Article

The Impact of Leadership in Fostering Work Engagement in Hybrid and Remote Work: A Meta-Analysis

Journal of Leadership & Organizational Studies
1–16

DOI: 10.1177/15480518261452306
journals.sagepub.com/home/jlo


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Abstract

The growth of hybrid and remote work has renewed interest in how leadership supports employee work engagement in digitally mediated environments. Although leadership is a well-established predictor of engagement, most evidence is drawn from co-located contexts. This meta-analysis advances contextual leadership research by estimating the overall association between leadership and engagement in hybrid and remote work and testing moderation by work arrangement, leadership category, cultural context, and engagement measure. A systematic search of five databases (2015–2025) identified 24 independent samples (N = 8,166) using the Utrecht Work Engagement Scale. Risk of bias was assessed using the Joanna Briggs Institute (JBI) cross-sectional checklist, and random-effects models were applied. Leadership showed a moderate positive association with engagement ($r = .39$, 95% CI [.33, .45]). Heterogeneity was high ($I^2 = 90\%$) and partly explained by leadership category, which accounted for 33% of between-study variance. Relations-oriented behaviours demonstrated the strongest associations ($r = .50$), followed by change-oriented behaviours ($r = .48$), then task-oriented behaviours ($r = .32$) and supervisor-support constructs ($r = .31$). Overall, leadership continues to predict engagement when work is dispersed, underscoring the importance of contextual and relationally focused leader behaviours for supporting employees' psychological need for relatedness when face-to-face interaction is limited.

Keywords

leadership, work engagement, remote work

The Role of Leadership in Fostering Work Engagement in Hybrid and Remote Work: A Meta-Analysis

The rapid expansion of hybrid and remote work has fundamentally changed how employees interact with leaders and experience their work. Leadership is widely recognised as a key driver of employee engagement, however, most existing evidence is drawn from traditional workplaces. This leaves a critical gap in our understanding of whether leadership behaviours remain effective in fostering engagement in remote or hybrid environments, and if so, what behaviours and factors best support employee engagement in digitally mediated workplaces? The current study addresses this critical gap with a comprehensive meta-analysis of empirical studies examining the relationship between leadership and work engagement, specifically within hybrid and remote work settings.

Background

Leadership is a critical driver of employee work engagement (Breevaart et al., 2014; Tims et al., 2011; Tummers & Bakker, 2021). Engaged employees consistently show higher job performance, better well-being, stronger organisational commitment, and lower turnover intentions (Bakker & Leiter, 2010; Christian et al., 2011). Rapid digitalisation and the growth of dispersed work have transformed how leaders and teams interact (Kniffin et al., 2021). Although remote work has existed since the 1970s (Allen et al., 2015), the COVID-19 pandemic accelerated its widespread adoption (Amankwah-Amoah et al., 2021). In the United States, the proportion of employees working remotely jumped from 5.7% in 2019 to 18% in 2023 (U.S. Census Bureau, 2023). Globally, employees across 40 countries now work from home about one day per week on average,

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highlighting the ongoing nature of this change (Aksoy et al., 2025).

Hybrid and remote work are related but distinct. Hybrid work blends on-site and off-site patterns (Lauring & Jonasson, 2025), whereas remote work entails completing all tasks away from a central workplace, typically enabled by information and communication technologies (ICTs; Gajendran & Harrison, 2007). Pre-pandemic evidence on employee outcomes in these arrangements was limited and focused on productivity and coordination (Allen et al., 2015; Messenger, 2019). The pandemic functioned as a natural experiment, accelerating research activity (Carnevale & Hatak, 2020). As organisations now embed hybrid and remote practices (Wang et al., 2021), examining the leadership-engagement relationship in these contexts is timely.

Employees face both opportunities and challenges in hybrid and remote work. They often cite increased flexibility in how they perform their roles and greater autonomy as key advantages (Gajendran & Harrison, 2007; Galanti et al., 2021). Simultaneously, stressors such as social isolation, blurred boundaries between work and personal life, and pressure to remain online, known as "digital presenteeism", are frequently highlighted (Adisa et al., 2023; Henke et al., 2022). These stressors undermine well-being and, in turn, engagement. Engagement is arguably one of the most sought-after employee outcome metrics for organisations, as it remains a key indicator of organisational health and performance (Bakker et al., 2014; Mackay et al., 2017). Although multiple definitions of engagement exist, for the present study, engagement is operationalised as a positive psychological state characterised by vigour, dedication, and absorption in one's work (Schaufeli et al., 2002). Leaders support engagement through resource provision (i.e., feedback, training, flexibility) and trust-based communication (Tummers & Bakker, 2021), effects that hold longitudinally (Lesener et al., 2020).

Leadership can be understood as the social process of inspiring and enabling others to achieve shared goals (Day & Antonakis, 2012; Yukl, 2012). Scholars increasingly emphasise that leadership is embedded in, and shaped by, contextual factors such as technology, culture, and work design (Johns, 2006; Oc, 2018; Yukl, 2012). From this contextual perspective, the effectiveness of leader behaviour depends on situational features rather than a single best approach. A particularly relevant feature here is physical distance between leaders and followers.

Traditionally, physical distance is found to weaken leadership influence (Howell et al., 2005; Podsakoff et al., 1996). Distance often forces interactions through ICTs (email, chat, video) that reduce media richness, which is the capacity to convey cues, emotions, and immediate feedback (Daft & Lengel, 1986). Additionally, these contexts also reduce opportunities for informal contact and leader visibility (Bartel et al., 2012).These constraints can make leadership behaviours such as role-modelling and trust-building communication harder to enact. However, advances in technology have prompted a re-evaluation of earlier findings about leadership effectiveness at a distance. Leader distance theory argues that separation alters but does not eliminate leader influence, depending on how leaders meet follower expectations (Antonakis & Atwater, 2002). E-leadership research similarly shows that structured, intentional communication can offset reduced media richness (Avolio et al., 2014; Contreras et al., 2020). Thus, distance may change how leadership is enacted rather than diminish its overall effectiveness.

