

The Effects and Mechanism of Leader-member Exchange on Individual Innovative Behavior and Organizational Citizenship Behavior: A Meta-analysis Based on Thriving at Work and Cultural Contexts

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Abstract. In recent years, an increasing number of scholars have begun to notice the relationship between leader-member exchange and employees' innovative behavior and organizational citizenship behavior. However, few studies have focused on the underlying mechanism of leader-member exchange affecting innovative behavior and organizational citizenship behavior. This study aims to explain the effects of leader-member exchange on employees' behavior from the perspective of individual psychological experience, based on social exchange theory, conservation of resources theory, and social cognitive theory. The study included 298 papers containing 321 effect sizes and 103,615 research samples for meta-analysis, and found that: (1) leader-member exchange is significantly and positively related to innovative behavior, organizational citizenship behavior, and thriving at work; (2) leader-member exchange can facilitate individuals to exhibit more innovative behavior and organizational citizenship behavior by enhancing thriving at work; (3) collectivist cultural tendency tends to play a moderating role in the process of leader-member exchange influencing individual innovative behavior and organizational citizenship behavior through thriving at work. Compared to the context of low collectivist cultures, the effects of leader-member exchange on thriving at work are stronger in the context of high collectivist cultures, so are the indirect effects of leader-member exchange on innovative and organizational citizenship behavior through thriving at work. The findings help to understand the underlying mechanism and boundary conditions of leader-member exchange affecting individual psychological experiences and behavior. They also provide momentous practical insights for managers to build high-quality exchange relationships with employees and enhance organizational collectivism to promote innovative and organizational citizenship behavior.

Keywords: LMX; Thriving at work; Innovative behavior; Organizational citizenship behavior; meta-analysis.

1. Introduction

Leader-member exchange (LMX) is a milestone in leadership research development (Erdogan et al., 2010). Leader-member exchange theory has developed into a crucial stage of scientific inquiry and has received considerable empirical research attention in the field of organizational management. Leader-member exchange refers to the quality of the relationship between employees and their leaders (Graen & Uhl-Bien, 1995), which can determine the amount of physical work, mental work, material resources, information, and social support exchanged between leaders and employees (Liden et al., 1997). A review of the literature in the field of leader-member exchange reveals that a large number of studies have used leader-member exchange as a mediating or moderating variable between leadership style and employee performances (Dhar, 2016; Han et al., 2020). In recent years, an increasing number of studies have begun to explore the relationship between leader-member exchange and employees' behavioral performances from the perspective of their psychological experiences (Vila et al., 2020; Garg et al., 2017).

According to social exchange theory, employees with high-quality leader-member exchange relationships receive more resources from their leaders, such as more learning opportunities, challenging work, etc. (Xu et al., 2015), and therefore feel more energized at work. In return for their leaders, they spontaneously exhibit more performances that contribute to organizational effectiveness,

such as innovative behavior and organizational citizenship behavior (Schermulyet al., 2013; Sparrowe and Liden 1997). It is evident that leader-member exchange can have an impact on employees' psychological experiences, which in turn affects their behavioral performance. While past meta-analyses of leader-member exchange have focused on exploring the antecedent and outcome variables of leader-member exchange (Dulebohn et al., 2012; Gerstner et al., 1997), the present meta-analysis introduces thriving at work as a mediating variable based on a psychological experience perspective to explore the underlying mechanisms by which leader-member exchange affects employees' innovative and organizational citizenship behavior.

Social cognitive theory suggests that individuals, their environment, and their behavior interact with each other (Bandura, 2001). Collectivist cultures value interests and interpersonal relationships, and individuals with high collectivist cultural tendency attach more importance to the relationship between the individual and other members of the organization and put organizational interests above personal interests. Individuals with low collectivist cultural tendency place more emphasis on personal interests instead of the interests of the organization and other members, therefore disregarding the connection between the individual and the organization (Chen, 1995). Employees in the context of a high collectivist culture are more likely to have strong ties with their leaders and receive more emotional support from their leaders. Also, employees with high-quality leader-member exchanges are more likely to be thriving at work and exhibit more innovative behavior and organizational citizenship behavior in return for their leaders. Therefore, this study aims to explore the moderating role of collectivist cultural tendencies.

This paper comprehensively collects empirical studies on the relationship between leader-member exchange and thriving at work, innovative behavior, and organizational citizenship behavior. It constructs structural equation models, analyzes the relationship between leader-member exchange and thriving at work, innovative behavior, and organizational citizenship behavior using meta-analysis, and tests the moderating role of collectivist cultural tendencies with a view to establishing a more accurate understanding of the underlying mechanism and boundary conditions.

