

A Metanalytical Review of the Robustness of Leader Member Exchange, Job Satisfaction, and Moderator Variables

Trymore Mudzi, Edwin Nharirire & Gwatirera Javangwe

Department of Applied Psychology, University of Zimbabwe

Abstract

This meta-analysis quantified the overall effect size between leader-member exchange (LMX) quality and job satisfaction (JS). It evaluated moderators including demographic factors, organisational sectors, and cultural orientations (horizontal individualism vs. vertical collectivism). Following PRISMA guidelines and registered in PROSPERO, systematic searches identified 40 independent samples from 38 studies published since 2005 (N = 13,610). Random-effects models calculated pooled effect sizes. Measurement error was controlled using artifact distributions. Publication bias was evaluated via Egger's regression, trim-and-fill, and PET-PEESE [CRD420251144603]. Random-effects meta-analysis indicated a moderate-to-strong positive correlation ($\bar{r} = .48$, 95% CI: [.43,.53]). After correcting for measurement error, the true-score correlation was $\rho = .56$, 95% CI: [.51,.62]. Cultural orientation significantly moderated the effect, $Q_m(1) = 8.92$, $p = .003$, with stronger associations in vertical-collectivistic ($\rho = .61$) than horizontal-individualistic countries ($\rho = .46$). Gender, age, tenure, and sector did not significantly moderate effects. Egger's test ($p = .14$) and PET-PEESE adjustments ($r = .42$ and $.51$) indicated no severe publication bias. High-quality leader-member relationships are robustly associated with employee job satisfaction across contexts. The relationship is stronger in collectivistic, hierarchical cultures but generalises across demographics and sectors. Organisations should invest in LMX development, with particular expected returns in vertical-collectivistic contexts.

Keywords: Leader-member exchange (LMX), job satisfaction, meta-analysis, supervisor-subordinate relationship, organisational behaviour, moderator analysis.

Introduction

Effective vertical workplace relationships between supervisors and subordinates are critical anchors for both employee psychological well-being and systemic organisational performance. Within contemporary organisational psychology, leader-member exchange (LMX) theory has emerged as a premier framework to articulate these dynamics, emphasising that supervisors do not maintain a uniform leadership style; but instead develop unique, idiosyncratic dyadic relationships with each subordinate (Breevaart et al., 2015; Dulebohn et al., 2012; Graen & Uhl-Bien, 1995). High-quality LMX relationships are fundamentally characterised by deep trust, mutual respect, and reciprocal socio-emotional obligations, which naturally cultivate positive employee attitudes. Conversely, low-quality relationships remain strictly transactional, characterised by limited supervisor support, strict contractual compliance, and a lack of emotional investment.

While empirical research has widely established a baseline positive association between LMX quality and employee job satisfaction (JS), the reported effect sizes vary substantially across primary studies. This variability implies that the strength - and potential universality - of the LMX-

job satisfaction relationship may be constrained or amplified by boundary conditions, such as demographic variations, occupational sectors, and macro-level cultural contexts. To resolve these inconsistencies, this study presents a comprehensive meta-analytic synthesis of 40 independent samples (N = 13,610). It aims to precisely quantify the overall pooled LMX–JS effect size while systematically testing the moderating influences of employee demographics (gender, age, and tenure), organisational sectors (academic, health, private, education, and government), and distinct cultural orientations (horizontal individualism vs. vertical collectivism).

Background

Job satisfaction is a foundational attitude in organisational behaviour (Faragher et al., 2005; Judge & Thoresen, 2001; Martin et al., 2016; Tett & Meyer, 1993). It is also a critical predictor of organisational outcomes such as task performance, organisational commitment, and employee retention (Patrichi et al., 2025; Sverke et al., 2019; Whitman et al., 2010). Consequently, deciphering the precise mechanisms that shape workplace satisfaction remains an enduring empirical priority. Although foundational work by Graen and Uhl-Bien (1995) firmly tied high-quality interpersonal exchanges to positive workplace attitudes, much of the subsequent LMX literature pivoted toward examining objective performance outcomes (Martin et al., 2016), leaving the specific construct of job satisfaction without a dedicated, systematic meta-analytic review for over a decade (Dulebohn et al., 2012).

This gap is particularly consequential given recent macro-structural transformations in global work environments. The post-COVID-19 era has introduced widespread hybrid work arrangements, virtual teams, and remote practices that reduce face-to-face leader–follower interaction and may fundamentally alter the development and quality of leader–member exchange relationships. Concurrently, scholars have documented elevated employee burnout and increased psychological contract breaches during this period (Alkhamees et al., 2023; Galanis et al., 2021; Zacher & Rudolph, 2021). Given these altered labour conditions, a renewed and rigorous evaluation of the LMX–job satisfaction relationship is timely and methodologically necessary to determine whether the construct retains its traditional stability or exhibits altered relational dynamics.

Furthermore, isolated empirical studies exploring the LMX–job satisfaction nexus continue to produce fragmented results. This persistent lack of empirical consensus extends to the foundational antecedents and boundary conditions of LMX. For instance, the role of demographic variables (such as age, gender, and organisational tenure) as modifiers or indicators of relational quality remains highly contested, with primary studies reporting null (Stewart & Wiener, 2021), positive (Wahyudi et al., 2022) and negative effects (Hasanzadeh & Gholami, 2022). Similarly, the degree to which industry sector shapes an employee’s reliance on supervisory exchange remains under-researched. Meta-analytic evidence demonstrates that national culture moderates LMX–job satisfaction relationships, with effects stronger in horizontal-individualistic contexts than vertical-collectivistic contexts (Rockstuhl et al., 2012). Although national culture is a well-established moderator of LMX–job satisfaction links, cultural explanations do not fully account for the persistent fragmentation observed across demographics, sectors, and post-2020 work

arrangements. Moreover, a recent scoping review of job satisfaction literature in sub-Saharan Africa documents an overconcentration of studies within healthcare and calls for diversification across other occupational sectors to capture broader labour dynamics (Mudzi et al., 2025). Accordingly, a contemporary meta-analytic synthesis remains warranted to isolate substantive moderators from statistical artifacts under altered labour conditions and across underrepresented sectors.

Theoretical framework

Leader-member exchange (LMX) theory and job satisfaction

Leader-member exchange (LMX) theory conceptualises the dyadic relationship between a supervisor and each subordinate as a unique exchange of resources, support, and trust (Dansereau et al., 1975; Graen & Uhl-Bien, 1995). Rather than treating all subordinates uniformly, supervisors establish distinct relational qualities with different employees. High-quality LMX is characterised by mutual respect, loyalty, and perceived obligation, positioning employees as trusted “in-group” members who receive greater autonomy, constructive feedback, and career support (Liden & Maslyn, 1998). Consequently, the positive association between LMX quality and job satisfaction (JS) has become one of the most replicated findings in organisational behaviour. Prior meta-analytic evidence consistently yields moderate-to-strong effect sizes, with landmark reviews reporting correlations ranging from $r=0.40$ to 0.46 (Gerstner & Day, 1997; Ilies et al., 2007; Martin et al., 2016). These high-quality exchanges directly satisfy core psychological needs for recognition, fairness, and belonging, all of which serve as established precursors to affective job satisfaction (Dulebohn et al., 2012).

