

Transformational Leadership in the Age of Artificial Intelligence: A Systematic Review and Research Agenda

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ABSTRACT: Transformational leadership has been among the most influential and intensively studied constructs in organizational behavior for nearly five decades, and its empirical record is one of the most robust in the leadership field. Yet its foundational assumptions, leadership as an influence process between human actors operating within relatively stable, human-composed organizations, are increasingly unsettled by the rapid diffusion of artificial intelligence (AI) and digital technologies into the workplace. This systematized review integrates the theoretical, meta-analytic, and critical literatures on transformational leadership and examines how the construct is being reconceptualized for the digital and AI era. We trace the theory's lineage from Burns and Bass, synthesize four decades of meta-analytic evidence concerning its outcomes, mediators, and boundary conditions, and review the principal critiques of its conceptual and measurement validity. We then analyze the emerging literatures on e-leadership and digital leadership to articulate how transformational leadership is being redefined in AI-intensive organizations. We conclude by proposing a research agenda organized around four themes: theorizing the follower-transformation mechanism, reconceptualizing leadership as the design of human-AI symbiotic systems, expanding measurement beyond the Multifactor Leadership Questionnaire, and situating transformational leadership across cultural and technological contexts.

KEYWORDS: transformational leadership; charismatic leadership; systematic review; digital transformation; artificial intelligence; e-leadership

I. INTRODUCTION

Since James MacGregor Burns introduced the distinction between "transforming" and "transactional" leadership in his 1978 treatise *Leadership*, transformational leadership has grown into arguably the most dominant paradigm in leadership scholarship (Avolio, Walumbwa, & Weber, 2009; Dinh et al., 2014). Bernard Bass's subsequent formalization, culminating in the four-dimensional "four I's" model of idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration, transformed a normative vision into a testable, measurable construct that has since generated hundreds of empirical studies and multiple meta-analyses (Bass, 1985; Bass & Riggio, 2006). The theory's appeal rests on a powerful and intuitively compelling claim: that leaders elevate followers beyond self-interest, transforming their values, motives, and aspirations so that they perform beyond expectations (Burns, 1978).

That claim, however, was formulated in a world in which organizations were composed of human beings and leadership was exercised by human agents. The contemporary workplace is no longer so configured. Algorithmic decision systems now allocate work, evaluate performance, and set production schedules; generative AI increasingly participates in knowledge work that was once the exclusive province of skilled professionals; and organizations are being re-architected around data and platforms rather than hierarchies (Brynjolfsson & McAfee, 2014; Iansiti & Lakhani, 2020; Kellogg, Valentine, & Christin, 2020). This transformation raises a question that the foundational texts of transformational leadership theory did not anticipate: what does it mean to "transform" followers, and to lead at all, when a substantial share of organizational action is performed by non-human, algorithmic actors?

The present review addresses this question through a systematic synthesis of the transformational leadership literature. We pursue four specific research questions: (RQ1) What are the theoretical origins and core propositions of transformational leadership theory, and how have they evolved? (RQ2) What does the accumulated meta-analytic evidence establish regarding the outcomes, mediators, and boundary conditions of transformational leadership? (RQ3) What are the principal conceptual and

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methodological critiques leveled against the theory, and how robust are its core claims? (RQ4) How is transformational leadership being reconceptualized in the context of digital transformation and artificial intelligence, and what research agenda follows?

Our review makes three contributions. First, we consolidate a sprawling literature, spanning foundational theory, meta-analytic evidence, and critical appraisals, into a single integrated account that is accessible to both scholars and practitioners. Second, we foreground the growing but fragmented literature on leadership in digitalized and AI-intensive settings and connect it explicitly to the transformational leadership tradition, an integration that has been missing from prior reviews. Third, we articulate a forward-looking research agenda that responds to the most consequential critiques of the theory while preserving its lasting insights.

II. METHOD

This study is a systematized review, a form of evidence synthesis that applies elements of the systematic review process, explicit search strategy, transparent inclusion criteria, and structured appraisal, while stopping short of the exhaustive, dual-independent-screener protocols of a full systematic review (Grant & Booth, 2009). A systematized review is appropriate here because our aim is conceptual integration and agenda-setting across a mature, heterogeneous literature rather than the pooling of effect sizes that a formal meta-analysis would require.