2. Theories and Hypotheses

2.1 Leader-member Exchange and Innovative Behavior

A high-quality leader-member exchange relationship implies that employees view their leaders as trustworthy, caring, and supportive. According to social exchange theory, employees reward or give back to their leaders by increasing their personal involvement, effort, and personal performance at work (Schermulyet al., 2013), and they exhibit behavior beyond what is required in their job descriptions to achieve team goals (Sparrowe & Liden 1997). Innovative behavior is the process by which employees generate and put into practice new and effective ideas related to products, services, work methods and actions to be improved (De Jong & Den Hartog, 2007). Thus, innovative behavior consists of two aspects: generation and implementation of innovative ideas (Scott & Bruce, 1994). Employees who have high-quality leader-member exchange relationships are more likely to gain knowledge from their leaders and have more opportunities to ask their leaders for their understanding and experience of work-related issues. This sharing of knowledge and experience can lead to more creative ideas (Mumford et al., 2002). At the same time, high-quality leader-member exchange relationships allow employees to share their creative ideas with their leaders (Botero & Van Dyne, 2009), and leaders have the willingness to help them implement these innovative ideas. In addition, according to balance theory (Heider, 1958), an individual who is perceived to be close to a prominent person is more likely to be viewed positively by other members of the group because there is pressure for cognitive balance in the perception of the observer. Thus, employees who have high-quality leader-member exchange relationships are able to enjoy higher prestige and authority within the work team (Kilduff & Krackhardt, 1994), and are thus more likely to persuade important members of the organization to embrace new ideas and establish necessary collaboration with them to implement them (Scott & Bruce, 1994). Accordingly, this paper proposes the following hypothesis.

H1: Leader-member exchange has a positive direct effect on innovative behavior.

2.2 Leader-member Exchange and Organizational Citizenship Behavior

Organizational citizenship behavior (OCB) is an individual behavior exhibited spontaneously by employees that is not directly or explicitly recognized by the formal reward system in the organization, and generally contributes to the effective functioning of the organization (Bateman, 1983; Organ, 1988). Organizational citizenship behavior is extra-role rather than in-role behavior and must be self-determined in nature, i.e., the behavior is not mandated by the job (Indartiet al., 2017), but is generally perceived by employees as a way to return the favor and support of their leaders (Hackett & Lapierre, 2004). According to social exchange theory, when employees perceive that they have a quality exchange relationship with their leaders, their sense of responsibility will be evoked (Chow et al., 2015; Harris et al., 2014). Thus, in order to reward their leaders, they will prioritize collective interests over short-term personal satisfaction (Graen, 1995) and spontaneously demonstrate organizational citizenship behavior that contributes to the effective functioning of the organization by taking on extra-role tasks such as helping colleagues and making suggestions that are beneficial to organizational development. The positive contribution of leader-member exchange to employees' organizational citizenship behavior is supported by many empirical studies (Khan et al., 2017; Sun et al., 2013). Accordingly, this paper proposes the following hypothesis.

H2: Leader-member exchange has a positive direct effect on organizational citizenship behavior.

2.3 The Mediating Role of Thriving at Work

Thriving at work refers to the positive psychological state in which individuals experience both learning and vitality at work (Spreitzer et al., 2005), and it consists of two dimensions: learning and vitality. Spreitzer et al. (2005) defined learning as a feeling that one is acquiring and can apply knowledge and skills, and achieve growth. They also defined vitality as a psychological state in which individuals are energetic and enthusiastic. Both encompass the psychological experience of both cognitive (learning) and affective (vitality) aspects of an individual's growth process (Porath, 2012). Vitality and learning are deeply rooted in the social network of the workplace. Thus, thriving at work is influenced by situational factors, with interpersonal interactions being one of the most critical ones (Ryan et al., 2000).

According to social exchange theory and conservation of resources theory, employees who have high-quality leader-member exchange relationships receive high levels of respect, trust, and interconnection from their leaders, and own significant resources such as timely help and support, challenging tasks, and access to leadership social networks (Xu et al., 2015). These employees are more likely to acquire new knowledge and come up with some innovative ideas to solve problems in the workplace. In addition, challenging tasks assigned to these employees can also provide them with more opportunities to think deeply and apply new knowledge and skills (Graen et al., 1995). The trust and respect that leaders have for their employees can also make employees with high-quality leader-member exchange relationships willing to try and learn from past mistakes (Kim et al., 2015). At the same time, employees feel energized by working in an environment of trust and respect. Employees with high-quality leader-member exchange relationships receive timely guidance and emotional support from their leaders, which makes them more engaged in their job roles and able to perform their work energetically (Gerstner et al., 1997). Based on conservation of resources theory, thriving at work, as a positive psychological resource, makes employees take more initiative at work. Furthermore, employees with high levels of thriving at work devote more resources to their work, which leads to higher evaluations from their leaders and motivates them to perform more innovative behavior to obtain favorable resources; while employees with low levels of thriving at work are more likely to reduce or resist innovative behavior to avoid further depletion of resources (Spreitzer et al., 2012).