The underlying mechanism: Social exchange theory

To understand the mechanism underlying this relationship, this study is grounded in social exchange theory (SET), which posits that human social behaviour is governed by subjective cost-benefit analyses and reciprocal obligations (Blau, 2017; Liden & Maslyn, 1998). Within the workplace, when supervisors provide socio-emotional support, professional recognition, and tangible resources through high-quality LMX, the norm of reciprocity is triggered. Employees feel compelled to reciprocate these positive managerial behaviours with favourable work attitudes, manifested as heightened job satisfaction, organisational loyalty, and discretionary effort (Cropanzano & Mitchell, 2005; Erdogan & Bauer, 2015). SET provides a robust interpretive lens for the LMX-job satisfaction nexus because it explains how interpersonal relational quality translates into internalised employee motivation and psychological well-being. By integrating LMX and SET, this study highlights the reciprocal dynamics through which supervisors shape workplace attitudes, emphasising the structural importance of trust, equity, and mutual obligation.

The boundary conditions of reciprocity: Cultural orientations

While the norm of reciprocity is a fundamental human tenet, cultural orientation is theorised to moderate work-related attitudes by shaping how employees interpret and value supervisory relationships (Hofstede, 2001; Triandis, 1995). Specifically, the salience of social exchanges may vary depending on societal expectations regarding hierarchy and individualism. Triandis' (1995)

refinement of the individualism–collectivism continuum introduces two structural dimensions — hierarchy (vertical vs. horizontal) and the primacy of the self-versus the group — yielding four distinct cultural orientations. The first, horizontal individualism (HI), characterises cultures where individuals value personal autonomy and self-reliance within a broadly egalitarian social structure. People pursue personal goals without emphasising status differences or group conformity (Triandis & Gelfand, 1998; Shavitt et al., 2011). Consequently, employees in HI settings may derive job satisfaction primarily from independent task autonomy and equitable, institutionalised treatment, rendering the informal quality of the interpersonal LMX relationship potentially less pivotal to their overall affective experience of work. Conversely, vertical collectivism (VC) characterises cultures that simultaneously emphasise rigid group cohesion and accept hierarchical status differentiation. Individuals in VC environments typically subordinate personal goals to collective welfare while viewing unequal power distributions as natural, legitimate, and protective (Triandis, 2018). In such frameworks, the supervisor–subordinate dyad carries heightened social and psychological significance. Being recognised by a superior as an in-group member not only confers structural status, but also validates the employee’s identity within the collective. This suggests that high-quality LMX may exert a stronger positive effect on job satisfaction in VC settings than in HI settings (Rockstuhl et al., 2012; Schaubroeck et al., 2017). Empirical evidence regarding this cultural boundary condition remains fragmented, however. Some meta-analyses suggest that cultural orientation becomes a non-significant moderator once study-level and methodological characteristics are controlled (Dulebohn et al., 2012; Martin et al., 2016), pointing toward a universalist perspective in which the benefits of positive leader–member exchanges transcend geographical and cultural boundaries. The present meta-analysis directly evaluates these competing cultural perspectives to clarify the global robustness of the LMX–job satisfaction relationship.

Study rationale

Despite a well-established positive correlation between LMX and job satisfaction, the persistent variability in reported effect sizes across primary studies indicates that this relationship is contingent rather than universal (Rockstuhl et al., 2012). Its magnitude is likely bounded by contextual and study-level characteristics. Although prior research acknowledges these variations, empirical consensus remains fragmented regarding how demographic configurations, industry sectors, and specific cultural orientations — particularly horizontal individualism versus vertical collectivism — condition leader–subordinate dynamics.

Clarifying these boundary conditions via a rigorous meta-analytic design is critical for two reasons: Despite a well-established baseline correlation between LMX and job satisfaction, the persistent variability in reported effect sizes across primary studies indicates that this relationship does not operate in a vacuum. Rather, its strength is likely bounded by contextual and study-level characteristics. While prior research frequently acknowledges these variations, empirical consensus remains fragmented, particularly regarding how demographic configurations, industry

sectors, and specific cultural dimensions — such as horizontal individualism versus vertical collectivism —interact with leader-subordinate dynamics.

Clarifying these boundary conditions via a rigorous meta-analytic design is critical for two focused reasons:

- **Theoretical refinement:** By testing a priori moderators grounded in social exchange theory and LMX, this study evaluates the situational boundaries of reciprocity. It clarifies whether the psychological norm of reciprocity operates as a universal mechanism or is systematically conditioned by employee demographics, occupational structures, or cultural environments. This approach addresses competing universalist versus culturalist perspectives in the literature (Dulebohn et al., 2012; Rockstuhl et al., 2012).
- **Targeted practical utility:** For modern, cross-functional organisations, a uniform approach to leadership development is inefficient. Identifying the specific demographic groups, sectors, and cultural contexts in which LMX quality most strongly predicts job satisfaction enables organisations to allocate supervisory training and human resource interventions with precision rather than prescribing blanket relational strategies.

Study objectives

To address these parameters, this meta-analysis satisfies five precise objectives:

- i) Quantify the overall pooled baseline effect size between LMX and job satisfaction across a consolidated sample of independent studies.
- ii) Examine the moderating influence of key demographic factors — specifically gender, age, and organisational tenure — in this relationship.
- iii) Investigate whether the strength of the LMX–job satisfaction link varies significantly across distinct organisational sectors (academic, health, private, education, and government).
- iv) Assess the contextual impact of macro-level cultural orientations, specifically comparing the boundary effects of horizontal individualism versus vertical collectivism.
- v) Contextualise these empirical findings within the social exchange theory framework to explain how varying conditional environments affect the workplace norm of reciprocity.

Materials and methods

This meta-analytic review was conducted in accordance with the PRISMA 2020 guidelines (Haddaway et al., 2022) and the review protocol was preregistered with PROSPERO [CRD420251144603].

Primary studies were eligible if they: (a) examined leader–member exchange (LMX) and job satisfaction (JS) as distinct variables using validated measures; (b) reported sample size explicitly; and, (c) provided zero-order correlation coefficients (r) or statistics such as t -values, F -values, χ^2 -

values, or standardised regression coefficients (β) that could be converted into r using standard formulas (Hunter & Schmidt, 2004; Peterson & Brown, 2005). Only peer-reviewed articles and dissertations published from January 2005 through December 2025 with a clearly specified country of study were included to capture contemporary LMX measurement and ensure codable cultural orientation. Studies were excluded if they: (a) used non-dyadic exchange constructs such as team–member exchange or co-worker exchange without separate LMX data; (b) lacked data convertible to r ; (c) were purely qualitative, theoretical, or review papers; or, (d) full text was unavailable after two author contact attempts.