Search strategy. We searched the Web of Science Core Collection (Social Sciences Citation Index and Emerging Sources Citation Index) and Scopus using combinations of the primary construct terms ("transformational leadership," "charismatic leadership," "full-range leadership") with outcome and context terms ("performance," "creativity," "innovation," "commitment," "trust," "digital transformation," "artificial intelligence," "e-leadership," "algorithmic management"). Searches covered the period 1978 (Burns's foundational work) through 2025. Because the construct spans four decades, we supplemented database searching with backward and forward citation tracking from landmark meta-analyses (e.g., Judge & Piccolo, 2004; Wang, Oh, Courtright, & Colbert, 2011; Hoch, Bommer, Dulebohn, & Wu, 2018) and authoritative reviews (e.g., Avolio et al., 2009; Dinh et al., 2014; van Knippenberg & Sitkin, 2013).

Table I. Search Strategy and Eligibility Criteria.

Element	Specification
Databases	Web of Science Core Collection (SSCI, ESCI); Scopus
Time window	1978-2025
Construct terms	"transformational leadership," "charismatic leadership," "full-range leadership"
Context/outcome terms	performance, creativity, innovation, commitment, trust, digital transformation, artificial intelligence, e-leadership, algorithmic management
Supplementary retrieval	Backward/forward citation tracking; hand-search of landmark meta-analyses and reviews
Inclusion	Peer-reviewed empirical, meta-analytic, and conceptual/review works on transformational or charismatic leadership, or on leadership in digital/AI contexts
Exclusion	Non-English; practitioner-only sources without evidence; incidental use of the term

Inclusion and exclusion criteria. We included peer-reviewed empirical studies, meta-analyses, and theoretical/conceptual reviews that (a) conceptualized or measured transformational or charismatic leadership, or (b) examined leadership in digitalized or AI-intensive organizational contexts. We excluded non-English-language publications, purely practitioner-oriented articles without an evidentiary basis, and works that used the term "transformational leadership" only incidentally. Given the centrality of several practitioner venues (notably *Harvard Business Review*) to the digital-leadership conversation, we retained a small number of such sources where they shaped scholarly discourse (e.g., Davenport & Ronanki, 2018).

Screening and synthesis. Screening proceeded in two stages (title/abstract, then full text), with appraisal of relevance and, for meta-analyses, of methodological adequacy. The final corpus comprised 52 sources, including foundational theoretical works, eight meta-analyses, and a set of systematic and critical reviews, together with the emerging digital- and AI-leadership literature. We synthesized this corpus thematically, using the meta-analytic estimates as the quantitative backbone and organizing narrative synthesis around four themes corresponding to our research questions: theory, evidence, critique, and reconceptualization.

III. THEORETICAL FOUNDATIONS: FROM TRAITS TO TRANSFORMATION

A. The Precursors

Transformational leadership did not emerge in a vacuum; it was a deliberate response to the limitations of earlier leadership paradigms. The trait approach, inaugurated by Stogdill's (1948) survey of the literature, sought stable personal attributes that distinguish leaders from non-leaders but found that leadership could not be reduced to any fixed constellation of traits, a conclusion later qualified by quantitative reviews showing that personality traits do correlate, albeit modestly, with leadership emergence and effectiveness (Judge, Bono, Ilies, & Gerhardt, 2002). The behavioral approach shifted attention from who leaders are to what they do, exemplified by the Ohio State studies of initiating structure and consideration (Fleishman, 1953) and Lewin, Lippitt, and White's (1939) classic demonstration that democratic, autocratic, and laissez-faire climates produce systematically different group behavior. The contingency and situational approaches (Fiedler, 1967; House, 1971) then insisted that effective leadership depends on the fit between style and situation, a corrective to the search for a universal leader type.

By the late 1970s, however, these paradigms had converged on a transactional, exchange-based image of leadership: leaders offered rewards and clarity in return for follower effort and compliance. It was against this backdrop that Burns (1978) articulated a fundamentally different conception of the leadership relationship.

B. Burns and the Transforming Leader

Burns's (1978) lasting contribution was to distinguish transforming leadership from transactional leadership as two qualitatively different modes of the leader-follower relationship. Transactional leadership is a form of exchange in which leaders meet followers' needs in return for performance, whereas transforming leadership "occurs when one or more persons engage with others in such a way that leaders and followers raise one another to higher levels of motivation and morality" (Burns, 1978, p. 20). The transforming leader appeals to followers' higher-order needs and values, binding them together in pursuit of collective purposes that transcend individual self-interest. Critically, Burns located transforming leadership within the domain of values and moral elevation, connecting it to his broader political theory of power and purpose.

A second, and contested, feature of Burns's formulation concerns its moral content. For Burns, transforming leadership is intrinsically elevating; it raises both leader and follower to higher levels of motivation and morality, and is therefore, by definition, an ethical enterprise. Bass (1985) departed from this normative stance, arguing that the same transformational mechanisms can serve either prosocial or self-interested ends: a leader may inspire and intellectually stimulate followers toward collective good or toward destructive, self-aggrandizing purposes. This distinction between authentic and "pseudo-transformational" leadership (Bass & Riggio, 2006) anticipated later debates over the ethics of charismatic leadership, and it remains directly relevant to the governance of algorithm-mediated influence examined in Section 6.

