Research on the emergence mechanism of shared leadership: The mediating role of self-efficacy

Yiqing Jiang*

School of Economics and Management, Beijing Jiaotong University, Beijing, China 100044

Abstract. Current academic research on shared leadership has focused on the impact of shared leadership, with relatively little research on its causes and operational mechanisms. To fill this gap, this paper identifies, analyzes, and tests the emergent mechanisms of shared leadership. Firstly, by defining the concept, I constructed a theoretical model of the study based on theories such as social exchange. Secondly, I used SPSS 25.0 and AMOS 24.0 software to analyze the 227 valid questionnaires collected. The results show that team member exchange has a significant positive impact on the emergence of shared leadership, and self-efficacy plays a positive mediating role.

1 Introduction

Much of the research on leadership has focused on individual leadership, with less research on team members participating together and sharing leadership behaviors [1]. However, with the increased complexity, variability, and unpredictability of the environment faced by organizations, it is no longer realistic for a single leader to successfully perform the leadership functions required by the team [2]. At the same time, with the advent of the era of knowledge integration and innovation, the complexity and responsibility of team tasks have increased, organizational structures have flattened, and virtualized, self-managed teams have become important work units, which makes the traditional top-down, strictly controlled leadership approach unable to meet the management needs of teams with specialized expertise and self-management capabilities [3]. Accordingly, it is crucial to explore the antecedents of shared leadership in the context of organizational environment variability and increased task complexity [4]. In contrast, most of the current research on shared leadership has focused on the impact it brings, including studies on team performance [1,5-7], and employee behavior [8-10]. There are relatively few studies, especially empirical ones, on the causes and operational mechanisms of shared leadership [11-13]. Therefore, in this paper, i will identify, analyze, and test the emergent mechanisms of shared leadership based on an empirical research approach to dissect the mediating mechanisms of the impact of team member exchange on the emergence of shared leadership.

* Corresponding author: yqjiang98@163.com

Shared leadership focuses on the operation of interpersonal influence among team members, including the ability to participate in constructive horizontal influence, give and receive feedback. Its purpose is to better achieve team goals through mutual leadership among team members. Team member exchange is a horizontal exchange relationship within an organization, representing the quality of relationships between individuals in the team and other members of the team, representing individual perceptions of team member information and resource sharing, mutual assistance [14], and the degree of recognition of team member roles. Therefore, the emergence of shared leadership is inseparable from the exchange of team members. In addition, according to social exchange theory, high-quality team member exchange brings psychological support such as trust and help among team members [15] and recognition of peers' abilities and roles [16], which can enhance employees' self-efficacy.

In summary, this paper intends to explore in depth the mechanisms underlying the emergence of shared leadership from the perspective of social exchange theory, in conjunction with the effects of team member exchange on self-efficacy. It will enrich the existing research on shared leadership and provide a theoretical basis and practical guidance for the implementation of shared leadership as a more flexible and effective model in enterprises.

2 Theory and hypothesis

2.1 Shared leadership and team member exchange

Since the 1990s, scholars at home and abroad have carried out research on shared leadership, but the definition of shared leadership has not been agreed [17]. Their definition of shared leadership is mainly divided into macro and micro levels. First, the macro level focuses shared leadership on the team as a whole, describing shared leadership as a process. Carson et al. (2007) [18] defined shared leadership as a spontaneous team attribute in which leadership functions are assigned to team members rather than focusing on a designated leader. Secondly, at the micro level, shared leadership is described as a relational phenomenon, involving the interaction and leadership of team members in their efforts towards team goals [19]. Leadership functions are voluntarily shared among members of the team [11]. Therefore, this paper argues that shared leadership is a dynamic and interactive process among team members. Leadership responsibilities are widely distributed among team members rather than concentrated in the hands of a leader. The goal is that team members lead each other and achieve team or organizational goals. It has the characteristics of responsibility sharing, equality, multi-center, collaboration, and dynamics.

In order to describe the relationship quality between individuals and other members of the team, Seers (1989) proposed the concept of Team Member Exchange (TMX) based on role theory and social exchange theory [20]. It is defined as individual members' perceptions of the overall exchange relationship between themselves and other team members. It is used to measure the reciprocal relationship formed in the process of team member exchange, that is, the willingness of individual members to assist colleagues, share opinions and feedback, and accept opinions, obtain help and recognition from colleagues [20]. Team member exchange differs from vertical leader-member exchange in that it is a horizontal exchange relationship within the organization that represents the quality of the relationship between individuals in the team and other members within the team, and represents the individual's perceived sharing of information and resources and mutual help among team members [14]. Furthermore, team member exchange can be used as both a

group-level variable and an individual-level variable, depending entirely on the individual's research perspective [21]. Team member exchange in this paper is an individual-level variable.