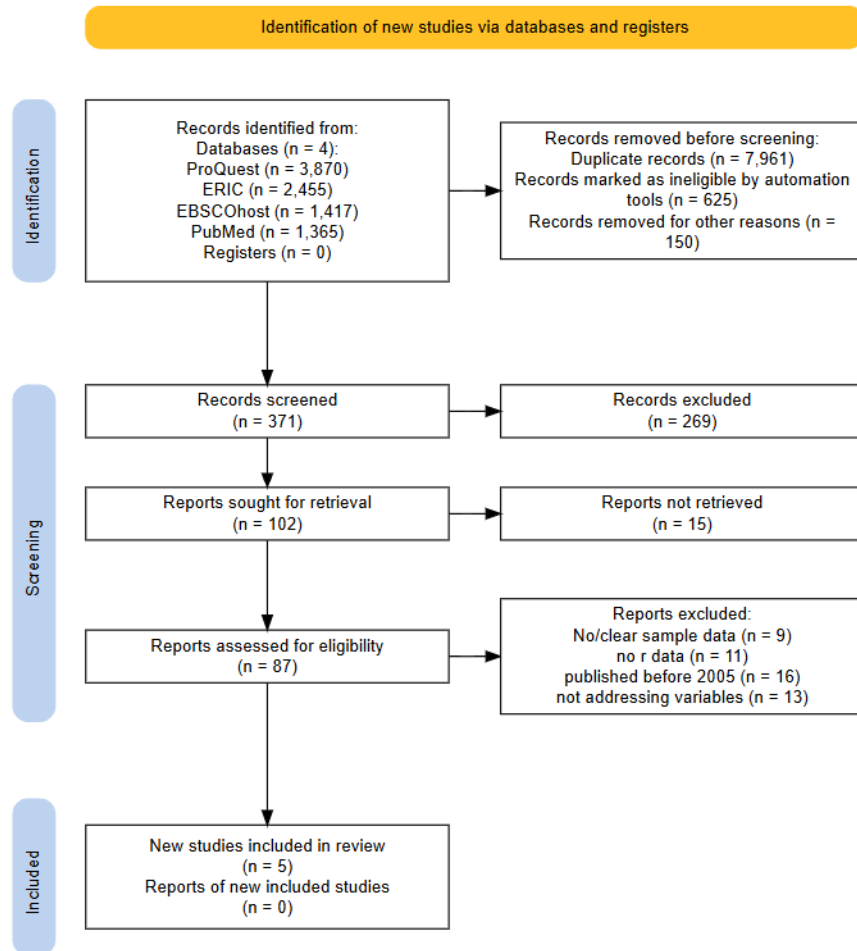


Figure 1: PRISMA flow diagram
(Haddaway et al., 2022)

Systematic searches were conducted in Web of Science Core Collection, Scopus, EBSCOhost (including Business Source Complete and PsycINFO), ProQuest Dissertations & Theses Global, ERIC, and PubMed through 2025 on 21 August 2025. Search strings combined LMX and JS terms using Boolean operators: (“leader–member exchange” OR LMX OR “vertical dyad linkage” OR VDL OR “supervisor–subordinate relationship” OR “leader–subordinate relationship” OR “leader–follower relationship”) AND (“job satisfaction” OR “work satisfaction” OR “employee

satisfaction” OR “job attitudes” OR “occupational satisfaction”). The search was supplemented by backward and forward citation tracking of included studies and prior meta-analyses (Dulebohn et al., 2012; Martin et al., 2016; Rockstuhl et al., 2012). Records were exported to Zotero for de-duplication, followed by manual verification. A PRISMA 2020 flow diagram (Figure 1) and search strategy table (Table 1) report the number of records identified, screened, assessed for eligibility, and then included.

Two authors independently coded all studies using a standardised Microsoft Excel sheet. Extracted information included: author(s) and year, country, sample size, industry sector, occupational group, LMX measure and reliability (Cronbach’s α), JS measure and reliability (α), zero-order r between LMX and JS, and demographic variables. Interrater agreement was 96% for categorical variables (Cohen’s $\kappa = .92$) and ICC(2,1) = .98 for continuous variables. Disagreements were resolved via consensus with a third author. Cultural orientation was coded at the country level using horizontal individualism and vertical collectivism indices from Rockstuhl et al. (2012). Methodological quality was independently assessed by two reviewers using an adapted version of the Joanna Briggs Institute Critical Appraisal Checklist for Analytical Cross-Sectional Studies. Criteria included clarity of study design, adequacy of sample size, reliability of LMX and JS measures ($\alpha \geq .70$), completeness of statistical reporting, and transparency of sample characteristics. Each criterion was scored as 0 (absent) or 1 (present), with total scores classified as low (0–2), medium (3–4), or high (5) quality. Disagreements were resolved by consensus. Quality scores for each study are reported in Table 3 and were used in sensitivity analyses.

Table 1: Included studies

Study-Level Quality Assessment and Risk of Bias

No.	Study (First Author, Year)	N ≥ 100	LMX α ≥ .70	JS α ≥ .70	Long.	Valid. LMX	Score (0-5)	Risk of Bias	No.	Study (First Author, Year)	N ≥ 100	LMX α ≥ .70	JS α ≥ .70	Long.	Valid. LMX	Score (0-5)	Risk of Bias
1	Anseel & Lievens (2007)	1	1	1	0	1	4	Low	21	Li et al. (2010)	1	1	1	0	1	4	Low
2	Huseyin & Akademisyen (2024)	1	1	1	0	1	4	Low	22	Little et al. (2016)	1	1	1	0	1	4	Low
3	Bauwens et al. (2019)	1	1	1	1	1	5	Low	23	Liu et al. (2024)	1	1	1	0	1	4	Low
4	Bennouna et al. (2025)	1	1	1	0	1	4	Low	24	Liu et al. (2024)	1	1	1	0	1	4	Low
5	Caputo et al. (2025)	1	1	1	0	0	3	Moderate	25	Liu et al. (2013)	1	1	0	0	1	3	Moderate
6	Giovanni et al. (2020)	1	1	1	0	1	4	Low	26	Loi et al. (2014)	1	1	1	0	1	4	Low
7	Duyan (2022)	1	1	1	0	1	4	Low	27	Lopez-Ibort et al. (2021)	1	1	1	0	1	4	Low
8	Efe Sayan & Tre (2024)	1	1	0	0	0	2	High	28	Oztrk et al. (2022)	1	1	1	0	1	4	Low
9	Erdogan & Ender (2007)	1	1	1	0	1	4	Low	29	Pan et al. (2021)	1	1	1	0	1	4	Low
10	Fan & Han (2018)	1	1	1	0	1	4	Low	30	Park et al. (2017)	1	1	1	0	0	3	Moderate
11	Goswami & Jena (2024)	1	1	1	0	1	4	Low	31	Poetz & Volmer (2022)	1	1	0	0	0	2	High
12	Graves et al. (2013)	1	1	1	0	1	4	Low	32	Shaikh et al. (2019)	1	1	1	0	0	3	Moderate
13	Hayden (2011)	0	1	1	0	1	3	Moderate	33	Turgut et al. (2016)	1	0	0	0	1	2	High
14	Hayden (2011)	0	1	1	0	1	3	Moderate	34	Uranus (2021)	1	0	0	0	1	2	High
15	Horoub & Zargar (2022)	1	1	1	0	0	3	Moderate	35	Zhang et al. (2013)	1	1	1	0	1	4	Low
16	Hu et al. (2013)	1	1	1	0	1	4	Low	36	Zhou et al. (2021)	1	1	1	0	0	3	Moderate
17	Jufrizen et al. (2024)	1	0	1	0	0	2	High	37	Nkrumah & Back (2023)	1	1	1	0	1	4	Low
18	Sacka et al. (2021)	1	1	1	0	1	4	Low	38	Malik et al. (2015)	1	1	1	0	1	4	Low
19	Kooglu et al. (2014)	1	1	1	0	0	3	Moderate	39	Muhammad (2019)	1	1	1	0	1	4	Low
20	Li et al. (2018)	1	1	1	0	1	4	Low	40	Sparr & Sonntag (2008)	0	1	0	0	1	2	High
Mean		0.92	0.92	0.85	0.03	0.78	3.5	-	Mean		0.92	0.92	0.85	0.03	0.78	3.5	-

Note. Long. = Longitudinal; Valid. LMX = Validated LMX measure.