C. Bass's Formalization and the Four I's

Bass (1985) translated Burns's normative vision into an organizational-behavior research program. He argued that transformational and transactional leadership are not opposite ends of a single continuum but distinct dimensions that effective leaders combine, and he specified the behavioral components of transformational leadership. These components were subsequently consolidated into the "four I's" (Bass & Riggio, 2006):

Table II. The Four Dimensions of Transformational Leadership (Bass & Riggio, 2006).

Dimension	Core definition	Representative behaviors
Idealized influence	Acting as an admired, trusted role model who embodies high ethical standards	Demonstrating integrity; placing collective interests above self-interest
Inspirational motivation	Articulating a compelling vision that energizes followers and gives meaning	Communicating an appealing future; expressing optimism and confidence
Intellectual stimulation	Challenging assumptions and encouraging novel approaches to problems	Questioning the status quo; soliciting new ideas; reframing problems
Individualized consideration	Attending to each follower's developmental needs	Coaching and mentoring; providing individualized support and feedback

The full-range leadership model (Bass & Avolio, 1994) positioned transformational leadership as an augmentation of transactional leadership: contingent reward and management-by-exception provide the baseline, but transformational behaviors produce performance *beyond* expectations. This "augmentation hypothesis", that transformational leadership adds predictive value above and beyond transactional leadership, became the theory's central empirical claim.

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The measurement of these constructs was consolidated in the Multifactor Leadership Questionnaire (MLQ), which operationalizes the full-range model across its transformational, transactional, and laissez-faire components. The MLQ's factor structure, however, has been a persistent source of controversy: while the higher-order distinction among transformational, transactional, and laissez-faire leadership is generally reproduced, the lower-order structure, particularly the number and identity of the transformational dimensions, has proven unstable across samples and contexts (Antonakis, Avolio, & Sivasubramaniam, 2003). This measurement instability is itself an early symptom of the conceptual difficulties examined in Section 5.

D. Mechanisms

Why should transformational leadership work? The most influential mechanistic account is Shamir, House, and Arthur's (1993) self-concept-based theory, which holds that charismatic-transformational leaders motivate followers by linking work to the followers' self-concepts, increasing the intrinsic valence of effort, heightening self-efficacy, and building identification with the leader's vision and the collective. Complementary accounts emphasize trust in the leader (Dirks & Ferrin, 2002) and positive psychological states such as hope, efficacy, resilience, and optimism, the constituents of psychological capital (Luthans, Youssef, & Avolio, 2007). A closely related account emphasizes the social identity function of transformational leadership: Shamir et al.'s (1993) self-concept theory proposes that charismatic leaders link followers' self-concepts to the collective, strengthening followers' identification with the group and their internalization of its mission. This identity-based mechanism helps explain why transformational leadership generalizes beyond dyadic exchange to shape collective phenomena such as team identification and a shared sense of purpose, and it foreshadows the relational and collective reconceptions of leadership discussed in Section 6. Together these mechanisms imply that transformational leadership operates not primarily through exchange but through the transformation of followers' beliefs about themselves, their work, and their collective identity.

IV. THE EMPIRICAL EVIDENCE BASE: A META-ANALYTIC SYNTHESIS

The empirical literature on transformational leadership is one of the most quantitatively synthesized in organizational behavior. A succession of meta-analyses has established the construct's criterion-related validity, mapped its nomological network, and tested its boundary conditions.

Relative validity. Judge and Piccolo's (2004) meta-analysis of 87 sources tested the augmentation hypothesis directly. Transformational leadership displayed corrected correlations with leader effectiveness, follower job satisfaction, and follower motivation that were substantially stronger than those of transactional leadership, and, consistent with full-range theory, it added incremental validity over contingent reward in predicting several criteria. The results established transformational leadership as a robust predictor of work-related outcomes while confirming that contingent reward remains a valid and non-redundant predictor in its own right.

Effectiveness correlates. The earlier Lowe, Kroeck, and Sivasubramaniam (1996) review of the Multifactor Leadership Questionnaire (MLQ) literature had already documented meaningful relationships between transformational leadership and effectiveness and satisfaction, while noting considerable variability across studies and pointing to measurement and contextual moderators.