According to social exchange theory, employees who have high-quality leader-member exchange relationships have more opportunities to learn from their leaders in order to gain knowledge and build

self-confidence, and thus feel knowledgeable, enthusiastic and a sense of growth in their work. This leads to more opportunities for employees to identify problems in the organization and have the initiative and knowledge needed to improve existing organizational situations, thus exhibiting more organizational citizenship behavior (Magni et al., 2013). Accordingly, this paper proposes the following hypotheses.

H3a: Leader-member exchange has a positive direct effect on thriving at work.

H3b: Thriving at work has a positive direct effect on innovative behavior.

H3c: Thriving at work has a positive direct effect on organizational citizenship behavior.

H4a: Thriving at work serves as a mediator between leader-member exchange and innovative behavior.

H4b: Thriving at work serves as a mediator between leader-member exchange and organizational citizenship behavior.

2.4 The Moderating Effect of Collectivist Cultural Tendencies

Collectivist culture emphasizes that individuals belong to a tight-knit social group, and that people expect members of this group to take care of themselves, and in exchange, people have absolute loyalty to the group (Hofstede, 1980). Social cognitive theory suggests that individuals, environment, and behavior interact with each other (Bandura, 2001). Therefore, culture, an environmental factor, also influences the psychological state and behavior of individuals. The relationship between leader-member exchange and thriving at work may differ across cultures, and the mediating role of thriving at work in the relationship between leader-member exchange and innovative behavior and organizational citizenship behavior might differ. Individuals in collectivist cultures are more focused on collective goals and see themselves as part of the community. Subordinates are more likely to identify with the leader and view the leader's goals as the goals of the whole community (Chen, 2011). Leaders are also more likely to view employees as their insiders and provide them with more resources, and employees will gain more learning opportunities and vitality, thus exhibiting more innovative behavior and organizational citizenship behavior. Accordingly, this paper proposes the following hypotheses.

H5: Collectivist cultural tendencies positively moderate the relationship between leader-member exchange and thriving at work.

H6a: Collectivist cultural tendencies positively moderate the mediating role of thriving at work in the relationship between leader-member exchange and innovative behavior. The strength of the indirect relationship between leader-member exchange and innovative behavior through thriving at work was stronger in the contexts of high collectivist cultural tendencies; the strength of the indirect relationship between leader-member exchange and innovative behavior through thriving at work was weaker in the contexts of low collectivist cultural tendencies.

H6b: Collectivist cultural tendencies positively moderate the mediating role of thriving at work in the relationship between leader-member exchange and organizational citizenship behavior. The strength of the indirect relationship between leader-member exchange and organizational citizenship behavior through thriving at work was stronger in the contexts of high collectivist cultural tendencies; the strength of the indirect relationship between leader-member exchange and organizational citizenship behavior through thriving at work was weaker in the contexts with low collectivist cultural tendencies.

In summary, the model for this study is shown in Figure 1.

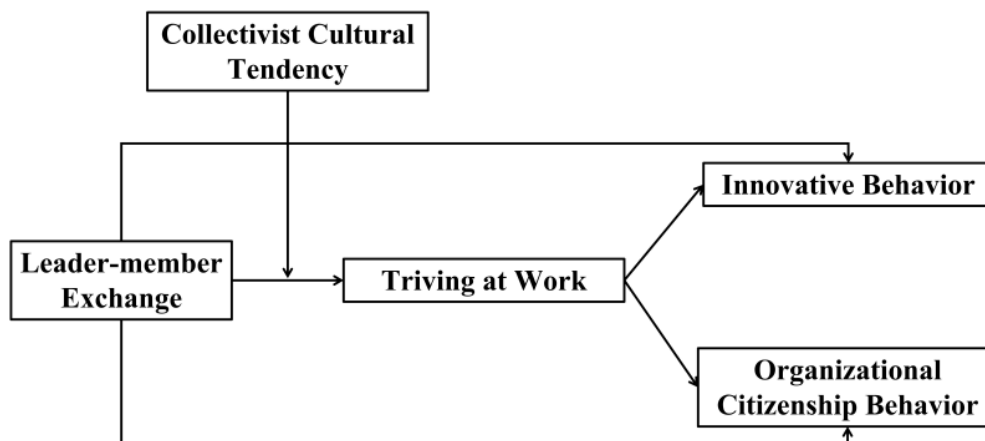


Figure 1. Model of the Study

3. Research Methodology

3.1 Literature Search, Screening and Coding

This study conducted a comprehensive search of relevant literature both in Chinese and English. In CNKI, Wanfang Database, and Weipu Database, the Chinese literature was searched with “Leader-member exchange” and “Supervisor-subordinate relationship” as keywords. In Web of Science, EBSCO, Wiley, Sage, ProQuest, Elsevier, GoogleScholar databases, English literature was searched with “LMX”, “Leader-member exchange”, “LMX quality”, “Supervisor-subordinate relationship”, “Leader relational behaviors” and “Social exchange” as keywords. All the literature was published and searched before April 2022. For the literature without reported effect sizes, the author contacted those researchers through email to obtain the full text or results.