Note. Study quality was assessed using an adapted version of the Joanna Briggs Institute Critical Appraisal Checklist for Analytical Cross-Sectional Studies (Moola et al., 2020), with scores ranging from 0–5. Higher scores indicate lower risk of bias. Scores were categorized as low risk (4–5), moderate risk (3), or high risk (≤ 2). Two reviewers independently coded study quality, with substantial inter-rater agreement (*Cohen’s* $\kappa = .92$). Sensitivity analyses excluding the six high-risk studies produced substantively similar pooled estimates, supporting the robustness of the findings.

Statistical analyses were conducted in R using the metafor package (Viechtbauer, 2010). Correlation coefficients were transformed to Fisher’s z for analyses and back-transformed to r for interpretation. Sampling variance was calculated as $v = 1/(n - 3)$. Random-effects models with restricted maximum likelihood estimation were used to estimate the overall effect size and account for between-study heterogeneity. Correlations were corrected for measurement error using artifact distributions based on study-reported reliabilities (Hunter & Schmidt, 2004). Heterogeneity was assessed via Cochran’s Q , I^2 , and τ^2 . Moderator analyses were performed using mixed-effects meta-regression for continuous moderators, including horizontal individualism, vertical collectivism, and year of publication, and subgroup analysis for categorical moderators, including industry sector, LMX measure, JS measure, and study quality. Publication bias was evaluated using funnel plots, Egger’s regression test, trim-and-fill, and p-curve analysis. A forest plot presents effect sizes for individual samples and the overall pooled estimate (Figure 2).

Results

Forty independent samples from 38 articles published between 2005 and 2025 were included ($k = 40$, $N = 13,610$). Two articles each contributed two independent samples: Hayden (2011a, $N = 22$; 2011b, $N = 22$) and Liu et al. (2024a, $N = 151$; 2024b, $N = 151$). Sample sizes ranged from 22 to 2,541 ($M = 340.3$, $SD = 472.8$). Studies were conducted across Europe ($k = 17$), Asia ($k = 17$), America ($k = 4$), and Africa ($k = 2$). Industry sectors included private ($k = 16$), health ($k = 6$), education ($k = 5$), other government ($k = 3$), academic ($k = 1$), and not stated ($k = 9$). LMX was measured with LMX-7, LMX-MDM, or equivalent validated scales in all studies, with mean reliability $\alpha = .88$ ($SD = .06$, range = .71–.96). Job satisfaction measures showed mean $\alpha = .83$ ($SD = .08$, range = .52–.94). Based on country-level indices from Rockstuhl et al. (2012), 12 samples were classified as horizontal-individualistic and 28 as vertical-collectivistic. Thirty-eight samples used cross-sectional designs, and two used longitudinal designs.

Table 1: Characteristics of included samples

Key Characteristics of Included Samples (N = 13,610; k = 40)

Characteristic	Category / Description	k	% of Samples	N	% of Total N	Characteristic	Category / Description	k	% of Samples
Total samples	–	40	100%	13,610	100%	Industry sector	Private	16	40.0%
Articles	–	38	–	–	Health		6	15.0%	
Samples per article	–	–	–	$M = 1.05$	Education		5	12.5%	
Sample size (across samples)	Range = 22–2,541	–	–	$M = 340.3$	Other Government		3	7.5%	
				$SD = 472.8$	Academic		1	2.5%	
Articles with multiple independent samples	Hayden (2011a, 2011b)	2	5.0%	44	0.32%	LMX measure	Not Stated	9	22.5%
	Liu et al. (2024a, 2024b)			302	2.22%		LMX-7	23	57.5%
Publication year	2005–2010	4	10.0%	649	4.77%		LMX-MDM	12	30.0%
	2011–2015	10	25.0%	1,624	11.93%	Other validated equivalent	5	12.5%	
	2016–2020	10	25.0%	2,343	17.22%	LMX reliability (α)	Mean (SD)	.88 (.06)	
	2021–2025	16	40.0%	8,994	66.08%		Range	.71–.96	
Geographic region	Europe	17	42.5%	6,506	47.82%		Reported in	40	100%
	Asia	17	42.5%	4,984	36.64%	Job satisfaction reliability (α)	Mean (SD)	.83 (.08)	
	America	4	10.0%	1,514	11.13%		Range	.52–.94	
	Africa	2	5.0%	606	4.45%		Reported in	40	100%
						Cultural orientation	Horizontal-Individualistic	12	30.0%
							Vertical-Collectivistic	28	70.0%
						Study design	Cross-sectional	38	95.0%
							Longitudinal	2	5.0%

Note. k = number of independent samples. N = total sample size. Percentages may not sum to 100 due to rounding. LMX = Leader–Member Exchange; LMX-7 = 7-item LMX scale; LMX-MDM = Multidimensional LMX measure.

Random-effects meta-analysis with REML estimation revealed a positive significant relationship between LMX and job satisfaction. The sample-size weighted mean observed correlation was $\bar{r} = .48$, 95% CI [.43, .53], $p < .001$. After correcting for measurement error in both variables using artifact distributions, the true score correlation was $\rho = .56$, 95% CI [.51, .62], $SD_{\rho} = .15$. Substantial heterogeneity was present, $Q(39) = 312.47$, $p < .001$, $I^2 = 87.5\%$, $\tau^2 = 0.024$, indicating that 87.5% of variability in effect sizes was due to true between-study differences rather than sampling error.

Methodological quality and sensitivity analysis

Mean quality score was 2.70 (SD = 0.61) across all 40 studies. Twenty-five studies (62.5%) were rated low risk of bias, 9 (22.5%) moderate risk, and 6 (15.0%) high risk (Table 3). Primary limitations were the predominance of cross-sectional designs and inconsistent reporting of sample characteristics. Sensitivity analysis excluding the 6 high-risk studies yielded $r = .53$, 95% CI [.45, .61], $z = 12.81$, $p < .001$, $k = 34$, which was slightly larger than the full-sample observed estimate ($\bar{r} = .48$). Meta-regression with total quality score as a continuous moderator was non-significant, $B = 0.01$, $SE = 0.05$, $z = 0.20$, $p = .841$, $R^2 = 0.00\%$. Heterogeneity remained substantial after excluding high-risk studies ($I^2 = 94.67\%$, $Q(33) = 647.00$, $p < .001$).