Despite this progress, much evidence linking leadership to engagement comes from co-located workplaces. Because physical distance can disrupt informal connections and complicate traditional leadership behaviours (Hoch & Kozlowski, 2014), it remains unclear whether leadership has the same effect on engagement in hybrid and remote contexts.

Conceptualising Leadership Categories

Research on leadership and engagement has traditionally focused on positive styles, such as transformational, authentic, and ethical leadership (Bedi et al., 2016; Decuypere & Schaufeli, 2021; Lesener et al., 2020). However, recent meta-analyses show these styles share overlapping mechanisms such as trust-building, need satisfaction, and prosocial modelling, resulting in conceptual redundancy (Banks et al., 2018; Hoch et al., 2018). Scholars therefore advocate shifting from comparing styles to integrating their underlying mechanisms (Decuypere & Schaufeli, 2019).

Theoretically, multiple mechanism-based frameworks converge to explain the leadership-engagement relationship. First, the Job Demands-Resources (JD-R) model (Bakker & Demerouti, 2017) views leadership as a source of job resources (e.g., clarity, autonomy, support) that buffers demand, enabling employees to thrive. Second, Self-Determination Theory (SDT; Deci & Ryan, 2008) explains how leaders foster engagement by supporting autonomy, competence, and relatedness, thereby satisfying core psychological needs. Lastly, Social Exchange Theory (SET; Shore et al., 2006) adds a direct relational lens, emphasising reciprocity: supportive and fair leader behaviours build trust and commitment, which in turn sustain engagement. These mechanisms rarely function in isolation but reinforce one another, helping explain why diverse leadership styles often produce similar positive effects on engagement (Decuypere & Schaufeli, 2021).

To move beyond style-based redundancy, we adopt a behavioural lens using Yukl et al.'s (2002) hierarchical taxonomy, which classifies leadership into three meta-categories: task-oriented, relations-oriented, and change-oriented

Table 1. Meta-Analytic Scope of Leadership Categories.

Meta-Category	Definition
Relations-oriented behaviours	Strengthen leader-follower relationships through supporting, recognising, developing and empowering employees, thereby fostering trust (Yukl et al., 2002).
Task-oriented behaviours	Focus on achieving objectives by clarifying roles, directing activities, monitoring progress, and solving problems to ensure efficiency and reliability (Yukl et al., 2002).
Change-oriented behaviours	Promote adaptation and innovation by articulating vision, championing new ideas, and encouraging learning to meet evolving demands (Derue et al., 2011; Yukl et al., 2002).
Additional category	**Definition**
Supervisor support constructs	Refers to employees' perceptions that their supervisor values and cares for their well-being. Conceptualised as a perceptual social resource and signal of organisational support (Bakker et al., 2007; Kottke & Sharafinski, 1988).

behaviours (see Table 1). Task-oriented behaviours support goal achievement, relations-oriented behaviours strengthen relationships, and change-oriented behaviours articulate vision and drive improvement. This taxonomy is empirically validated and offers a parsimonious way to integrate proliferating leadership constructs while linking them to outcomes such as engagement (Borgmann et al., 2016; Bormann & Rowold, 2018; Derue et al., 2011).

To capture constructs especially relevant to engagement in dispersed work, we add a fourth category: supervisor-support constructs. These constructs (e.g., perceived supervisor support, family-supportive supervisor behaviours) reflect employees' perceptions of being valued and cared for (Kottke & Sharafinski, 1988). From a JD-R perspective, these perceptions function as job resources that energise employees and feed into perceived organisational support (Bakker et al., 2007). Social interaction is reduced in hybrid and remote work; therefore, this resource may be particularly salient. Treating supervisor support as a distinct category allows for a cleaner test of its unique contribution to sustaining engagement.

Additional Contextual Moderators

Beyond leadership categories, two contextual factors may shape the leadership-engagement relationship. Cultural values, particularly individualism–collectivism, influence expectations of leadership and how engagement is expressed (Cooper & Thatcher, 2010; Hofstede, 2011). In collectivist cultures, strong group norms and mutual support among team members may already fulfil key motivational and relational needs, such as belonging and recognition, reducing the incremental impact of leadership on engagement. In contrast, employees in individualist cultures may rely more heavily on leaders to fulfil these functions, making leadership a more salient driver of engagement. This is consistent with Kirkman et al. (2009), who demonstrated that individual-level cultural value orientations meaningfully moderate how followers respond to leadership behaviours. Second, differences in engagement measurement may affect observed effect sizes. The Utrecht Work Engagement Scale (UWES; Schaufeli et al., 2006) exists in 17-, 9-, and 3-item versions, all reliable, but shorter versions may produce weaker or less stable estimates (Farndale et al., 2014; Shimazu et al., 2008).

In summary, leadership research has expanded rapidly but often assumes co-located settings. As hybrid and remote work become more common, it is essential to examine whether leadership remains effective and which behaviours matter most for sustaining engagement. This meta-analysis integrates quantitative evidence on the leadership-engagement relationship in dispersed work and aims to inform leadership practice and organisational policy for digitally mediated environments. Specifically, this study seeks to (1) estimate the overall strength of the leadership-engagement relationship in hybrid and remote work, (2) examine work arrangement (hybrid vs. remote), leadership category, cultural context, and engagement measure as moderators.