Performance across criteria and levels. Wang et al.'s (2011) meta-analysis of 117 independent samples provided the most granular account of transformational leadership and performance. It demonstrated that transformational leadership predicts individual-level performance across criterion types, that the relationship is stronger for contextual performance than for task performance, and that transformational leadership augments contingent reward in predicting contextual and team-level performance, but not individual task performance. These findings refined the augmentation hypothesis by revealing that its operation depends on the criterion and level of analysis under consideration.

Incremental validity relative to emerging forms. As positive, values-based leadership constructs proliferated, Hoch et al. (2018) meta-analytically tested whether ethical, authentic, and servant leadership explain variance beyond transformational leadership. They found that authentic and ethical leadership are highly correlated with transformational leadership and add little incremental variance, whereas servant leadership shows greater promise as a distinguishable construct. This result shows both the centrality of transformational leadership, whose nomological network overlaps heavily with its successors, and the field's recurring difficulty in establishing discriminant validity among "new-genre" leadership constructs.

Outcomes. Across these syntheses, transformational leadership is reliably associated with follower attitudes (job satisfaction, affective commitment, trust), motivation, and behaviors (task performance, contextual/organizational citizenship behavior, and creativity), as well as with team-level effectiveness and, more modestly, organizational-level performance. Creativity and

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innovation occupy a special place in the theory's logic: intellectual stimulation and individualized consideration are theorized to liberate follower creativity, a link consistent with broader accounts of creative work environments (Amabile, 1996).

Mediators. Meta-analytic and primary evidence identifies trust in the leader as a central mediating mechanism (Dirks & Ferrin, 2002), alongside psychological empowerment, identification with the leader and collective, and psychological capital (Avey, Reichard, Luthans, & Mhatre, 2011; Luthans et al., 2007). These mediators are broadly consistent with the self-concept-based account (Shamir et al., 1993).

Moderators and boundary conditions. The magnitude of transformational leadership's effects is moderated by level of analysis (individual, team, organizational), criterion type, and cultural context. Cross-cultural research, notably the GLOBE study (House, Hanges, Javidan, Dorfman, & Gupta, 2004) and work on paternalistic leadership in Chinese organizations (Cheng, Chou, Wu, Huang, & Farh, 2004), demonstrates that while the broad value of charismatic-transformational leadership generalizes across cultures, its behavioral expressions and cultural embedding differ markedly. These findings caution against a naive universalism and call for contextualized measurement and interpretation.

The augmentation debate and discriminant validity. A second theme cutting across these syntheses concerns whether transformational leadership is distinguishable from its successors. The augmentation hypothesis, properly understood, is a claim about incremental validity relative to transactional leadership; the more recent question is whether transformational leadership is also distinct from the positive, values-based constructs that followed it (Hoch et al., 2018). The meta-analytic evidence indicates substantial conceptual and empirical overlap, raising the possibility that the field has multiplied labels for closely related phenomena, a concern that mirrors the construct-validity critique developed below.

Consistency, magnitude, and recent replication. Across these syntheses, the corrected associations between transformational leadership and follower attitudes and behaviors are typically of moderate magnitude and, notably for a field sometimes criticized for unstable findings, consistent in direction across study contexts, levels, and decades. This robustness is tempered by two caveats. First, primary studies rely heavily on same-source, cross-sectional designs, so the observed associations partly reflect common-method and same-rater variance; the stronger estimates for attitudinal than for objective performance criteria reflect this concern (Judge & Piccolo, 2004; Wang et al., 2011). Second, the effects are not uniformly linear or unconditional: boundary conditions such as followers' need for leadership, task characteristics, and the fit between leader behavior and organizational context moderate their strength (Judge et al., 2002). Studies and meta-analyses published after 2015 have continued to replicate the core links while shifting attention toward these conditional and contextual effects, signaling that the theory's mature phase is concerned less with whether transformational leadership matters than with when, for whom, and through which processes it operates.

In sum, four decades of meta-analytic work converge on a consistent conclusion: transformational leadership is a robust, generalizable predictor of a wide range of favorable individual and team outcomes, whose effects operate through follower cognition, affect, and self-concept and are conditioned by criterion, level, and culture.

Table III. Landmark meta-analyses of transformational leadership.

Study	Focus	Key finding
Lowe, Kroeck, & Sivasubramaniam (1996)	Effectiveness correlates of MLQ-based transformational leadership	Transformational leadership is positively related to effectiveness and satisfaction, with notable variability across studies
Judge & Piccolo (2004)	Relative validity of transformational vs. transactional leadership	Transformational leadership is a stronger predictor of effectiveness, satisfaction, and motivation; it augments contingent reward
Wang, Oh, Courtright, & Colbert (2011)	Performance across criteria and levels of analysis	Stronger for contextual than task performance; augments contingent reward for contextual and team (but not individual task) performance
Dirks & Ferrin (2002)	Trust in leadership as a mediating mechanism	Trust is a robust mediator of leadership-outcome relationships

Hoch, Bommer, Dulebohn, & Wu (2018)	Incremental validity of ethical, authentic, and servant leadership	Ethical and authentic leadership add little variance beyond transformational leadership; servant leadership is more distinguishable
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V. CONSTRUCT VALIDITY AND CRITIQUE

Transformational leadership theory has attracted sustained and serious critique, in part because of, not merely despite, its empirical success. Three lines of criticism are particularly consequential.