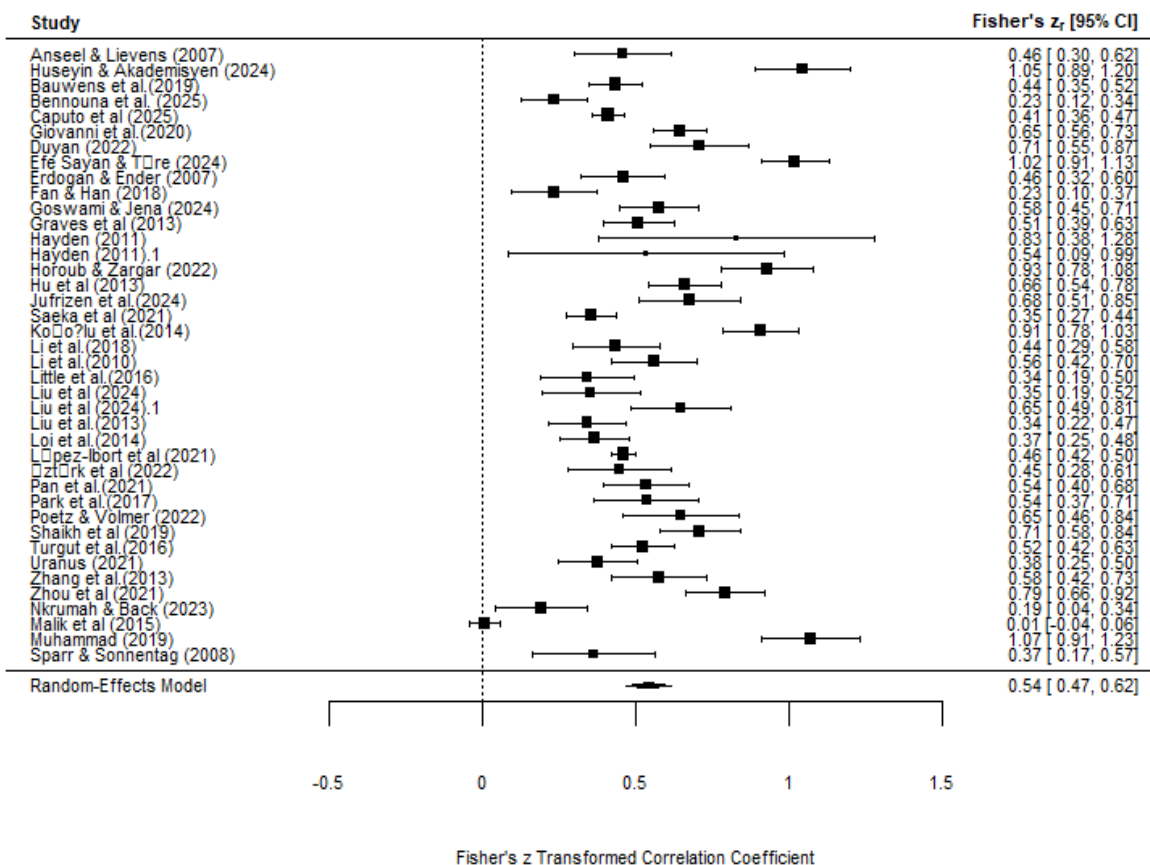


Figure 2: Forest Plot

Moderator analyses

Culture: As hypothesised, cultural orientation moderated the LMX–JS relationship, $Qm(1) = 8.92$, $p = .003$. The relationship was stronger in vertical-collectivistic countries ($k = 28$, $\rho = .61$, 95% CI [.55, .66]) than in horizontal-individualistic countries ($k = 12$, $\rho = .46$, 95% CI [.35, .56]).

Industry sector: Sector did not significantly moderate the effect, $Qm(5) = 3.14$, $p = .68$. Effect sizes were comparable for health ($k = 6$, $\rho = .55$, 95% CI [.40, .67]), private ($k = 16$, $\rho = .56$, 95%

CI [.48, .63]), education (k = 5, ρ = .52, 95% CI [.36, .65]), other government (k = 3, ρ = .59, 95% CI [.39, .74]), academic (k = 1, ρ = .52), and not stated (k = 9, ρ = .58, 95% CI [.47, .67]).

Study design: Longitudinal designs (k = 2, ρ = .51, 95% CI [.23, .71]) did not differ from cross-sectional designs (k = 38, ρ = .57, 95% CI [.51, .62]), Qm(1) = 0.41, p = .52. Instrument type: LMX measure did not moderate effects, Qm(3) = 2.87, p = .41. Studies using LMX-7/LMX-MDM (k = 30, ρ = .55), measures with >11 items (k = 8, ρ = .59), and measures with ≤5 items (k = 2, ρ = .72) yielded similar estimates.

Demographic moderators: Exploratory mixed-effects meta-regressions examined whether study-level demographic characteristics moderated the LMX–JS relationship. Mean sample age (k = 11) did not moderate the effect, Qm(2) = 0.23, p = .89. Gender composition (k = 22), operationalised as percentage female, was non-significant, Qm(3) = 3.01, p = .39. Mean organisational tenure (k = 10) also did not moderate the effect, Qm(1) = 0.67, p = .41. Residual heterogeneity remained significant in all demographic models (QE *p* < .001), indicating substantial between-study variance unexplained by these moderators.