The impact of team member exchange on shared leadership. First of all, according to the view of social exchange theory, high-quality team member exchange makes employees feel good interaction in the team [15]. Good interaction will make team members more willing to show feedback behavior that is beneficial to the team to express their attention to high-quality relationships in the team. They are willing to contribute their strength to achieve team goals [22]. Therefore, when there are situations that are beneficial to team development or that may affect team interests, employees are more willing to share ideas with others and actively participate in team decisions, making it easier for shared leadership to occur in team work. Secondly, team member exchange can reflect the degree of recognition of the ability and role of team members [23], and team members' recognition of each other's ability is also a necessary condition for individuals to try to accept peer influence [4]. Based on the above discussion, hypothesis 1 is proposed :

H1 : Team member exchange will positively affect the emergence of shared leadership.

2.2 The mediating role of self-efficacy

Team member exchange measures the quality of relationships between individuals in the team [24]. A high-quality team member exchange promotes collaboration, support, and trust among team members [15, 20], and generates a sense of obligation and reward, which is conducive to enhancing emotional support among members [25], which in turn will make individuals more confident in their work and dare to challenge it even when it is difficult. Secondly, high-quality team member exchange will enable individuals to gain the affirmation and trust of other team members in their work [26], which will also enhance individual leadership self-efficacy. Finally, information processing theory holds that the relevant information obtained by individuals from the organizational environment affects their perception of self-ability. Therefore, a series of behavioral, cognitive and social rewards generated by high-quality team member exchange are likely to lead to greater self-efficacy. Liao et al. (2010) confirmed the positive effect of high-quality team member exchange on self-efficacy [27]. Xue (2020) also confirmed that high-quality team member exchanges would enhance employees' recognition of their own abilities through reciprocal exchanges [28].

Self-efficacy refers to an individual's belief in his or her ability to achieve expected results in life (such as achieving goals and changing events that have an impact on life), and is one of the important determinants of human behavior [29]. Therefore, high self-efficacy will make team members confident that they have the necessary skills to participate in the common leadership work, and actively participate in decision-making, support, and encourage other team members. At the same time, self-efficacy is based on specific situations or relatively specific behaviors in situations, and individuals may have high self-efficacy for some tasks and low self-efficacy for others [4]. Therefore, according to the imitation and learning behaviors of team members, in a team with high-quality exchange, when individuals perform leadership behaviors and gain recognition from other members by assuming leadership roles, they will also stimulate the self-efficacy of other team members, take the initiative to assume corresponding responsibilities in the part they are good at, and show leadership behaviors. This dynamic and mutually influencing process promotes the emergence of shared leadership.

In short, high-quality team member exchange will make team members trust and support each other, and recognize the role and work effect of team members, so that individuals have confidence in their own ability, are willing to and believe that they are

competent for the leadership role, actively participate in decision-making at work, and put forward suggestions that are conducive to the realization of team goals. Based on the above discussion, the following hypotheses are proposed:

H2: Team member exchange has a positive impact on self-efficacy.

H3: Self-efficacy has a positive impact on the emergence of shared leadership.

H4: Self-efficacy plays a mediating role in team member exchange and the emergence of shared leadership.

Combined with the above analysis, this study constructs a theoretical model as shown in Figure 1.

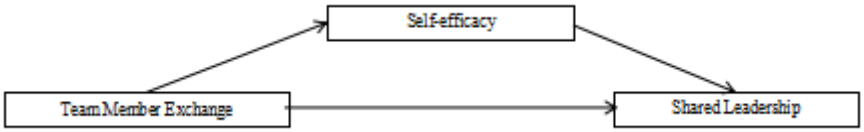

Fig. 1. Theoretical model.

3 Method

3.1 Sample

An online questionnaire survey was used to collect data from enterprises in Beijing from September to October 2022. A total of 260 questionnaires were collected, and 227 valid samples were obtained after eliminating invalid questionnaires with incomplete and regular answers. The effective recovery rate was 87.31 %. In order to ensure the generalization of the research conclusions, the samples selected in this study cover many industries, such as the IT industry, manufacturing industry, energy, and finance.