For the literature that has been searched and obtained, this paper follows the following criteria to decide whether to include in the subsequent meta-analysis: (1) the correlation coefficients and sample sizes between leader-member exchange and other variables are reported in the literature, and purely theoretical or review studies are excluded; (2) the literature studies the relationship between leader-member exchange and other variables at the individual level, and group-level studies are excluded; (3) repeatedly published literature was selected from only one of them, and the data was obtained from the lasted revised one. Then the valid literature samples were coded for characteristics, including information of authors, year of publication, literature title, journal, sample country, collectivist cultural tendency score of the sample country, reliability of variable measurement, sample size, effect size, measurement method and study design, etc. The results were saved to Excel. After completing the coding, the effect sizes of variables not relevant to this study were excluded and obtained the 192 pieces of literature needed for the main effects analysis of this paper, which were published in the years spanning from 1999 to 2022. Based on the effect sizes required for the structural equation modeling meta-analysis, 106 additional papers were added, and the final number of papers included in the meta-analysis was 298, involving 305 independent research samples, 321 effect sizes, and a total sample size of 103,615. The literature selection process is shown in Figure 2.

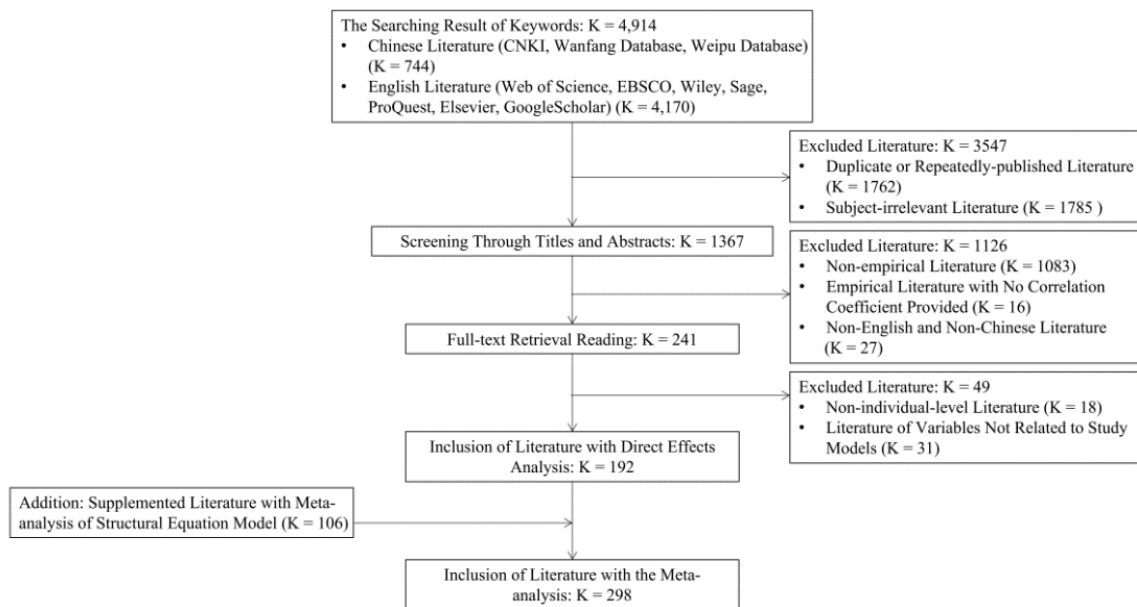


Figure 2. Flow Chart of Literature Screening

At the end of the coding, the moderating variable for this study was defined as collectivist cultural tendency, which was divided into high collectivist cultural tendency and low collectivist cultural tendency. This study uses data from Hofstede et al.’s (2010) survey of cultural values, which scores countries or regions on a scale from 0 to 100 according to their individualistic cultural tendencies, with lower scores indicating weaker individualistic cultural tendencies and stronger collectivist cultural tendencies. In this paper, countries or regions with scores from 0 to 49 are labeled as high collectivist samples, and countries or regions with scores from 51 to 100 are labeled as low collectivist samples. If the sample source includes both high and low collectivist countries or regions, they will not be included in the subsequent analysis of the moderating effect of collectivist cultural tendencies in the structural equation model.

3.2 Meta-analysis Process

3.2.1 Selection of the Model

When conducting a meta-analysis, researchers should choose either a fixed-effects model or a random-effects model, which makes different assumptions about the distribution of effect sizes across studies. The fixed-effects model assumes that each study used in the meta-analysis has the same true effect size (ρ), and that differences in the amount of effect for each study are due to sampling error. The random-effects model assumes that different studies have different true effect sizes (ρ), i.e., the true effect size of each study is random (Borenstein et al., 2009). Since the assumptions of the two models are different, the significance tests for effect sizes and the significance tests for mediating and moderating variables differ when different models are chosen for meta-analysis (Hunter & Schmidt, 2000). In the finalized 298 research papers, subjects came from multiple countries, different age groups, occupations, etc. Therefore, the effect sizes obtained from the meta-analysis could not be limited to the sample group involved in a particular study, so it was not suitable to select a fixed-effects model for the meta-analysis. In addition, the present meta-analysis wanted to explore the moderating effect of collectivist cultural tendencies, so the random-effects model was considered more suitable for the present meta-analysis. In the subsequent meta-analysis, heterogeneity tests will be used in this paper to verify the correctness of the model selection.