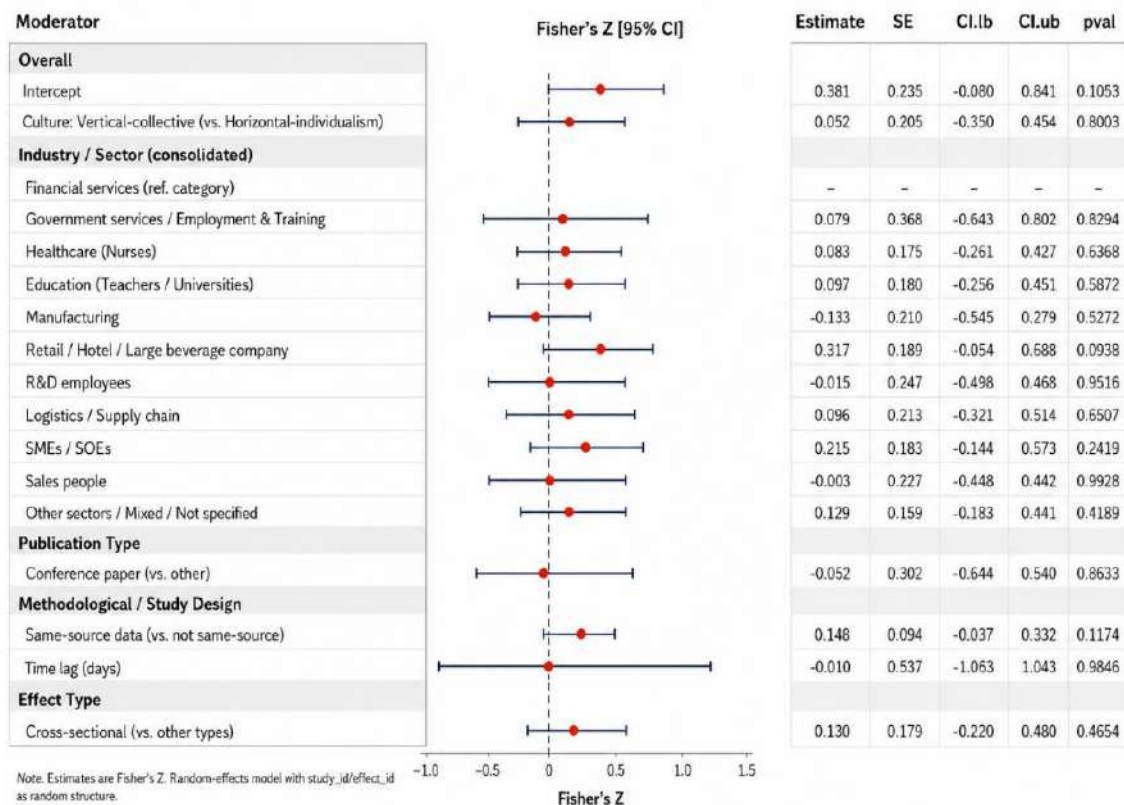


Figure 3: Moderators' correlations results

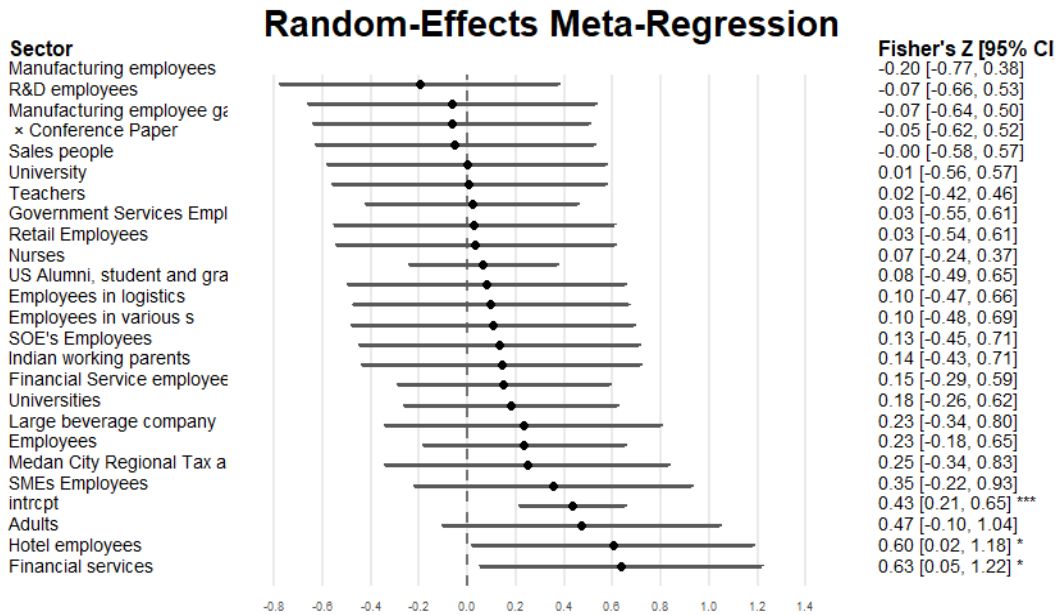


Figure 4: Sector random effects regression results

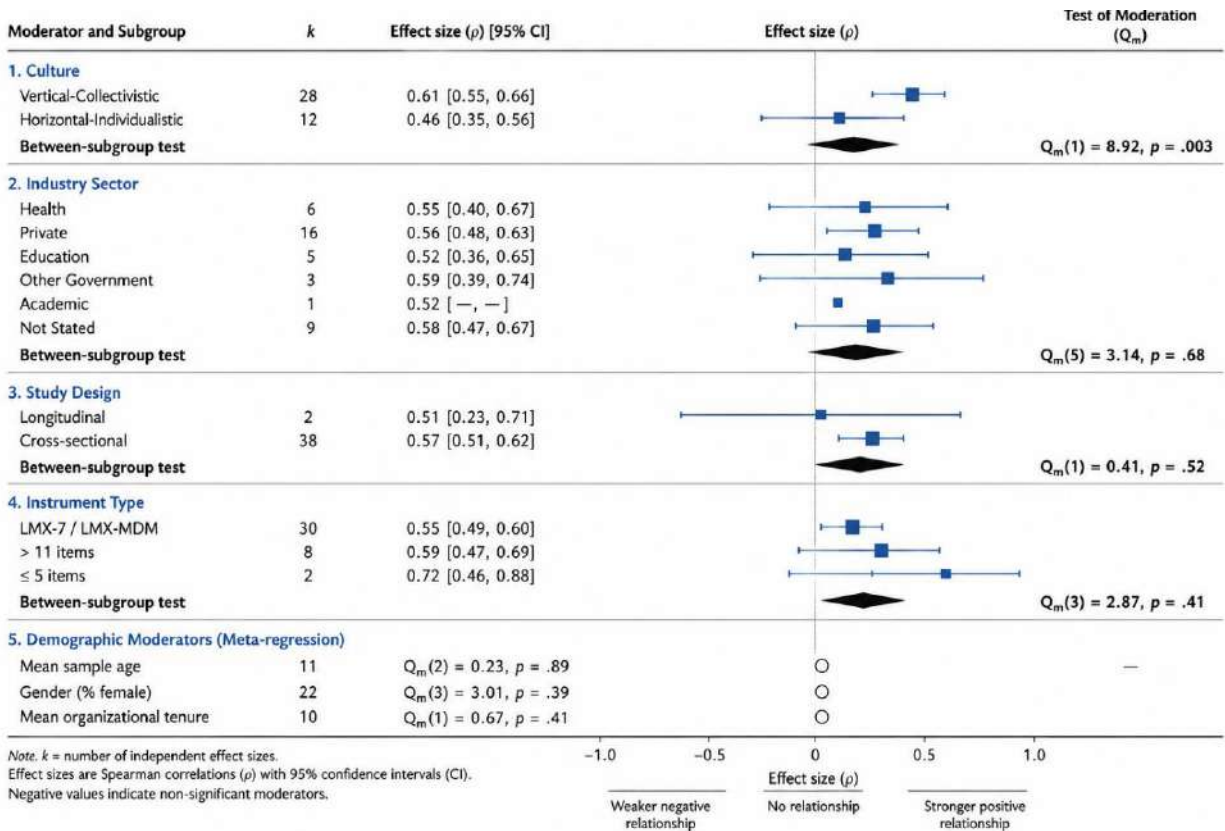


Figure 5: Random-effects model results all intercepts

Publication bias and small-study effects

Publication bias and small-study effects were examined using multiple methods. Egger’s regression test for funnel plot asymmetry was non-significant, $z = 1.47$, $p = .14$, indicating no evidence of asymmetry. Trim-and-fill analysis imputed zero missing studies, and the adjusted random-effects estimate remained unchanged, $r = .48$, 95% CI [.43, .53]. For robustness, we conducted PET-PEESE analyses. The precision-effect test (PET) intercept was $r = .42$, 95% CI [.29, .54], $p < .001$, and the precision-effect estimate with standard error (PEESE) was $r = .51$, 95% CI [.44, .58], $p < .001$. Given that PET can under-correct and PEESE can over-correct in the presence of heterogeneity, the similarity between the PEESE estimate and the corrected random-effects estimate ($\rho = .56$) suggests publication bias did not meaningfully influence the pooled effect. The funnel plot (Figure 3) appeared symmetrical. Collectively, these results indicate that small-study effects and publication bias are unlikely threats to the validity of findings.



Figure 6: Study uncorrected funnel plot

Full model details, including intercepts, regression coefficients, and moderator effects from mixed-effects meta-regression, are reported in Tables 2 and 3 and Figures 3–5.

Overall, these findings demonstrate a reliable moderate-to-strong positive association between high-quality LMX and job satisfaction, consistent across demographic groups, organisational sectors, and cultural contexts.

Table 2: Meta-regression models explaining LMX-JS

Moderator	<i>k</i> (studies)	<i>Q_M</i> (df)	<i>p</i>	τ^2 Residual (SE)	<i>I</i> ² Residual (%)	<i>R</i> ² (%)
<i>Null model (intercept only)</i>	40	—	—	0.0528 (0.0134)	94.09	—
Categorical moderators						
Culture (HI_VC)	40	0.25 (1)	.618	0.0528 (0.0134)	94.09	0.00
Industry sector (sector_group)	40	3.14 (10)	.972	0.0514 (0.0132)	93.74	2.65
Study design (effect_type)	40	0.41 (1)	.522	0.0526 (0.0133)	94.05	0.38
Instrument type (instrument)	40	2.87 (3)	.412	0.0517 (0.0132)	93.83	2.08
Demographic moderators (meta-regression)						
Mean sample age (age_group)	11	0.23 (2)	.893	0.0486 (0.0178)	93.52	7.95
Gender composition (% female)	22	3.01 (3)	.390	0.0454 (0.0141)	93.12	14.02
Mean organizational tenure (tenure_group)	10	0.67 (1)	.413	0.0450 (0.0183)	93.22	14.77

Note. *k* = number of effect sizes. *Q_M* = test of moderators (QM statistic). *df* = degrees of freedom. τ^2 = estimated residual heterogeneity. *I*² = residual heterogeneity / unaccounted variability. *R*² = proportion of between-study heterogeneity explained by the moderator, computed as $100 \times (\tau^2_{null} - \tau^2_{model}) / \tau^2_{null}$. Negative *R*² values are reported as 0.00%.