Method

This meta-analysis was conducted independently and preregistered on the Open Science Framework (OSF) on 20 April 2025. The protocol, amendments, coding sheets, and analysis scripts are available on the project page (https://osf.io/4n5qa/). The review adheres to PRISMA 2020 guidelines (Page et al., 2021).

Eligibility Criteria

The inclusion criteria were: (1) studies involving workers in hybrid or remote work arrangements; (2) reports of employee work engagement measures; (3) reports of leadership styles (e.g., transformational, authentic) or leadership behaviours (e.g., collaborating, coaching); (4) sufficient statistical data linking work engagement and leadership, such as a bi-variate correlations or statistics from which a correlation could be derived; (5) quantitative empirical articles; and (6) articles written in English. To capture contemporary leadership practices before, during, and after COVID-19, searches covered 2015 onwards. Grey literature was included to minimise publication bias.

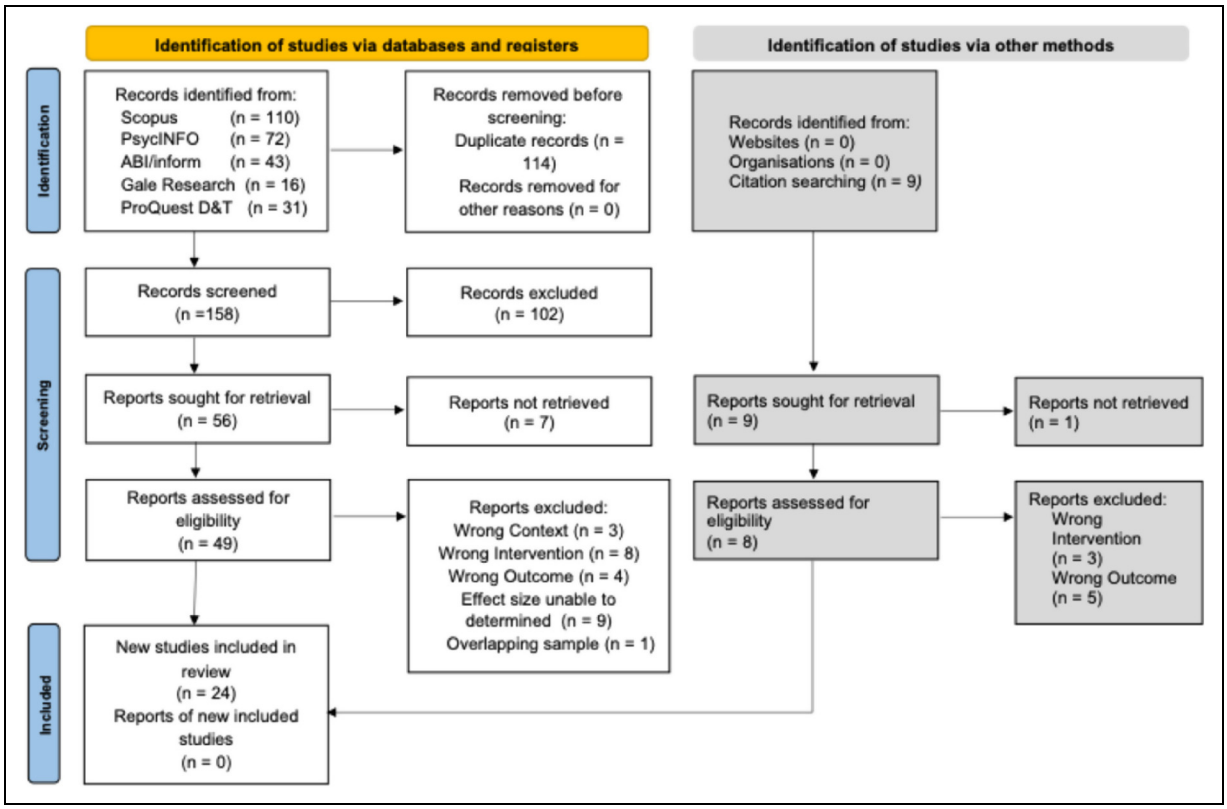

Figure 1. PRISMA Flow Diagram of Study Selection. *Note.* PRISMA = Preferred Reporting Items for Systematic Reviews and Meta-Analyses; ABI/Inform = Abstracted Business Information/Inform; ProQuest D&T = ProQuest Dissertations and Theses.

Search Strategy

A comprehensive search was conducted on 28 May 2025 across five databases: Scopus, PsycINFO (ProQuest), ABI/Inform Complete (ProQuest Central), Gale Research Complete, and ProQuest Theses and Dissertations Global. Synonyms for key populations (e.g., "employee", "supervisor", "manager") were incorporated. Searches were limited to titles, abstracts, and keywords; restricted to English; and filtered to the 2015–2025 publication period. Full search strings are reported in the Supplementary Material. Reference lists and forward citation searches (Google Scholar) identified no additional eligible studies.

Article Selection

Article selection occurred in two phases using Rayyan, a systematic review software (Ouzzani et al., 2016). In Phase 1, duplicates were removed, and titles and abstracts were screened by the lead author (Clark). A random 20% of abstracts were independently screened by a second author (Somoray) to assess interrater reliability using Cohen's kappa (Cohen, 1960), which showed substantial agreement ($\kappa = .79$, $SE = 0.03$, 95% CI [0.73, 0.85]). In Phase 2, full-text articles were screened, again with 20% double-screened by the same reviewing team, showing substantial interrater reliability ($\kappa = .80$, $SE = 0.06$, 95% CI [0.68, 0.92]). Disagreements about leadership eligibility were resolved through discussion. The selection process was documented in sufficient detail to complete a PRISMA flow diagram (see Figure 1).