Of the valid samples, 48.5 % were male and 51.5 % were female ; 25 years old and below accounted for 14.1 %, 26-35 years old accounted for 51.1 %, 36-45 years old accounted for 31.7 %, over 45 years old accounted for 3.1 %. The education level of secondary school and below accounted for 3.1 %, college accounted for 10.1 %, undergraduate accounted for 34.4 %, master and above accounted for 52.4 % ; among the working years, less than 1 year accounted for 8.8 %, 1-3 years accounted for 11.9 %, 4-5 years accounted for 10.1 %, 6-10 years accounted for 23.3 %, and more than 10 years accounted for 45.8 %. Team size, 1-5 people accounted for 16.7 %, 6-10 people accounted for 18.5 %, 11-20 people accounted for 20.7 %, more than 20 people accounted for 44.1 %. Overall, the respondents are mainly 26-35 years old, highly educated, high work experience. These people pay more attention to work autonomy and have a certain understanding of the behavior of shared leadership. Therefore, the obtained data fit the research content and purpose of this paper.

3.2 Variable measurement

The main variables of this study include shared leadership, team member exchange and self-efficacy. All scales used the Likert-5 point scoring method, and the scores from 1 to 5 were “ very disagree ” to “ very agree ”. As the content of this study are individual level, therefore, the use of employee self-assessment.

Shared Leadership (SL) uses the shared leadership scale developed by Muethel et al. (2012) [30], with a total of 7 items. Combined with the statistical results of this paper, “ I will seek other members for their own work performance information ” was deleted, and the final Cronbach 's α coefficient was 0.859.

Team member exchange (TMX) adopts the team member exchange scale developed by Seers et al. (1995) [15], with a total of 10 items. Combined with the statistical results of this paper, " I often recommend better working methods to other members of the team " was deleted, and the final Cronbach 's α coefficient was 0.884.

Self-efficacy (SE) was developed by Chen et al. (2001) [31], a total of 8 items. Combined with the statistical results of this paper, " I can perform well even if I encounter difficulties " was deleted, and the final Cronbach 's α coefficient was 0.875.

Control variables. First, basic demographic variables may have some effect on the results. Second, previous studies have found that team size and work experience have an impact on shared leadership [32]. Therefore, the control variables of this paper are gender, age, education level, working years and team size.

4 Data analysis and results

4.1 Common method bias and discriminant validity test

This paper adopts the method of employee self-evaluation, so there may be common method bias. To ensure reliability, Harman single factor test was performed using SPSS 25.0. The analysis results show that the variance interpretation of the first factor is 20.432 %, which is lower than the empirical judgment standard value of 40%, indicating that the common method deviation problem is not serious.

Secondly, through AMOS24.0, the confirmatory factor analysis of shared leadership, team member exchange and self-efficacy was carried out to test the discriminant validity of each variable. The results are shown in table 1. The fitting indexes of the three-factor model were the best and all in the acceptable range, indicating that there was a good discriminant validity between the variables in this study.

Table 1. Confirmatory factor analysis.

Models	$\chi 2$	df	$\chi 2/df$	RMSEA	CFI	TLI
three-factor model(TMX, SE, SL)	422.466	204	2.071	0.069	0.914	0.903
two-factor model(SE+SL, TMX)	516.484	207	2.495	0.081	0.879	0.865
two-factor model(SE+TMX, SL)	561.52	207	2.713	0.087	0.861	0.845
one-factor model(SL+SE+TMX)	669.923	209	3.025	0.099	0.819	0.800

Note : + means that two variables are combined into one variable , TMX : Team Member Exchange , SE : Self-efficacy , SL : Shared Leadership.

4.2 Descriptive statistics and correlation analysis

The mean, standard deviation and correlation coefficient of each variable are shown in Table 2. Team member exchange is significantly positively correlated with shared leadership ($r = 0.702$, $p < 0.01$) and self-efficacy ($r = 0.688$, $p < 0.01$). Self-efficacy was positively correlated with shared leadership ($r = 0.72$, $p < 0.01$). Therefore, H1, H2 and H3 are preliminarily verified.

Table 2. Descriptive statistics and correlation analysis.

Variable	M	SD	SEX	AGE	EDU	YEAR	SCALE	TMX	SE	SL
SEX	1.52	0.501	1							
AGE	2.24	0.726	-0.022	1						
EDU	3.36	0.788	-0.014	0.143*	1					
YEAR	3.85	1.347	0.007	0.791**	0.212**	1				
SCALE	2.92	1.138	-0.044	0.103	-0.205**	0.044	1			
TMX	3.8223	0.69352	-0.023	-0.042	-0.075	-0.044	0.118	1		
SE	3.9742	0.65034	-0.004	0.001	0.07	0.041	0.132*	0.688**	1	
SL	3.9398	0.70662	-0.077	0.004	0.079	0.033	0.089	0.702**	0.72**	1

Note: Significance (bilateral): ** $p < 0.01$, * $p < 0.05$. M : mean , SD : Standard Deviation , TMX : Team Member Exchange , SE : Self-efficacy , SL : Shared Leadership.