3.2.2 Meta-analysis Process and Software

In this study, heterogeneity test, publication bias test, main effects analysis, test for mediating effects, and test for moderating effects were performed in turn. First, the heterogeneity of effect sizes was tested by calculating the Q statistic and the I2 statistic. Then, this paper performed the publication bias test by calculating the Fail-safe N with the help of CMA 3.7 software (Field & Gillett, 2010; Fisher, 1921). For the main effects analysis, this paper used the Hunter-Schmidt effect-value integration strategy (Hunter et al., 2006; Hunter & Schmidt, 2004; Schmidt & Hunter, 2015). This method is widely used in the field of psychology as it uses a common statistical method that is more easily accepted by everyone. The present study used the psychmeta package in R language (Dahlke & Wiernik, 2018) to conduct statistical analyses of the main effects, reporting the independent sample size *k* of effect sizes, the cumulative sample size *N* across all studies, the sample-weighted mean effect size *r*, the true effect size ρ corrected for reliability and its standard deviation SD, the 95% confidence interval, and the 80% credible interval. For the mediation effect test, this paper used webMASEM for statistical analysis (Jak et al., 2020). Finally, this paper used the psychmeta package in R language and Mplus 8.3 software for the test of the moderating effects (Wei, 2021).

4. Results of the Study

4.1 Heterogeneity Test

When integrating effect sizes, there is certain variation in the study scenarios, resulting in differences in the effect sizes of different studies. Meta-analytic statisticians have proposed a heterogeneity test for effect sizes to identify the degree of variation in effect sizes across studies, which on the one hand provides the possibility for more detailed group analysis and on the other hand helps researchers to test the reasonableness of the chosen effect size estimation model. The Q statistic is the weighted sum of squared deviations of effect sizes and is mainly used for the heterogeneity test. From the results in Table 1, it is clear that the leader-member exchange and other Q tests for the outcome variables are significant, indicating that the effect sizes across studies in the meta-analysis are heterogeneous. In addition, I2 mainly reflects the degree of inconsistency in the results of different studies in the meta-analysis, and researchers usually consider I2 to take values of 75%, 50%, and 25% to represent high, medium, and low heterogeneity, respectively (Borenstein et al, 2009). The I2 tests of heterogeneity of effect sizes for leader-member exchange and thriving at work, innovative behavior, and organizational citizenship behavior were 89.176%, 92.257%, and 93.795%, respectively. This illustrates that the degree of effect size variance was greater than 75% of the total variance at 89.176%, 92.257%, and 93.795%, respectively, further indicating that there was a very large variance in effect sizes. The results of the heterogeneity test indicate that further moderating effect analysis is necessary and that the random-effects model selected for the meta-analysis in this paper is accurate and reasonable.

Table 1. Results of the Heterogeneity Test of Effect Sizes

Result Variables	<i>Q</i>	<i>df</i>	<i>p</i>	<i>I</i> ²
Thriving at Work	157.052	16	< 0.001	89.176%
Innovative Behavior	1188.171	91	< 0.001	92.257%
Organizational Citizenship Behavior	1514.920	93	< 0.001	93.795%

4.2 Publication Bias Test and Main Effects Analysis

Before conducting hypothesis testing, this paper first tested for publication bias and main effects analysis for the outcome variables related to leader-member exchange involved in the study. Because the sample of studies included in the meta-analysis was a biased sample of all relevant studies, the mean effect sizes calculated from the meta-analysis based on the biased sample would reflect this bias (Borenstein et al., 2009). It has been shown that studies reporting higher effect sizes are more

likely to be published (Hunter and Schmidt, 2004), and that publicly published studies are more likely to be included in meta-analyses, which may affect the accuracy of meta-analysis results (Rothstein et al., 2005). Therefore, publication bias is a fundamental issue that should be considered in meta-analysis (Borenstein et al., 2011). In this paper, Fail-safe N proposed by Rosenthal (1979) was used to judge the degree of publication bias of this meta-analysis. The central idea of the method is that when the results of a meta-analysis are significant, several unpublished studies are needed to change this significance so that the findings become insignificant. A large fail-safe factor indicates that a large number of unpublished and insignificant studies are needed to change the significance of this meta-analysis, which means that the likelihood of the results of this meta-analysis being changed is low and the publication bias is not severe. The fail-safe factor should follow the “5k+10” criterion (Rhoads & Eisenberger, 2020; Rosenthal, 1979), where k is the number of studies included in the meta-analysis. When the fail-safe factor is greater than 5k+10, a larger value indicates that the results of this meta-analysis are more stable and that publication bias is not severe. If the fail-safe factor is less than 5k+10, it indicates that there is a serious publication bias in this study. Table 2 presents the results of the publication bias calculated using the Rothenthal method, setting 95% confidence intervals to calculate the Fail-safe N. It can be seen that the Fail-safe N for leader-member exchange and thriving at work, innovative behavior, and organizational citizenship behavior are all much greater than 5k+10, indicating that the results of this meta-analysis are more stable and less likely to be changed.