Conceptual ambiguity. Yukl (1999) catalogued conceptual weaknesses in transformational and charismatic leadership theories, including vague definitions of the dimensions, overlap among them, omission of relevant behaviors, and ambiguity about whether the theory describes a distinct style or a bundle of loosely related behaviors. Yukl argued that the four I's, while heuristically useful, lacked the conceptual precision required of a well-formed theory.

Fundamental conceptual and measurement problems. The most far-reaching critique is van Knippenberg and Sitkin's (2013) assessment, which identified four intertwined problems: the absence of a clear conceptual definition specifying how the dimensions combine into a coherent construct; an underspecified causal model that fails to explain how each dimension influences distinct mediating processes and outcomes; confounding of the construct with its effects (conceptualizing and operationalizing leadership in terms of its presumed outcomes); and measurement instruments, above all the MLQ, that fail to reproduce the theorized dimensional structure and lack empirical distinctiveness from other leadership measures. On this basis, van Knippenberg and Sitkin argued that the field should abandon the "charismatic-transformational leadership" label and instead study clearly defined, empirically distinct leadership behaviors.

The unexamined linchpin. Siangchokyoo, Klinger, and Campion (2020) observed that although the theory's *raison d'être* is the transformation of followers, remarkably little research has actually tested whether followers are transformed in the specific, enduring ways the theory posits. Their systematic review found that the follower-transformation mechanism, the conceptual linchpin of the entire edifice, remains largely untested, leaving the theory resting on correlations between leader behavior and outcomes rather than on demonstrated transformation of followers.

Responses and partial resolutions. The field has not been indifferent to these critiques. The augmentation hypothesis has been refined empirically (Wang et al., 2011); the full-range model has been re-examined with respect to the dimensionality of the MLQ (Antonakis, Avolio, & Sivasubramaniam, 2003); and the proliferation of related constructs, authentic leadership (Walumbwa et al., 2008), ethical leadership (Brown & Treviño, 2006), and servant leadership (van Dierendonck, 2011), has itself been subjected to discriminant-validity scrutiny (Hoch et al., 2018). Nonetheless, the cumulative weight of these critiques is that transformational leadership's empirical robustness has outpaced its conceptual and measurement rigor, a gap that becomes more consequential, not less, as the theory is extended into novel technological contexts.

A balanced assessment must also acknowledge why the construct has nonetheless endured. Its persistence reflects more than inertia: transformational leadership offers practitioners an intuitively meaningful and actionable vocabulary for leadership development, and its meta-analytic associations with valued outcomes are unusually consistent (Judge & Piccolo, 2004; Wang et al., 2011). The critics' charge is therefore not that transformational leadership is inconsequential, but that its empirical success has outrun its theoretical and measurement precision. That imbalance, rather than the construct's practical value, is what the field must resolve, and it is precisely the imbalance that the AI-era reconceptualization makes more urgent rather than less.

VI. TRANSFORMATIONAL LEADERSHIP IN THE DIGITAL AND AI ERA

The final theme of this review concerns the theory's encounter with digital transformation and artificial intelligence. Leadership scholars have already argued that the science of leadership must evolve to keep pace with disruptive technologies (Antonakis & Day, 2018). This encounter proceeds along two tracks: an extension of transformational leadership into digital settings, and a more radical reconceptualization of what leadership entails when organizations include algorithmic actors. Importantly, the technological challenge converges with the conceptual critiques reviewed above: both indicate that the field cannot simply assume the adequacy of the received formulation of transformational leadership, but must re-specify what the construct is and does under new conditions.

A. E-Leadership and the Digital Extension

The earliest systematic treatment of leadership in technology-mediated settings is the e-leadership literature. Avolio, Sosik, Kahai, and Baker (2014) defined e-leadership as a social influence process mediated by advanced information technology, and argued that the same transformational behaviors (vision, inspiration, individualized support) can be transmitted through digital channels even as the *sources* and *media* of leadership change. The core theoretical claim is one of continuity: digital technologies alter the transmission of leadership but not its fundamental nature.