Data Extraction

A standardised Excel form was used to code study characteristics, outcomes, and risk of bias. The lead author extracted all data; 20% were independently verified, with no discrepancies. Extracted information included publication details, sample characteristics, work arrangement description, study design, leadership construct and measure, engagement instrument (including version and reliability), and effect size (Pearson's r or converted equivalent). There was no requirement to contact the study authors.

Risk of Bias Assessment

As almost all included studies were cross-sectional (except one weekly diary study; Hodzic et al., 2024), methodological quality was assessed using the Joanna Briggs Institute (JBI) Critical Appraisal Checklist for Analytical Cross-Sectional

Studies (Moola et al., 2015). Two reviewers independently assessed 20% of studies, achieving 92.5% raw agreement; disagreements were resolved through discussion. Items were coded as "Yes," "No," or "Unclear." Following JBI guidance, no numeric thresholds were applied; instead, item-level assessments were narratively interpreted to inform confidence in study findings.

Data Synthesis

All analyses were conducted in R (version 2025.05.0) using the *metafor* package (Viechtbauer, 2010). Pearson's r was the effect size metric. When zero-order correlations were unavailable, effect sizes were converted from alternative statistics (e.g., standardised betas, t-values) using formulas from Lipsey and Wilson (2001). A random-effects model using REML estimation was applied to account for expected between-study heterogeneity. Effect sizes were Fisher's z-transformed for analysis and back-transformed for reporting. Interpretation followed Cohen's (1988) benchmarks. Each study contributed one independent effect size reflecting the leadership-engagement association. Sensitivity analyses were conducted via Baujat plots and re-estimating the pooled effect after their exclusion. Publication bias was examined using funnel plots and Egger's regression test, supplemented by Rosenthal's fail-safe N. Heterogeneity was evaluated using Cochran's Q and the I^2 statistic (Higgins et al., 2003).

Four moderators were coded: Work Arrangement, leadership category, cultural context, and engagement measurement. Work arrangement was categorised as hybrid or remote. When not explicitly stated, arrangement was inferred from contextual descriptions (e.g., "working from home," "lockdown"). Any mixed pattern with <100% remote work was coded as hybrid. Sensitivity analyses examined the impact of these decisions by (a) excluding inferred studies and (b) applying a stricter hybrid threshold of <50% remote work. Leadership constructs were coded into Yukl et al.'s (2002) behavioural taxonomy, task-, relations-, and change-oriented behaviours, following criteria outlined in Yukl et al. (2002). Coding was based on scale content, where constructs spanned multiple categories, classification reflected the dominant behavioural focus. Constructs measuring perceived supervisor support were coded into a fourth category (supervisor support). Cultural Context was coded using Hofstede's Individualism Index (Hofstede, 2011): ≥50 = individualistic; <50 = collectivist. Multi-country samples were coded by majority representation. Engagement measurement was coded according to the version of the Utrecht Work Engagement Scale used.

Results

In line with the stated aims, results are presented in three sections following the study characteristics and publication bias results: (1) the overall effect of leadership on work engagement across remote and hybrid work arrangements, (2) subgroup differences based on work arrangements, and an exploration of study-level moderators, including leadership category, cultural context, and engagement measurement.

Study Characteristics

This meta-analysis synthesised 24 studies (21 peer-reviewed, 3 grey literature) encompassing a total of 8,166 employees across 12 countries. Publications span 2017–2025, with approximately 80% conducted during the COVID-19 period (World Health Organization, 2023). Mean age, reported in 19 studies, was 36.5 years. Sex distribution was broadly balanced (female 50.1% [$n = 4{,}149$], male 44.7% [$n = 3{,}703$]) in total. Studies represented diverse industries, with 28% focused on single sectors (e.g., IT/business, banking, education, nursing) and the rest spanning multiple industries.

Leadership was operationalised through both styles (i.e., transformational) and behaviours (i.e., collaboration), with supervisor support constructs appearing most frequently rather than broad styles. Measures of general and social supervisor support were most common ($k = 8$), followed by family-supportive supervisor behaviours ($k = 4$). Among Yukl et al.'s (2002) meta-categories, relations-oriented behaviours appeared in $k = 7$ (identity leadership × 2, Leader-member exchange, authentic leadership, collaboration, leader's trust behaviours, Health-oriented leadership), Change-oriented in $k = 3$ (transformational leadership × 2; leadership behaviour) and Task-oriented in $k = 2$ (interactive monitoring; managerial coaching). Leadership scale reliability was generally high ($\alpha = .76$ to $.97$, $M = .90$).

Work engagement was consistently measured using the UWES, based on Schaufeli et al. (2002)'s conceptualisation. Three validated versions were utilised: the UWES-9 (used in 11 studies), the UWES-3 (7 studies), and the UWES-17 (6 studies), each maintaining the core dimensions of vigour, dedication, and absorption. The UWES-9 was the most frequently used, offering a balance between comprehensiveness and efficiency. Internal consistency was also high ($\alpha = .77$ to $.96$, $M = .90$). Full study characteristics are reported in Table 2.

Bias Assessment

Risk of bias was generally low; however, confounding factors were only identified in 58% of studies, and half of those studies tested for common method bias. Overall, the evidence base exhibits sound methodology but a moderate risk related to confounding and method variance. Funnel plot suggested symmetry with a slight scarcity of small studies showing weak effects. Egger's test was non-significant ($z = 0.03$, $p = .980$). Rosenthal's fail-safe N showed over 11,000 null-result studies would be needed to negate the effect. These results indicate robustness against publication bias.