Table 2. Main Effects Analysis of Leader-member Exchange and Publication Bias Test for the Relationship of Each Group

<i>Dependent Variable</i>	<i>k</i>	<i>N</i>	<i>r</i>	ρ	<i>SD</i> ρ	<i>95% CI</i>	<i>80% CV</i>	<i>Fail-safe N</i>	<i>5k+10</i>
Thriving at Work	17	5418	0.454	0.520	0.145	[0.447, 0.593]	[0.334, 0.706]	8099	95
Innovative Behavior	92	28903	0.342	0.391	0.197	[0.349, 0.432]	[0.138, 0.643]	120156	470
Organizational Citizenship Behavior	94	31565	0.351	0.406	0.215	[0.361, 0.451]	[0.130, 0.681]	139939	480

Note: k = independent sample size of effect sizes; N = cumulative sample size across all studies; r = sample-weighted average effect size; ρ = true effect size corrected for confidence; SD ρ = standard deviation of ρ ; 95% CI = 95% confidence interval of ρ ; 80% CV = 80% confidence interval of ρ ; Fail-safe N = value of the fail-safe factor at 95% confidence interval.

The main effects results in Table 2 indicate that the true effect size ρ for leader-member exchange and innovative behavior corrected for reliability is 0.391, with 95% confidence interval [0.349, 0.432], excluding 0, indicating that leader-member exchange is significantly positively related to innovative behavior; the true effect size ρ for leader-member exchange and organizational citizenship behavior corrected for reliability is 0.406, with 95% confidence interval [0.361, 0.451], excluding 0, indicating that leader-member exchange is significantly positively related to organizational citizenship behavior; the reliability-corrected true effect size ρ for leader-member exchange and thriving at work is 0.520, with 95% confidence interval [0.447, 0.593], excluding 0, indicating that leader-member exchange is significantly positively related to thriving at work.

The above main effects test results are consistent with the basic direction of this paper’s research hypotheses, which lays the foundation for further analysis to test the research hypothesis.

4.3 Test for Mediating Effect

Structural equation modeling meta-analysis is able to analyze the relationship between multiple variables, and the researcher only needs to know the sample size of the study and the correlation matrix of all variables to develop structural equation modeling. In order to test the mechanism by

which leader-member exchange affects employees' innovative behavior and organizational citizenship behavior, this paper examines the mediating role of thriving at work between leader-member exchange and innovative behavior and organizational citizenship behavior with the help of structural equation modeling meta-analysis. The basic information of correlation coefficients and sample sizes among the variables of this meta-analysis are shown in Table 3. To test the research hypotheses, a structural equation model for the full sample was constructed in this paper using webMASEM. (Jak et al., 2020). The results of the path analysis of this model indicated that in the full sample, there was a significant positive effect of leader-member exchange on innovative behavior ($\beta = 0.126$, $p < 0.005$), organizational citizenship behavior ($\beta = 0.212$, $p < 0.001$), and thriving at work ($\beta = 0.506$, $p < 0.001$). Thriving at work has a significant positive effect on innovative behavior ($\beta = 0.497$, $p < 0.001$) and organizational citizenship behavior ($\beta = 0.354$, $p < 0.001$). Thus H1, H2, H3a, H3b, and H3c were validated. This suggests that leader-member exchange may trigger higher levels of innovative behavior and organizational citizenship behavior through the role of thriving at work.

Due to the large sample involved in this meta-analysis and the large overall sample size, the path coefficient product term (Preacher & Hayes, 2008) was used to further test the indirect effect between leader-member exchange and innovative and organizational citizenship behavior derived through the path of thriving at work. The results of the test for indirect effects using all samples showed that thriving at work positively mediated between leader-member exchange and innovative behavior with an indirect effect size of 0.251, 95% CI = [0.202, 0.315], a significant level of mediation, so H4a was verified; thriving at work positively mediated between leader-member exchange and organizational citizenship behavior with an indirect effect size of 0.179, 95% CI = [0.106, 0.268], and the mediating effect reached a significant level, so H4b was verified.

