscript contributes to a better understanding of the effects of leaders' style on learning within teams, expanding the growing literature on KOL (Donate & de Pablo, 2015; Latif, Afzal, et al., 2020). We provide the field with an explanatory framework supported by empirical evidence on the relationship between KOL and learning outcomes within research teams through the mediating mechanism of knowledge sharing. Moreover, the present study highlights the need for research team leaders to adopt a KOL style within research teams to stimulate knowledge sharing and enhance researchers' learning outcomes. We hope that both academics and practitioners will find our study useful and that our contribution will further stimulate more research in this topic.

6. References

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