Table 2. Study Characteristics from Meta-Analysis Sample.

First Author (year)	Leadership Construct	Leadership Category	Leadership Measure	Alpha	Engagement Measure	Alpha	Country	*n*	Industry, Work Arrangement	*r*
Mayfield and O'Donnell (2025)	Collaboration	relations	IBQ (Yukl et al., 2008)	0.89	UWES-9	0.94	USA	231	Diverse, hybrid	0.47
Mosquera and Branco (2025)	Supervisor Support	support	SSS (McGilton, 2010)	0.94	UWES-17	0.93	Portugal	420	ICT, remote	0.51
Lathabhavan and Griffiths (2024)	Manager Support	support	LTSI (Holton et al., 2000)	0.84	UWES-9	0.89	India	852	Diverse, remote	0.18
Boccoli et al. (2024)	Transformational Leadership	change	GTL (Carless et al., 2000)	0.93	UWES-17	0.94	Italy	410	Consultants, remote	0.56
Deepa and Dharshini(2024)	Leadership And Organisational Support	support	(Deepa & Dharshini, 2024)	0.78	UWES-9	0.70	India	244	IT and business, hybrid	0.12
Shi et al. (2024)	Identity Leadership	relations	ILI (Steffens et al., 2014)	0.97	UWES-9	0.93	UK	202	Diverse, hybrid	0.52
Li and Wang (2024)	Interactive Monitoring	task	(Liao & Chun, 2016)	0.89	UWES-3	0.92	China	299	Diverse, remote	0.43
Koekemoer et al. (2021)	Leadership Behaviour	change	(Prewitt & Weil, 2014)	0.94	UWES-3	0.82	South Africa	229	Diverse, remote	0.45
Maheshwari et al. (2024)	Perceived E-Leadership: Leader's trust	relations	(Elyousfi et al., 2021)	0.77	UWES-17	0.96	Vietnam	445	education sector, remote	0.46
Kakkar et al. (2024)	Supervisor Support	support	PSS (Rhoades et al., 2001)	0.91	UWES-9	0.87	India	294	IT and business, remote	0.54
Popaitoon (2023)	Supervisor Support	support	PSS (Rhoades et al., 2001)	0.88	UWES-3	0.84	Thailand	1052	Diverse, remote	0.37
Min Ha et al. (2023)	Identity Leadership	relations	ILI (Steffens et al., 2014)	0.91	UWES-9	0.91	South Korea	300	Diverse, hybrid	0.58
Gianneschi (2024)	Leader Member Exchange	relations	LMX-MDM (Liden et al., 1998)	0.95	UWES-9	0.91	USA	232	Diverse, remote	0.68
Wang et al. (2023)	Family Supportive Leadership	support	FSSB (Hammer et al., 2013)	0.87	UWES-9	0.96	China	276	Diverse, hybrid	0.27
Anson (2017)	Managerial Coaching	task	(Ellinger et al., 2003)	0.94	UWES-9	0.91	USA	200	Diverse, remote	0.19
Varghese (2017)	Transformational Leadership	change	TLI (Podsakoff et al., 1990)	0.92	UWES-3	0.92	USA	299	Nurses, hybrid	0.41
Da et al. (2022)	Social Support Leader	support	(van Veldhoven et al., 2002)	0.87	UWES-3	0.78	Norway	306	Diverse, remote	0.27
Van Engen et al. (2023)	Family Supportive Supervisor Behaviour	support	FSSB (Hammer et al., 2013)	0.94	UWES-17	0.88	Netherlands	206	Diverse, remote	0.26
Singh et al. (2024)	Authentic Leadership	relations	ALQ (Walumbwa et al., 2008)	0.93	UWES-9	0.94	India	300	Information Technology and business, remote	0.29
Fawehinmi et al. (2023)	Supervisor Support	support	PSS (Rhoades et al., 2001)	0.97	UWES-17	0.94	Malaysia	259	Diverse, remote	0.26

(continued)

Table 2. Continued.

First Author (year)	Leadership Construct	Leadership Category	Leadership Measure	Alpha	Engagement Measure	Alpha	Country	*n*	Industry, Work Arrangement	*r*
Lopes et al. (2024)	Perceived Supervisory Family Support	support	POFS (Jahn et al., 2003)	0.90	UWES-3	0.77	Portugal	411	diverse, remote	0.32
Chambel et al. (2023)	Family-supportive Supervisor Behaviours	support	FSSB (Hammer et al., 2013)	0.91	UWES-17	0.92	Portugal	318	Bank workers, hybrid	0.32
Hodzic et al. (2024)	Supervisor Social Support	support	(Frese, 1989)	0.97	UWES-3	0.95	Germany	167	diverse. hybrid	0.22
Klebe et al. (2024)	Health-orientated Leadership	relations	(Franke et al., 2014)	0.91	UWES-9	0.93	Germany	214	diverse, remote	0.47

Note. *N* = sample size; *r* = bivariate correlation; IBQ = Influence Behaviour Questionnaire; SSS = Supportive Supervisory Scale; LTSI = Learning Training System Inventory; GTL = Global Transformational Leadership; ILI = Identity Leadership Inventory; PSS = Perceived Supervisor Support; LMX-MDM = Leader Member Exchange - Multidimensional Measure; FSSB = Family Supportive Supervisory Behaviours; TLI = Transformational Leadership Inventory; ALQ = Authentic Leadership Questionnaire; POFS = Perceived Organisational Family Support.