Table 3. Correlation Matrix of Meta-analytic Effect Sizes Based on Structural Equation Modeling

Variables	1	2	3
1. Leader-member Exchange			
2. Thriving at Work			
(r , ρ)	(0.454, 0.520)		
(k , N)	(17, 5418)		
95% CI	[0.447, 0.593]		
80% CV	[0.334, 0.706]		
3. Innovative Behavior			
(r , ρ)	(0.342, 0.391)	(0.513, 0.580)	
(k , N)	(92, 28903)	(59, 20778)	
95% CI	[0.349, 0.432]	[0.542, 0.618]	
80% CV	[0.138, 0.643]	[0.397, 0.762]	
4. Organizational Citizenship Behavior			
(r , ρ)	(0.351, 0.406)	(0.412, 0.462)	(0.455, 0.535)
(k , N)	(94, 31565)	(16, 4699)	(43, 17771)
95% CI	[0.361, 0.451]	[0.343, 0.582]	[0.469, 0.602]
80% CV	[0.130, 0.681]	[0.158, 0.767]	[0.257, 0.814]

4.4 Test for Moderating Effect

In this paper, collectivist cultural tendency was selected as the moderating variable and divided into two groups: high collectivist cultural tendency and low collectivist cultural tendency. In the high collectivism sample, the path coefficient of leader-member exchange on thriving at work was 0.534 with 95% confidence interval [0.456, 0.612]; in the low collectivism sample, the path coefficient of leader-member exchange on thriving at work was 0.396 with 95% confidence interval [0.167, 0.425]. The impact of leader-member exchange on thriving at work was stronger in the high collectivist cultural context compared to the low collectivist cultural context, and there was no overlap in the 95% CI, indicating that there was a significant difference in the impact of collectivist cultural tendencies

on the relationship between leader-member exchange and thriving at work, so the findings support H5 .

Then, the paper conducted a multi-group analysis with the help of Mplus 8.3 software to test the moderating effect of collectivist cultural tendencies on the mediating effect. If there is a significant difference between the mediating effects of the two groups when the moderating variable takes different values, it means that the moderating variable can moderate the mediating effects of both groups. The results are shown in Table 4. In terms of indirect effects, the difference in the indirect effect of leader-member exchange on innovative behavior through thriving at work was significant in the context of high collectivist cultural tendency, compared to the context of low collectivist cultural tendency ($\Delta r = 0.158$, $p < 0.001$), so the findings support H6a. The indirect effect of leader-member exchange on organizational citizenship behavior through thriving at work in the context of high collectivist cultural tendency differs significantly compared to the context of low collectivist cultural tendency ($\Delta r = 0.024$, $p < 0.001$). Therefore, the results of the study support H6b.

Table 4. Test Results of Mediating Effects with Moderation

Mediating Effect Path	High Collectivism	Low Collectivism	Differences
Leader-member Exchange → Thriving at Work → Creative Behavior	0.277***	0.119***	0.158***
Leader-member Exchange → Thriving at Work → Organizational Citizenship Behavior	0.187***	0.163***	0.024***

Note: *** $p < 0.001$

5. Discussion

In recent years, leader-member exchange has received increasing attention from scholars. Employees who have high-quality leader-member exchange relationships receive more resources from their leaders, such as challenging work, ongoing support, and assistance. As a result, these employees are more energized and feel more knowledgeable and skilled, and thus exhibit more innovative and organizational citizenship behavior. In previous studies on the relationship between leader-member exchange and thriving at work, innovative behavior, and organizational citizenship behavior, empirical findings have varied somewhat and no uniform conclusions have been obtained. Using a meta-analytic approach, this study provides a more in-depth discussion of the relevant research questions, with the following main contributions.

5.1 Theoretical Implications

First, this paper explores the mutual effects of leader-member exchange, thriving at work, innovative behavior, and organizational citizenship behavior based on an adequate collection of literature, which facilitates the integration of heterogeneity among different research samples and leads to more stable and reliable conclusions (Egger & Smith, 1997). Existing research suggests that leader-member exchange has a significant impact on employees' psychological states and behavioral performance, but the specific strength of the relationship between these variables and leader-member exchange is not clear. Due to differences in sample selection, measurement instruments, data collection methods, and cultural contexts, studies addressing the same set of variable relationships may reach inconsistent conclusions, such as unclear strength of effects or inconsistent direction of effects. This paper synthesizes previous empirical research results and draws the strength of the relationship between leader-member exchange and individual psychological state and behavioral performance variables with the help of meta-analysis methods, which is conducive to more stable and reliable research conclusions and provides theoretical references for future research.