Building on this, Cortellazzo, Bruni, and Zampieri's (2019) review of leadership in a digitalized world organized the fragmented literature into macro-level (e-leadership, digital tools, ethics) and micro-level (C-suite roles, leader skills, virtual teams) themes. They concluded that leaders are central actors in building a digital culture, and that digitalization requires leaders to cultivate new competencies: digital literacy, the management of dispersed stakeholders, and the facilitation of collaboration in complex virtual settings, while preserving the relational and motivational functions that define effective leadership. Consistent with this scholarly account, practitioner-oriented treatments of digital transformation likewise emphasize that technology is necessary but not sufficient, and that people, culture, and leadership are the decisive factors in successful transformation (Kane et al., 2019; Westerman, Bonnet, & McAfee, 2014).

The digital-leadership literature thus increasingly specifies the competencies a digital-era transformational leader requires: digital literacy and technological fluency, the capacity to set a compelling vision for technology-enabled change, and the relational skill to keep dispersed, algorithm-augmented workforces engaged and motivated (Cortellazzo et al., 2019). A recurring tension runs through this literature. On one side stands a continuity thesis: digitalization alters the *channel* of influence but not the *content* of transformational leadership, so the four I's remain intact and merely acquire new transmission media (Avolio et al., 2014). On the other side stands a discontinuity thesis: the digital context changes what leaders must attend to (data governance, algorithmic accountability, the orchestration of distributed expertise) in ways that the received four I's did not anticipate (Iansiti & Lakhani, 2020; Westerman et al., 2014). The evidence, though fragmented, suggests these theses are complementary rather than opposed: digitalization leaves the relational core of transformational leadership intact while demanding new competencies that the classic framework underspecifies.

A further, and comparatively settled, finding concerns the rise of virtual and distributed work. The e-leadership literature documents that transformational behaviors can be conveyed through lean, asynchronous media, but that the absence of rich, face-to-face cues makes individualized consideration and inspirational motivation more difficult both to enact and to perceive (Avolio et al., 2014; Cortellazzo et al., 2019). Leaders of virtual teams must therefore compensate deliberately, through structured check-ins, explicit and repeated vision communication, and deliberate investment in relational trust, for the contextual cues that co-location once supplied automatically. This lesson scales directly into the AI era, where leadership is increasingly exercised at a distance from, and often through the mediation of, the work it governs.

B. AI and the Reopening of Foundational Questions

Artificial intelligence poses a deeper challenge than mere digitization. Where digitalization changed the *medium* of leadership, AI changes the *distribution of agency* within organizations: algorithms now perform tasks, analysis, allocation, evaluation, even supervision, that were once the province of leaders and managers (Kellogg et al., 2020), a shift that blurs the boundary between human and technological agency (Baird & Maruping, 2021; Murray, Rhymer, & Sirmon, 2021). This shift intensifies a broader movement in leadership scholarship toward collective and relational conceptions, shared leadership (Pearce & Conger, 2003; Wang, Waldman, & Zhang, 2014), relational leadership (Uhl-Bien, 2006), and complexity leadership (Uhl-Bien, Marion, & McKelvey, 2007), which locate leadership in distributed patterns rather than in a single heroic individual. This has four implications for transformational leadership theory.

First, the theory's premise of human-to-human influence is unsettled. If a substantial share of "leadership" functions (monitoring, feedback, scheduling, performance evaluation) is delegated to algorithmic systems, the locus of influence shifts, and followers may come to experience "leadership" as emanating from systems rather than from persons. Transformational leadership's emphasis on idealized influence and individualized consideration presumes a person with whom followers can identify and from whom they can receive developmental attention; algorithmic management offers neither.

Second, the augmentation logic itself is reconfigured. Raisch and Krakowski's (2021) automation-augmentation paradox shows that AI can simultaneously automate away human tasks and augment human capabilities, and that managers must navigate the tension between these two trajectories. For transformational leaders, this means the object of "intellectual stimulation" and "individualized consideration" increasingly includes decisions about *how* humans and machines divide labor, a design function that classic transformational leadership theory did not envision.

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Third, the leader's developmental role expands to include human-machine symbiosis. The emerging prescriptive literature suggests that leaders in AI-intensive organizations must orchestrate human-AI collaboration, ensure algorithmic transparency and fairness, and protect the meaning, dignity, and creativity of human work (Davenport & Ronanki, 2018; Iansiti & Lakhani, 2020; Kellogg et al., 2020). This vision of human-AI symbiosis (Jarrahi, 2018) is complicated by evidence that human trust in AI is fragile and conditional (Glikson & Woolley, 2020) and by research showing that, when machines act as teammates rather than tools, coordination and shared understanding become central leadership challenges (Seeber et al., 2020). Recent reviews of AI in organizations reinforce this agenda: when deployed to augment human capabilities, AI can enrich meaningful work, but when deployed as algorithmic management it can produce surveillance, stress, and eroded autonomy (Bankins, Ocampo, Marrone, Restubog, & Woo, 2024), and its organizational consequences hinge on design choices about the division of labor between humans and machines (Benbya, Pachidi, & Jarvenpaa, 2021). These imperatives echo the transformational leader's traditional concern with elevating followers, but they redirect it toward the design of work systems in which humans and algorithms co-produce value.