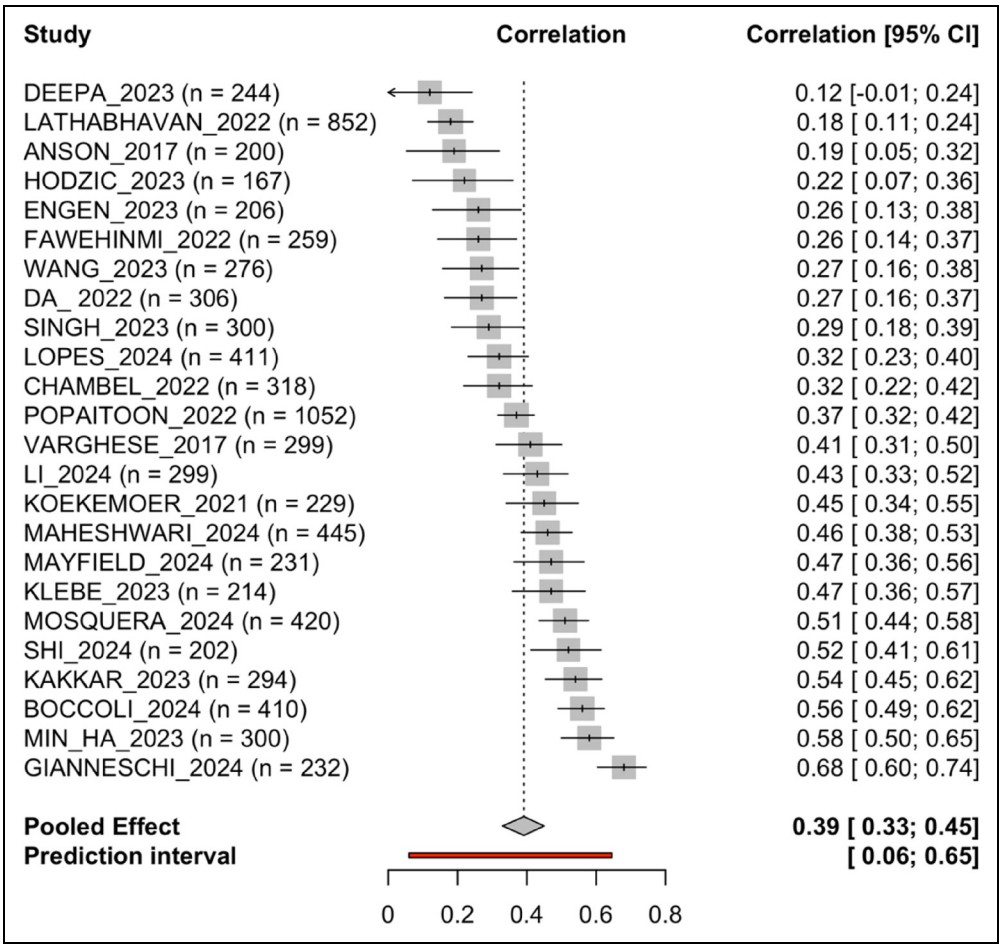

Figure 2. Forest plot of the effect sizes.

Overall Meta-Analytic Findings

The random effects meta-analysis ($k = 24$) showed a moderate positive link between leadership and work engagement in hybrid and remote work arrangements ($r = .39$, 95% CI [0.33, 0.45]), and this relationship was significant, $p < .001$. Heterogeneity was high ($I^2 = 90.25\%$). A sensitivity analysis that excluded one highly influential study identified through Baujat-plot inspection (Gianneschi, 2024) yielded a similar effect ($r = .38$, 95% CI [0.32, 0.43], $p < .001$) with reduced but still high heterogeneity ($I^2 = 87.87\%$). This demonstrates that the association remains robust despite considerable variation across studies. Figure 2 displays a forest plot showing the individual study estimates in order of correlation strength.

Moderator Analysis

Subgroup analyses were carried out to examine whether the leadership-engagement link varied by work arrangement, leadership pathway, cultural context, and work engagement measure (see Table 3). Work Arrangement: No significant difference was found between hybrid ($k = 8$; $r = .39$) and remote ($k = 16$; $r = .42$) contexts, $QM(1) = 0.15$, $p = .699$. Sensitivity analyses showed consistent findings. Removing studies where work arrangement was inferred ($k = 3$), and reclassifying work arrangement using a stricter 50% threshold for hybrid work, both resulted in non-significant moderator effects. There were minimal differences between groups and no reduction in heterogeneity. This suggests that the absence of moderation by work arrangement is robust. However, the stricter classification reduced the number of hybrid studies ($k = 3$), which may limit the ability to detect small effects.

Leadership Behavioural Categories: Based on Yukl et al.'s (2002) taxonomy plus supervisor support constructs, the leadership category significantly moderated the effect, $QM(3) = 12.87$, $p = .005$, explaining 33.3% of heterogeneity. Relations-oriented behaviours had the strongest association ($r = .50$), followed closely by change-oriented ($r = .48$). Task-oriented ($r = .32$) and supervisor support ($r = .31$) showed moderate effects. Interpretation should consider overlapping confidence intervals and uneven subgroup sizes.

Table 3. Moderator Analyses for the Leadership-Engagement Association in Hybrid and Remote Work.

Moderator	*k*	*r*	95% CI LL	95% CI UL	*QM*(df)	*p*
Work Arrangement					0.15(1)	.699
Hybrid	8	.39	.27	.52		
Remote	16	.42	.34	.51		
Leadership Category					12.87(3)	.005
Relations	7	.50	.41	.59		
Task	2	.32	.07	.53		
Change	3	.48	.38	.57		
Supervisor Support	12	.31	.24	.38		
Culture					0.86(1)	.355
Individualistic	11	.42	.32	.51		
Collectivist	13	.37	.29	.44		
Work Engagement Measurement					0.50(2)	.781
UWES-3	7	.36	.30	.41		
UWES-9	11	.41	.29	.51		
UWES-17	6	.41	.29	.51		

Note. *k* = number of effect sizes; *r* = pooled Pearson correlation; CI = confidence interval; LL = lower limit; UL = upper limit; *QM*(df) = omnibus test of subgroup differences.