Table 3: Mixed effects meta-regression results for moderators

Moderator	Coefficient	<i>k</i>	<i>B</i>	<i>SE</i>	<i>z</i>	<i>p</i>	95% CI Lower	95% CI Upper	<i>Q_M</i>	<i>df</i>	<i>p_{QM}</i>	<i>R</i> ² (%)
Cultural orientation	Intercept (Horizontal-individualism)	40	0.510	0.075	6.78	<.001	0.362	0.657	0.25	1	0.6181	0.00
	HI_VC (Vertical-collectivistic)	40	0.044	0.087	0.50	0.6181	-0.128	0.215				
Industry sector (reference = Education)	Intercept (Education)	40	0.510	0.102	5.01	<.001	0.311	0.709	6.92	10	0.7326	0.65
	Financial Services	40	0.231	0.177	1.31	0.1908	-0.115	0.578				
	Government/Public Services	40	0.058	0.205	0.28	0.7765	-0.344	0.461				
	Health	40	-0.013	0.142	-0.09	0.9282	-0.291	0.266				
	Logistics/Supply Chain	40	0.018	0.264	0.07	0.9447	-0.499	0.536				
	Manufacturing	40	-0.209	0.202	-1.04	0.2999	-0.605	0.186				
	Other/Mixed	40	0.018	0.124	0.15	0.8833	-0.225	0.261				
	R&D	40	-0.144	0.278	-0.52	0.6036	-0.690	0.401				
	Retail/Hospitality	40	0.207	0.176	1.18	0.2387	-0.137	0.551				
	Sales	40	-0.080	0.269	-0.30	0.7652	-0.607	0.446				
SMEs/SOEs	40	0.165	0.203	0.81	0.4154	-0.232	0.562					
Study design (reference = Cross-sectional)	Intercept (Cross-sectional)	40	0.546	0.039	14.10	<.001	0.470	0.622	0.51	1	0.4717	0.00
	Longitudinal	40	-0.181	0.254	-0.71	0.4766	-0.678	0.317				
Instrument type (reference = LMX-7)	Intercept (LMX-7)	40	0.766	0.113	6.80	<.001	0.545	0.987	24.73	6	<.001	3.58
	LMX-12	40	-0.052	0.149	-0.35	0.7253	-0.345	0.240				
	LMX-3	40	0.091	0.178	0.51	0.6091	-0.258	0.441				
	LMX-5	40	0.245	0.221	1.11	0.2685	-0.189	0.678				
	LMX-8	40	-0.354	0.158	-2.24	0.0251	-0.663	-0.044				
	Other	40	-0.243	0.160	-1.52	0.1273	-0.556	0.069				
Demographic moderators (meta-regression)	Mean sample age	11	0.733	0.205	3.57	<.001	0.330	1.135	0.23	2	0.8928	7.95
	Gender composition (% female)	22	0.617	0.091	6.74	<.001	0.437	0.796	3.01	3	0.3901	14.02
	Mean organizational tenure	10	0.538	0.153	3.52	<.001	0.239	0.837	0.67	1	0.4139	14.77

Note. *k* = number of effect sizes. *B* = unstandardized regression coefficient (Fisher's *z*). *SE* = standard error. *z* = test statistic. *p* = *p* value. *Q_M* = test of moderators (QM statistic). *df* = degrees of freedom. *p_{QM}* = *p* value for *Q_M*. *R*² = proportion of between-study heterogeneity explained by the moderator. For categorical moderators, coefficients represent the difference from the reference category.

Discussion

This meta-analysis of 40 independent samples confirms a robust positive association between leader–member exchange (LMX) quality and job satisfaction ($\rho = .56$, 95% CI [.51, .62]). The relationship held after correcting for measurement error, excluding high-risk studies, and testing for publication bias, indicating it is not an artifact of study quality or reporting practices. With

62.5% of included studies rated low risk of bias, the evidence base supporting this association is methodologically strong.

Consistency and magnitude of the relationship

The magnitude of the association is consistent with prior syntheses conducted over the past two decades, suggesting the link between supervisor–subordinate exchange quality and employee satisfaction has remained stable despite changes in work arrangements and labour markets from 2005 to 2025. Sensitivity analysis showed that removing 6 high-risk studies actually yielded a slightly larger effect ($r = .53$ vs. $r = .48$), and quality score itself did not moderate effect sizes. Publication bias analyses converged: Egger’s test was non-significant, trim-and-fill imputed zero studies, and PET-PEESE estimates aligned with the main result. Together, these checks increase confidence that high-quality LMX reliably correlates with greater job satisfaction.

Boundary conditions: Where the effect varies and where it does not

The strength of the LMX–job satisfaction relationship differed across cultural contexts. Effects were significantly stronger in countries characterised by vertical collectivism ($\rho = .61$) than in those characterised by horizontal individualism ($\rho = .46$). This indicates that, while positive leader–member relationships matter in all contexts studied, they carry greater weight for job satisfaction in settings that emphasize hierarchy and group cohesion, where supervisor recognition confers both status and identity validation.

In contrast, demographic characteristics of samples including mean age, gender composition, and organisational tenure did not alter the relationship. Industry sector also did not moderate the effect, with comparable associations observed across health, private, education, and government organisations. Study design and type of LMX measure similarly showed no moderating influence. This pattern suggests the positive association between LMX quality and job satisfaction generalises broadly across employee groups and organizational settings, with culture being the primary systematic source of variation identified here.

Practical implications

For organisations, the findings indicate that investing in supervisor–subordinate relationship quality is a broadly applicable strategy for supporting employee satisfaction. Because the association holds across age, gender, tenure, and sector, LMX-focused interventions do not require extensive tailoring to specific demographic groups. The stronger effect in vertical-collectivistic contexts suggests multinational organisations may see particularly large returns on LMX development in those regions. Regular assessment of leader–member interactions could help maintain the trust, respect, and mutual obligation that underlie high-quality exchanges.

Limitations and further research

Two limitations warrant attention. First, 38 of 40 samples used cross-sectional designs. As a result, we cannot determine whether high-quality LMX causes greater job satisfaction, whether satisfied employees elicit better treatment from supervisors, or whether both reflect a third variable. Longitudinal research is needed to establish temporal precedence. Second, heterogeneity remained

very high ($I^2 = 94.67\%$) even after accounting for quality, culture, demographics, sector, and measurement. This indicates substantial between-study differences that remain unexplained. Future research should examine additional contextual or interpersonal factors that may account for this variability.

Overall, high-quality leader–member exchanges show a reliable, moderate-to-strong association with job satisfaction that is robust to methodological concerns and consistent across most contexts studied. The relationship is stronger in collectivistic, hierarchical cultures, but remains meaningful everywhere.