Second, this study focuses on the mechanisms underlying the effects of leader-member exchange on innovative and organizational citizenship behavior, and explores the role of the psychological state

of thriving at work in the transmission between leader-member exchange and innovative and organizational citizenship behavior. Previous research on leader-member exchange has focused on the mechanisms underlying its effects on job satisfaction and organizational commitment, but researchers have learned less about the mechanisms underlying the effects of leader-member exchange on innovative and organizational citizenship behavior. Most of the studies on the relationship between leader-member exchange and innovative behavior and organizational citizenship behavior have used leader-member exchange as a mediating variable between leadership style and employees' innovative behavior and organizational citizenship behavior, and few studies have explored the mechanisms underlying leader-member exchange and innovative behavior and organizational citizenship behavior (Khan et al., 2021; Che et al., 2021). Thriving at work has attracted the attention of many scholars in recent years due to its social embedding characteristics. Utilizing previous empirical findings, this study demonstrates that thriving at work plays a positive mediating role between leader-member exchange and innovative and organizational citizenship behavior, and the stronger the leader-member exchange relationship, the stronger the thriving at work, and the more likely employees are to exhibit innovative and organizational citizenship behavior.

Third, this study further hypothesizes that the process by which leader-member exchange influences behavior through thriving at work may be subject to certain moderating effects, and focuses on the moderating role of collectivist cultural tendencies. This study compares the relationship between leader-member exchange and thriving at work and the mediating role of thriving at work between leader-member exchange and innovative and organizational citizenship behavior in a sample of high and low collectivist cultural contexts. The findings indicate that the strength of the indirect relationship between leader-member exchange and innovative and organizational citizenship behavior through thriving at work is stronger in contexts with high collectivist cultural tendencies, and the strength of the indirect relationship between leader-member exchange and innovative and organizational citizenship behavior through thriving at work is weaker in contexts with low collectivist cultural tendencies. The findings on the moderating role of cultural contexts not only respond to scholars' calls for research on the mechanisms underlying the role of leader-member exchange, but also provide a frame of reference for a deeper understanding of the boundary conditions of leader-member exchange's impact on individuals.

5.2 Practical Implications

While most previous studies have focused only on the influence of leadership style on employees' innovative behavior and organizational citizenship behavior, this study found that leader-member exchange relationship also has significant influence on employees' innovative behavior and organizational citizenship behavior. In addition, leader-member exchange can affect individual innovative behavior and organizational citizenship behavior by influencing employees' psychological state and psychological experience. A harmonious leader-member exchange relationship can lead to thriving at work among employees, which can promote some beneficial work outcomes for the organization (Li, 2015; Xu et al., 2017). According to social exchange theory, a quality leader-member exchange relationship helps to increase employees' productivity and enrich their work (Atwater et al., 2009). Employees show more innovative and organizational citizenship behavior in return for their leaders. Therefore, this paper suggests that leaders should establish high-quality exchange relationships with their direct reports.

Since thriving at work includes two important dimensions, learning and vitality, employees can only experience thriving at work when they feel they are growing, enthusiastic and energetic while acquiring many knowledge and skills, and thus exhibit more innovative and organizational citizenship behavior. Therefore, managers should provide resources to employees in a relatively balanced way, such as giving them challenging tasks while continuously encouraging them to be enthusiastic and energetic, and helping them to acquire more knowledge and skills in order to gain a sense of self-growth. At the same time, considering that leaders have limited time and resources to maintain quality

leader-member exchange relationships with each employee, HR can provide learning opportunities and social-emotional support directly to employees.

In addition, collectivist cultural tendencies play a role in mobilizing the positive influence of leader-member exchange. Therefore, organizations can strengthen employees' collective consciousness by taking certain management measures, such as conducting lectures and holding practical activities, to enhance employees' sense of identity and loyalty to the collective, which makes employees more willing to repay the organization, put organizational interests above personal interests, create and implement more innovative ideas for the organization, and spontaneously show more pro-organizational behavior, which helps to improve the organization's operational efficiency and enhance the organization's competitive advantage in human resource management.

5.3 Limitations and Future Prospects

The present study still has certain limitations. First, there are limitations at the research level. This meta-analysis was conducted at the individual level, and the data on variables related to the influence of leader-member exchange on behavior through psychological states were collected on an individual basis. While studies have shown a strong association between leader-member exchange and individual-level behavior, few articles have explored the role of leader-member exchange at the group or collective level. Therefore, future research should focus more on cross-level studies to enrich the results within the field of leader-member exchange.

Second, there are language limitations in this study. When collecting the literature, apart from Chinese literature and English literature, there are some articles written in minor languages, and although the number of these articles is very small, there is still a possibility of missing some key data. Therefore, future researchers who have the ability to break through this limitation should collect more comprehensive empirical research data to be included in the meta-analysis to improve the accuracy of the study results.

Third, in the moderating effect analysis section, we did not explore the effects of sample characteristics such as study design, sample industry, sample type, sample age, and the composition of sample gender on the effect of leader-member exchange due to the limitation of sample size. Therefore, future research can explore the process of leader-member exchange affecting individual behavior through thriving at work by examining potential moderating variables in terms of sample characteristics through a more nuanced and precise perspective. That will be conducive to a better understanding of the mechanism and boundary conditions of leader-member exchange.

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- [1] Note: incorporating a larger body of meta-analysis literature not listed here, interested readers should visit <https://osf.io/5za27/>
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