Cultural Context: Studies from individualistic cultures ($k = 11$) and collectivist cultures ($k = 13$) did not differ significantly, $QM(1) = 0.86$, $p = .355$, though effect sizes were marginally higher in individualistic settings ($r = .42$ vs. .37). Work Engagement Measure: Different UWES versions did not significantly moderate the relationship, $QM(2) = 0.50$, $p = .781$.

These findings highlight that while leadership behaviours consistently predict work engagement in distributed work, only leadership category significantly explains between-study variation. Relations- and change-oriented behaviours appear most influential. The absence of moderation by work arrangement, culture, and engagement measure suggests other factors may account for heterogeneity. Caution is warranted given uneven subgroup sizes and potential limited power to detect small effects (Borenstein et al., 2009).

Discussion

Overall Meta-Analytic Results

Given the rise of hybrid and remote work, it is essential to understand the strength and direction of the leadership-engagement relationship in these contexts. Traditional, co-located leadership studies have consistently shown a positive link between leadership and engagement (Breevaart et al., 2014; Decuypere & Schaufeli, 2021; Mazzetti et al., 2023). However, they provide limited insight into whether leadership behaviours function when face-to-face contact is limited. Building on validated taxonomies of leadership (Yukl et al., 2002) and work engagement (Schaufeli et al., 2002), we extended contextual leadership research by examining how leadership behaviours operate across hybrid and remote work environments. We also tested potential contingencies, including work arrangement (hybrid versus remote), leadership category, cultural context, and measurement variation.

Our findings affirm that leadership remains a robust predictor of work engagement in hybrid and remote settings. Across 24 samples, the moderate positive association ($r = .39$) is slightly lower than previous meta-analytic estimates in co-located contexts (Decuypere & Schaufeli, 2021; $r = .42$; Mazzetti et al., 2023; $r = .46$). These results support the idea that while physical distance changes leader influence, it does not negate it (Antonakis & Atwater, 2002). Leaders can sustain engagement through digitally mediated behaviours. Thus, leadership remains impactful despite physical separation. Substantial heterogeneity was present ($I^2 = 90.25\%$), reflecting enduring conceptual and methodological inconsistencies in leadership research (Banks et al., 2018; Yukl, 2012).

Moderator Analyses

Work Arrangements. Our moderation analyses found no differences in the leadership-engagement association between hybrid and remote arrangements. The observed effect size in hybrid contexts was slightly lower than in remote contexts, contrary to expectations. This may reflect the coordination complexity and relational discontinuity inherent to hybrid arrangements, where employees regularly transition between co-located and isolated settings without fully consolidating the interaction norms of either. Bartel et al. (2012) demonstrated that such discontinuity disrupts the consistency and observability of prototypical workplace behaviours. Contreras et al. (2020) further highlight that effective leadership in distributed contexts requires deliberate adaptation of communication norms, a challenge likely amplified when leaders must simultaneously manage employees across both settings.

Additionally, variability in how hybrid work is operationalised across studies may further contribute to this pattern. Thus, our findings may reflect not the irrelevance of arrangement, but the field's broader struggle with unclear definitions, a challenge that continues to impede clarity amongst census data (International Labour Office, 2020).

Leadership Categories. Leadership categories accounted for some between-study variance (33%), with relations-oriented and change-oriented behaviours showing the strongest associations with engagement. In dispersed contexts, relations-oriented behaviours may be particularly salient because they help compensate for a lack of relatedness and belonging. For example, Uru et al. (2022) found that leaders

who fostered shared organisational identity were more influential for remote workers than for on-site employees. This supports the idea that relations-oriented leadership can address deficits in connectedness that often characterise remote work arrangements (Galanti et al., 2021).

These findings also contribute to theoretical understanding. Both categories of behaviours change- and relations-oriented behaviours can be understood through the lens of SDT (Deci & Ryan, 2008). Relations-oriented behaviours cultivate trust and interpersonal connection, directly supporting employees' need for relatedness, while change-oriented behaviours provide vision and meaningful goals that foster autonomy and competence. Considering work engagement is a motivational state and SDT explains motivation, this framework seems salient in explaining how leaders can foster work engagement while dispersed.

By contrast, task-oriented behaviours and supervisor support constructs were associated with engagement to a lesser degree. One interpretation is that dispersed employees may increasingly rely on their own personal resources, such as self-efficacy and autonomy (Lange & Kayser, 2022). This concept is self-leadership, which is the process of setting one's own goals and monitoring their fulfilment. For instance, Galanti et al. (2021) found that self-leadership was positively related to work engagement during remote work. This finding suggests that task-oriented behaviours such as monitoring and goal setting, and supervisor support as a job resource, may be less critical when employees are already exercising higher levels of autonomy. However, this moderation test was limited by highly uneven subgroup sizes, which reduces the precision of estimates, making these comparisons across categories more tentative than conclusive. Nonetheless, collectively these insights extend contextual leadership research, refining our understanding of how leaders mobilise engagement in digitally mediated environments (Oc, 2018).