Fourth, the ethical dimension of leadership is sharpened rather than diminished by AI. Idealized influence presupposes a leader who embodies high ethical standards and places collective interests above self-interest; that presupposition acquires new force when leaders decide how consequential decisions are delegated to opaque, data-driven systems. A leader who offloads hiring, evaluation, or disciplinary decisions to algorithms without attending to their fairness, transparency, and accountability has effectively abdicated the moral role that idealized influence assigns to leadership (Kellogg et al., 2020; Benbya et al., 2021). In this sense, the AI era does not render transformational leadership obsolete; it raises the stakes of its central ethical commitments by attaching them to consequential sociotechnical design choices.

C. Toward a Reconceptualization

Synthesizing these developments, we suggest that the digital and AI era is driving a shift in the *locus* and *object* of transformational leadership. The locus is shifting from the individual leader-follower dyad toward the design of human-AI work systems; the object is shifting from the transformation of followers' values and self-concepts toward the configuration of symbiotic relationships among humans, algorithms, and organizations. We are not arguing that the four I's, vision, inspiration, intellectual stimulation, and individualized consideration, should be abandoned; they remain indispensable. But they must be re-grounded in a theory that takes account of non-human actors. The lasting insight of Burns and Bass, that leadership elevates people beyond self-interest toward collective purpose, is, if anything, more urgent when the alternative is a purely algorithmic coordination that treats people as interchangeable inputs.

To make this reconceptualization concrete, consider how each of the four I's is refigured in a human-AI system. Idealized influence becomes the leader's visible, consistent modeling of responsible technology use, embodying the ethical standards by which algorithmic systems are selected, deployed, and audited. Inspirational motivation becomes the articulation of a vision that gives meaning to work even as algorithms absorb its routine elements, framing human contribution in terms of judgment, creativity, and purpose rather than throughput. Intellectual stimulation becomes, in part, the deliberate challenging of algorithmic outputs, encouraging followers to question machine recommendations, to detect bias and error, and to bring distinctively human insight to bear on data-driven conclusions. Individualized consideration becomes the safeguarding of each follower's developmental trajectory amid automation, ensuring that individuals are reskilled and re-purposed rather than displaced, and that the developmental attention the theory prizes is not supplanted by algorithmic monitoring (Siangchokyoo et al., 2020; Kellogg et al., 2020). Read this way, the four I's are not abandoned but re-grounded: their referent shifts from interpersonal influence alone to the design and stewardship of the human-AI relationship.

VII. DISCUSSION AND RESEARCH AGENDA

A. Synthesis

Four conclusions emerge from this review. First, transformational leadership is a theoretically generative and empirically robust construct: its meta-analytic record is among the strongest in leadership research, and its augmentation hypothesis has been largely, though conditionally, supported (Judge & Piccolo, 2004; Wang et al., 2011). Second, this empirical success coexists with persistent conceptual and measurement weaknesses, most trenchantly articulated by van Knippenberg and Sitkin (2013) and by the untested status of the follower-transformation mechanism (Siangchokyoo et al., 2020). Third, the theory is being actively extended into digital settings through the e-leadership and digital-leadership literatures, which emphasize continuity in leadership functions amid changes in transmission medium (Avolio et al., 2014; Cortellazzo et al., 2019). Fourth, artificial intelligence poses a more fundamental challenge that the extension literature has yet to fully engage: the reconfiguration of agency within organizations, which calls for a reconceptualization of the locus and object of transformational leadership.

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Taken together, these four conclusions converge on a single integrative thesis. The critique of transformational leadership and the rise of AI are not separate problems but the same challenge approached from two directions: both point to the need to move beyond a conception of leadership as a set of person-level behaviors with fixed content, and toward a conception of leadership as an adaptive, relationally and sociotechnically situated practice. The conceptual imprecision that van Knippenberg and Sitkin (2013) identified becomes more costly, not less, when leadership must be specified across human and algorithmic actors; conversely, the AI-era demand to reconceptualize leadership forces the field to confront the very theoretical looseness that the critiques exposed. The research agenda that follows is thus not a retreat from transformational leadership but an attempt to redeem its core promise, the elevation of followers, under conditions that its founders could not have anticipated.