4.3 Hypothesis testing

The SPSS25.0 software was used to test the hypotheses by hierarchical regression. The results are shown in Table 3. H1 demonstrated that team member exchange has a significant positive impact on the emergence of shared leadership ($\beta = 0.721 > 0$, $p < 0.001$), according to M4. Secondly, step-by-step regression analysis is performed on the variables, and the mediating effect is tested by observing the changes in the regression results of the independent variables after adding the mediating variables. H2 demonstrated that team member exchange has a significant positive impact on self-efficacy ($\beta = 0.646 > 0$, $p < 0.001$), according to M2. M6 On the basis of M4, after adding the mediating variable self-efficacy, the impact of team member exchange on shared leadership decreases from 0.721 to 0.418, and self-efficacy has a significant positive impact on the emergence of shared leadership($\beta = 0.469 > 0$, $p < 0.001$). To sum up, the three conditions for the mediating effect are met, so H4 is proved. In order to further detect the mediating effect, bootstrapping was used to set the sample size to 5000, and the confidence interval was 95 %. The test results are shown in Table 4. The indirect effect of team member exchange on shared leadership is [0.1852, 0.4336] at the 95 % confidence interval, which does not include 0, indicating that the mediating effect of self-efficacy is significant and H4 is supported again.

Table 3. Regression analysis of mediating effect**.**

Variable	SE		SL			
	M1	M2	M3	M4	M5	M6
SEX	0.002	0.019	-0.102	-0.083	-0.104	-0.092
AGE	-0.095	-0.068	-0.076	-0.046	-0.002	-0.014
EDU	0.080	0.105*	0.087	0.115*	0.025	0.066
YEAR	0.047	0.049	0.036	0.038	0.000	0.015
SCALE	0.091*	0.046	0.069	0.019	-0.002	-0.002
TMX		0.646***		0.721***		0.418***
SE					0.780***	0.469***
R^2	0.032	0.498	0.025	0.517	0.525	0.610

$\triangle R^2$	——	0.466	——	0.492	0.499	0.093
F	1.447	36.335	1.139	39.227	40.446	49.002

Note: Significance (bilateral): *** p < 0.001, * p < 0.05, TMX : Team Member Exchange , SE : Self-efficacy , SL : Shared Leadership.

Table 4. Bootstrap mediating effect test.

Response relationship	Models	Effect	Boot SE	Boot LLC	Boot ULC
Direct effect	X→Y	0.4185***	0.0784	0.2528	0.5589
Indirect effect	X→M→Y	0.3029***	0.0643	0.1852	0.4336

Note: Significance (bilateral): *** p < 0.001, X : Team Member Exchange , Y:Shared Leadership , M : Self-efficacy , Boot SE : standard error , Boot LLCI : Lower limit of 95 % confidence interval , Boot ULCI : 95 % confidence interval upper limit.

5 Discussion

Based on the process performance of shared leadership, this paper confirms that team member exchange has a positive impact on the emergence of shared leadership and self-efficacy plays a positive mediating role in the impact of team member exchange on the emergence of shared leadership.

5.1 Theoretical implications

First of all, although the current academic research on shared leadership is gradually carried out, there are relatively few studies on the antecedents, formation and development of shared leadership, especially empirical tests. Based on social exchange theory, this paper incorporates team member exchange, self-efficacy and shared leadership into the research framework and confirms the framework. Secondly, most of the current research on the emergence of shared leadership is based on individual personality traits [11,32]. This paper studies leadership from the perspective of interpersonal perception, which provides a new perspective for the emergence of shared leadership. Finally, the data analysis results show that there is a certain correlation between self-efficacy and team size. In the future research on self-efficacy, team size can be used as a moderating variable for further research.