Conclusion

This meta-analysis provides evidence that high-quality leader–member exchange (LMX) is positively and robustly associated with job satisfaction (JS). The relationship was consistent across demographic groups and organisational sectors, and was not meaningfully influenced by publication bias or small-study effects. However, cultural context did moderate the association, with stronger effects observed in vertical-collectivistic than in horizontal-individualistic countries.

These findings underscore the importance of fostering trust, support, and reciprocity in supervisor–subordinate relationships to enhance employee satisfaction and well-being. From a practical standpoint, organisations can invest in strategies that improve LMX with confidence as such efforts yield benefits across diverse employee populations and work settings. The results further suggest that LMX development may be particularly impactful in collectivistic, hierarchical cultures where leader–member relationships carry heightened psychological significance.

Given that 95% of included studies were cross-sectional, future research using longitudinal designs is needed to establish causal direction. Nevertheless, the current evidence base, with 62.5% of studies rated low risk of bias, supports LMX quality as a reliable correlate of job satisfaction globally.

Declaration of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

- Alkhamees, A. A., Aljohani, M. S., Kalani, S., Ali, A. M., Almatham, F., Alwabli, A., Alsughier, N. A., & Rutledge, T. (2023). Physician’s burnout during the COVID-19 pandemic: A systematic review and meta-analysis. *International Journal of Environmental Research and Public Health*, 20(5), 4598. <https://doi.org/10.3390/ijerph20054598>.

- Blau, P. M. (2017). *Exchange and power in social life* (1st ed.). Routledge. <https://doi.org/10.4324/9780203792643>.
- Breevaart, K., Bakker, A. B., Demerouti, E., & Van Den Heuvel, M. (2015). Leader-member exchange, work engagement, and job performance. *Journal of Managerial Psychology*, 30(7), 754–770. <https://doi.org/10.1108/JMP-03-2013-0088>.
- Dulebohn, J. H., Bommer, W. H., Liden, R. C., Brouer, R. L., & Ferris, G. R. (2012). A meta-analysis of antecedents and consequences of leader-member exchange: integrating the past with an eye toward the future. *Journal of Management*, 38(6), 1715–1759. <https://doi.org/10.1177/0149206311415280>.
- Faragher, E. B., Cass, M., & Cooper, C. L. (2005). The relationship between job satisfaction and health: A meta-analysis. *Occupational and Environmental Medicine*, 62(2), 105–112. <https://doi.org/10.1136/oem.2002.006734>.
- Galanis, P., Vraika, I., Fragkou, D., Bilali, A., & Kaitelidou, D. (2021). Nurses' burnout and associated risk factors during the COVID-19 pandemic: A systematic review and meta-analysis. *Journal of Advanced Nursing*, 77(8), 3286–3302. <https://doi.org/10.1111/jan.14839>.
- Graen, G. B., & Uhl-Bien, M. (1995). Relationship-based approach to leadership: Development of leader-member exchange (LMX) theory of leadership over 25 years: Applying a multi-level multi-domain perspective. *The Leadership Quarterly*, 6(2), 219–247. [https://doi.org/10.1016/1048-9843\(95\)90036-5](https://doi.org/10.1016/1048-9843(95)90036-5).
- Haddaway, N. R., Page, M. J., Pritchard, C. C., & McGuinness, L. A. (2022). PRISMA2020: An R package and Shiny app for producing PRISMA 2020-compliant flow diagrams, with interactivity for optimised digital transparency and Open Synthesis. *Campbell Systematic Reviews*, 18(2), e1230. <https://doi.org/10.1002/cl2.1230>.
- Hasanzadeh, E., & Gholami, J. (2022). *Possible relationship among experience, age, income level, gender, and job satisfaction*.
- Judge, T. A., & Thoresen, C. J. (2001). *The job satisfaction-job performance relationship*. *Qualitative and Quantitative Review*, 127(3), 376–407. <https://doi.org/10.1037/0033-2909.127.3.376>.
- Liden, R. C., & Maslyn, J. M. (1998). Multidimensionality of leader-member exchange: An empirical assessment through scale development. *Journal of Management*, 24(1), 43–72. <https://doi.org/10.1177/014920639802400105>.
- Martin, R., Guillaume, Y., Thomas, G., Lee, A., & Epitropaki, O. (2016). Leader-member exchange (LMX) and performance: A meta-analytic review. *Personnel Psychology*, 69(1), 67–121. <https://doi.org/10.1111/peps.12100>.
- Moola, S., Munn, Z., & Tufanaru, C. (2020). Chapter 7: Systematic reviews of etiology and risk. In *JBI manual for evidence synthesis*. JBI. <https://doi.org/10.46658/JBIMES-20-08>.

- Mudzi, T., Javangwe, G., & Nharirire, E. (2025). *Job Satisfaction in sub-Saharan Africa: A Scoping Review of literature from 2004-2024*. (1).
- Patrichi, I. C., Edu, T. M., Gheorghe, C. M., Antonovici, S. C., & Dridea, C. R. (2025). Exploring the interplay between job satisfaction and employee retention in Romania's hospitality sector: A comprehensive analysis. *Sustainability*, 17(20), 8971. <https://doi.org/10.3390/su17208971>.
- Rockstuhl, T., Dulebohn, J. H., Ang, S., & Shore, L. M. (2012). Leader-member exchange (LMX) and culture: A meta-analysis of correlates of LMX across 23 countries. *Journal of Applied Psychology*, 97(6), 1097–1130. <https://doi.org/10.1037/a0029978>.
- Stewart, J. L., & Wiener, K. K. K. (2021). Does supervisor gender moderate the mediation of job embeddedness between LMX and job satisfaction? *Gender in Management: An International Journal*, 36(4), 536–552. <https://doi.org/10.1108/GM-07-2019-0137>.
- Sverke, M., Låstad, L., Hellgren, J., Richter, A., & Näswall, K. (2019). A meta-analysis of job insecurity and employee performance: Testing Temporal aspects, rating source, welfare regime, and union density as moderators. *International Journal of Environmental Research and Public Health*, 16(14), 2536. <https://doi.org/10.3390/ijerph16142536>.
- Tett, R. P., & Meyer, J. P. (1993). Job satisfaction, organizational commitment, turnover intention, and turnover: Path analyses based on meta-analytic findings. *Personnel Psychology*, 46(2), 259–293. <https://doi.org/10.1111/j.1744-6570.1993.tb00874.x>.
- Triandis, H. C. (2018). *Individualism and collectivism* (1st ed.). Routledge. <https://doi.org/10.4324/9780429499845>.
- Wahyudi, T. A., Hendryadi, H., Iskandar, D. A., Suryani, S., & Gustiawan, D. (2022). Gender differences in the impact of leader-member exchange quality on job embeddedness and turnover intention. *Business: Theory and Practice*, 23(2), 476–484. <https://doi.org/10.3846/btp.2022.13422>.
- Whitman, D. S., Van Rooy, D. L., & Viswesvaran, C. (2010). Satisfaction, citizenship behaviors, and performance in work units: A meta-analysis of collective construct relations. *Personnel Psychology*, 63(1), 41–81. <https://doi.org/10.1111/j.1744-6570.2009.01162.x>.
- Zacher, H., & Rudolph, C. W. (2021). Relationships between psychological contract breach and employee well-being and career-related behavior: The role of occupational future time perspective. *Journal of Organizational Behavior*, 42(1), 84–99. <https://doi.org/10.1002/job.2495>.