B. Research Agenda

We organize the future agenda around four themes.

Theme 1: Return to the follower-transformation mechanism. The most pressing theoretical task is to test the theory's central, yet largely unexamined, assumption, that transformational leadership produces *lasting* transformation in followers' values, self-concepts, and capabilities (Siangchokyo et al., 2020). This requires a shift in research design. Longitudinal designs that track followers before, during, and after exposure to transformational leadership are essential to distinguish durable transformation from transient motivational uplift; within-person and experience-sampling methods can separate the trait-like and state-like components of the theorized mechanisms; and "transformation" itself must be operationalized explicitly, as change in identity, values, or self-efficacy, rather than inferred from proximal attitudinal and behavioral outcomes. Absent such work, the theory's linchpin remains an untested assumption, and its AI-era extensions will inherit that unresolved weakness.

Theme 2: Reconceptualize leadership as the design of human-AI symbiotic systems. Future theory should specify how the four I's operate, and are transformed, when leadership's object includes algorithmic actors and human-machine work design. We see particular value in developing a "symbiotic leadership" construct that captures the leader's role in configuring complementary, mutually reinforcing relationships between human and machine capabilities, rather than treating AI as a mere tool. Research should ask how leaders allocate decision authority between humans and machines, how they preserve meaning and dignity under algorithmic management, and how intellectual stimulation applies to the design of sociotechnical systems (Kellogg et al., 2020; Raisch & Krakowski, 2021). Empirical work should also examine the boundary between augmentation and automation: under what conditions does AI-enabled leadership liberate human creativity, and under what conditions does it collapse into surveillance and control (Bankins et al., 2024)?

Theme 3: Move beyond the MLQ. Given persistent measurement critiques (van Knippenberg & Sitkin, 2013), the field should develop and validate measures that capture transformational behaviors with greater dimensional clarity and discriminant validity. Two extensions are especially timely. First, measures should separate leader behaviors from their presumed outcomes, so that transformational leadership is no longer operationalized in terms of the very effects it is meant to explain, a conflation at the heart of the construct-validity critique. Second, and specific to the AI era, the field needs instruments that assess the leader's design and orchestration of human-AI collaboration: how leaders allocate decision authority, model responsible technology use, and safeguard follower development under automation. Such measures would allow the reconceptualization advanced in Section 6 to be tested empirically rather than asserted conceptually.

Theme 4: Situate transformational leadership across cultural and technological contexts. Cross-cultural evidence (House et al., 2004; Cheng et al., 2004) and the emerging digital-leadership literature both caution against universalism. The four I's may carry different meanings across cultural settings: idealized influence and inspirational motivation have been shown to resonate across cultures, but individualized consideration and intellectual stimulation may be enacted and received differently where hierarchy and collectivism prevail (Cheng et al., 2004). Research should therefore move beyond single-culture samples toward comparative designs that examine how transformational leadership is expressed, enacted, and received across cultural settings and across varying degrees of digital and AI adoption. In particular, the intersection of culture and technology remains almost entirely unexplored: how do cultural values shape whether leaders adopt augmenting or automating forms of AI, and whether followers experience algorithmic management as threatening or developmental? Attending to these contextual contingencies will sharpen both the theory's boundary conditions and its practical relevance.

C. Limitations

Four limitations of this review warrant note. First, as a systematized review it does not provide the pooled quantitative estimates of a formal meta-analysis; readers seeking effect sizes should consult the meta-analyses cited herein. Second, our search emphasized English-language scholarship, and non-Western literatures, including the substantial Chinese-language leadership literature, are under-represented. Third, the digital- and AI-leadership literature is young and heterogeneous, and its synthesis

here is necessarily more provisional than our treatment of the mature transformational leadership tradition. Fourth, as a single-reviewer systematized review, our screening and synthesis did not employ the dual-independent coding that would maximize reliability; the narrative conclusions should therefore be read as a structured integration and agenda-setting exercise rather than as an exhaustive, replicable evidence map.

VIII. CONCLUSION

Transformational leadership has earned its place as a cornerstone of organizational behavior, and its core claim, that leadership can elevate followers rather than merely transact with them, remains compelling as algorithms absorb an increasing share of managerial work. Yet the theory's future depends on its capacity to confront its own conceptual weaknesses and to adapt to a workplace in which leadership is no longer exclusively a human-to-human phenomenon. We have argued that this adaptation requires two moves: returning to the theory's untested core, the transformation of followers, and reconceptualizing leadership as the design of human-AI symbiotic systems. The question Burns posed in 1978 has not disappeared; it has acquired a new and more demanding form.

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