5.2 Practical significance

The research in this paper provides ideas for the transformation of enterprises from traditional vertical leadership mode to shared leadership mode and sustainable and healthy operation. First, team member exchange will positively influence the emergence of shared leadership. Therefore, formal leadership should create a friendly atmosphere for the team, encourage and support team members to form common goals and commitments, and promote information exchange, feedback and member reciprocity among team members. Second, the mediating role of self-efficacy. Leaders should pay attention to the cultivation of employees' sense of self-efficacy, and give timely recognition for the work achievements and roles of members. Third, give full play to the role of leaders as coaches, and establish a sound training and development system for shared leadership development. For example, how to train team members to be responsible and constructive leaders ; train basic leadership skills such as setting goals, reporting team status, etc.

5.3 Research limitations and future prospects

Although this study has certain theoretical and practical significance, there are still some shortcomings to be improved. First of all, from the data point of view, the data of this paper comes from the self-assessment of employees. Although it has been verified that the homology bias problem is not serious, it will also have an impact on the accuracy and external validity of the causal relationship inference in this paper. Therefore, future research can be supplemented by situational experiments and other methods. Secondly, from the research level, this paper focuses on the individual level. Future research can combine the two levels of individual and team to conduct cross-level research to further explore the impact of individuals on groups, and then the impact on the emergence of shared leadership. Finally, from the model point of view, this paper is a mediation model. In the future, collectivism or power distance in the Chinese context can be introduced into the model as a moderating variable to further clarify the research boundary.

References

1. X. Liu, Z. Liu, Soft Science, **33**, 114-118 + 140 (2019).
2. X. Sun et al. Front Psychol, **7**, 1964 (2016).
3. F. Chai, B. Cheng, Enterprise Economy, 28-32 (2015).
4. M. Bligh, C. Pearce, J. Kohles, J Manage Psychol, **21**, 296-318 (2006).
5. X. Cao, S. Wang, N. Yao, Finance and Accounting Monthly, 147-154 (2022).
6. L. Wang, X. Niu, G. Shi, Science & Technology Progress and Policy, **34**, 141-146 (2017).
7. L. D'Innocenzo, J. Mathieu, J Manage, **42**, 1964-1991 (2016).
8. H. Wang, Q. Peng, The Theory and Practice of Finance and Economics, **41**,138-144 (2020).
9. P. Hao, L. Long, Journal of Industrial Engineering and Engineering Management, **34**, 11-20 (2020).
10. P. Yuan, X. Dong, H. Zhai, Q. Feng, Soft Science, **32**, 87-91 (2018).
11. H. Liu, S. Gao, L. Xu, Finance and Accounting Monthly, 121-127 (2021).
12. S. Gao, H. Liu, Y. Zhang, L. Xu, Modernization of Management, **37**, 113-116 (2017).
13. P.Hao, L. Long, Management Review, **29**, 87-101 (2017).
14. F. Steven , V. Linn, K. Dishan, J Appl Psychol, **100**, 583-595 (2015).
15. A. Seers, Group Organ Manage, **20**, 18-38 (1995).
16. H. Tse, Group Organ Manage, **33**, 194-215 (2008).
17. C. Chiu, B. Owens, P. Tesluk, J Appl Psychol, **101**, 1705-1720 (2016).
18. J. Carson, P. Tesluk, J. Marrone, Acad Manage J, **50**, 1217-1234 (2007).
19. A. Mehra, B. Smith, A. Dixon, B. Robertson, Leadership Quart, **17**, 232-245 (2006).
20. A. Seers, Organ Behav Hum Dec, **43**, 118-135 (1989).
21. K. Yin, J. Sun, K. Zhang, L. Chen, Management Review, **30**, 132-141 (2018).
22. Y. Zhu, Y. Jin, Y. Ye, Science Research Management, **37**, 114-121 (2016).
23. K. Dishan, V. Linn, J Appl Psychol, **92**, 1286-1298 (2007).
24. H. Jin, P. Diao, C. Yang, Journal of Jiangsu University(Social Science Edition), **24**, 103-113 (2022).

25. U. Baek, H. Olya, S. Lee, Serv Ind J, **38**, 584-606 (2018).
26. W. Zou, J. Liu, Advances in Psychological Science, **19**, 1193-1204 (2011).
27. H. Liao, D. Liu, R. LOI. Acad Manage J, **53**, 1090-1109 (2010).
28. H. Xue, Enterprise Economy, 77-83 (2020).
29. Z. Wan, *Psychological advantage affects life satisfaction : the role of self-efficacy and coping style* (2022).
30. M. Muethel, S. Gehrlein, M. Hoegl, Hum Resour Manage-Us, **51**, 525-548 (2012).
31. G. Chen, Organ Res Methods, **4**, 62-83 (2001).
32. J. Hoch, J. Dulebohn, Hum Resour Manage R, **27**,678-693 (2016).