Cultural Context Moderators. Building on previous research (Decuypere & Schaufeli, 2021; Mazzetti et al., 2023), we examined cultural context (Hofstede, 2011) and engagement measure as possible moderators. We did not find any moderation effects related to culture, even though there is evidence of cross-cultural differences in engagement (Hu et al., 2014). One reason might be that occupational differences have confounded earlier findings, since Hu et al.'s samples included multiple industries. Similarly, Mazzetti et al. (2023) found cultural moderation for feedback but not for leadership. This suggests that culture may influence the importance of specific leadership behaviours, like feedback, but does not consistently impact the overall leadership–engagement link. Nonetheless, more cross-cultural research is necessary to reach firmer conclusions.

Measurement Variations. We also found no moderation across UWES versions. This aligns with evidence that the scales have comparable reliability and factorial structure across contexts (Mazzetti et al., 2023). While UWES-3 tended to produce slightly weaker correlations, this likely reflects lower internal consistency in shorter forms, which inflates measurement error (Kulikowski, 2017; Schaufeli et al., 2019). Nonetheless, UWES-3 remains useful in applied research, where brevity can reduce participant burden and improve response rates (Fisher et al., 2016). Therefore, the lack of moderation likely reflects the overall robustness of the UWES scales, even though shorter versions involve a trade-off between precision and practicality.

Limitations and Future Research

This study has several limitations. First, coding decisions involved subjective judgment when combining different leadership concepts. For example, transformational leadership was classified as change-oriented in line with previous meta-analyses (Hoch et al., 2018; Judge & Piccolo, 2004). While this classification is theoretically justifiable (Longshore & Bass, 1987), it overlaps with relational behaviours, revealing ongoing conceptual ambiguity in leadership research (Derue et al., 2011; Yukl, 2012). Similarly, measures of supervisor support, varying from family-supportive behaviours to broader social support, were combined, which may have obscured meaningful distinctions and increased measurement variance. Given that task- and change-oriented categories are based on relatively few studies, precision is limited. Therefore, future research should broaden the evidence base, as task-oriented leadership behaviours may still be important in a dispersed setting with high job demands. Also, extend other less studied areas, such as destructive leadership, to help balance out the predominant focus on positive leadership styles.

Second, reliance on correlational, self-report designs limits causal inference and raises concerns about common-source bias and reverse causality (Spector, 2019). While experimental designs are rarely feasible in leadership research, longitudinal approaches could reveal how leadership behaviours influence engagement as digital contexts change. Adding qualitative work would help identify the competencies leaders need to sustain engagement virtually, such as digital communication, trust-building, and managing visibility, which could then inform more targeted interventions and training.

Third, contextual factors limit generalisability. Most studies took place during COVID-19, when uncertainty and job insecurity might have heightened or obscured leadership effects. Inconsistent definitions of remote and hybrid work further reduced comparability. Standardised measures, such as telework intensity scales and continuous indicators like weekly hours WFH, would enhance accuracy in future research. This would also allow co-located work to be included as a direct comparison condition, enabling a more

systematic test of whether the slightly lower effect sizes observed in remote and hybrid contexts reflect genuine differences in how work arrangement shapes leadership processes. Although not possible in this study, broader potential contextual moderators such as industry and organisational climate should also be examined. Since leadership does not function in isolation, the influence of follower traits and behaviours cannot be ignored. Including constructs like self-efficacy and self-leadership may offer a deeper understanding of how employees actively influence engagement outcomes.

Finally, this review relied exclusively on the UWES to measure engagement for conceptual clarity. While widely validated, the UWES has faced criticism over its theoretical scope and discriminant validity (Macey & Schneider, 2008; Saks & Gruman, 2014). Future reviews would benefit from including a broader range of engagement measures to better reflect the diverse evidence base and support clearer theoretical development in the field.

Implications for Practice

These findings highlight the ongoing importance of leadership in maintaining engagement in hybrid and remote arrangements. Focusing on leadership development that highlights relational skills can help organisations support leaders in fostering trust and sustaining engagement remotely. Since these behaviours increasingly depend on digital fluency (Contreras et al., 2020), training should include technology enabled communication skills and ensure leaders have access to platforms that are reliable and easy to use. Additionally, incorporating routines that build a shared team identity, such as clear goals, rituals, and recognition, can strengthen cohesion and reduce feelings of isolation. HR practitioners can implement this by developing workshops that incorporate hybrid and remote best practices, supported by structured feedback and scenario-based training (e.g., virtual role plays). Such initiatives can prepare leaders to enact behaviours that foster engagement across both physical and digital environments.

Conclusion

This study presents a novel synthesis of leadership and work engagement in hybrid and remote contexts, building on earlier reviews that focused on traditional, co-located workplaces. Contrary to expectations that physical distance might lessen leader influence, we found that leadership strength remains comparable to that in co-located research. The relationship between leadership and engagement did not vary by work arrangement (hybrid vs. remote), culture, or engagement measure version. However, we found that not all leadership behaviours were equally impactful: relations- and change-oriented behaviours showed the strongest links to engagement, emphasising the importance of trust, connection, and vision in digitally mediated work. By contrast, task-oriented behaviours and supervisor support constructs showed smaller effects; given the small and unbalanced subgroup sizes, these estimates are tentative. Overall, these findings suggest that engagement relies less on proximity and more on the quality of leader-follower interactions.

Acknowledgments

No acknowledgments to declare.

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Ethical Approval and Informed Consent

This meta-analysis used previously published data and did not involve new human participants; ethical approval and informed consent were not required.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Data Availability Statement

All data used in this meta-analysis were extracted from publicly available published studies. Extracted datasets and analysis scripts have been uploaded to the Open Science Framework (https://osf.io/4n5qa/) and are available upon request.

Supplemental Material

Supplemental material for this article is available online.

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