International Journal of Language and Literary Studies
Volume 8, Issue 3, 2026
Homepage : http://ijlls.org/index.php/ijlls

Frameworks, Methodological Approaches, and Multimodal-Rhetorical Interaction in TED Talks: A Systematic Review

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DOI: https://doi.org/10.36892/ijlls.v8i3.2636
APA Citation: Sison, N. R. M. (2026). Frameworks, Methodological Approaches, and Multimodal-Rhetorical Interaction in TED Talks: A Systematic Review. International Journal of Language and Literary Studies. 8(3). 443-457. https://doi.org/10.36892/ijlls.v8i3.2636

Received:
22/03/2026

Accepted:
28/04/2026

Keywords:
TED Talks; MDA; Multimodal-Rhetorical Interaction; Discourse

Abstract

TED Talks have emerged as a prominent genre of educational and motivational public discourse, characterized by sophisticated orchestration of multimodal elements. This systematic literature review synthesizes empirical research on multimodal-rhetorical interaction in TED Talks, examining theoretical frameworks, methodological approaches, multimodal elements, rhetorical strategies, and research gaps in the field. Following the PRISMA framework, the researcher conducted a comprehensive search across various databases. After title/abstract screening (n=20) and full-text review, in which empirical studies published in 2020–2026 analyzing multimodal-rhetorical interaction in TED Talks or similar motivational public speaking were considered, 18 studies met the inclusion criteria. Dominant frameworks include multimodal discourse analysis and multimodal persuasion models. Verbal discourse, gestures, and visual aids are most frequently studied. Key rhetorical strategies include narrative storytelling, ethos-building, emotional appeals (including humor), rhetorical devices, and dense nonverbal orchestration. Multimodal-rhetorical interaction in TED Talks represents a rich but methodologically constrained research domain.

1. INTRODUCTION

TED Talks have become one of the most influential platforms for disseminating ideas, inspiring audiences, and motivating behavior change globally. Since their inception in 1984 and subsequent expansion to online video distribution in 2006, TED Talks have attracted billions of views and established a distinctive genre of public discourse characterized by concise, engaging, and multimodally rich presentations (Jiang & Lim, 2022; Xia & Hafner, 2021; Xia, 2022). The TED platform's tagline, "Ideas worth spreading," encapsulates its mission to communicate complex concepts accessibly while motivating audiences toward new perspectives and actions (Masi, 2020).

The effectiveness of TED Talks as motivational discourse stems from speakers' sophisticated orchestration of multiple communicative modalities (Valeiras-Jurado, 2020; Marchenko & Minenko, 2020). Unlike traditional academic lectures or political speeches, TED presentations integrate verbal content with carefully choreographed gestures (Falih & Ahmed, 2024), professionally designed visual aids (Jiang & Lim, 2022), strategic vocal modulation (Kimani et al., 2020), and deliberate use of space and gaze to create an immersive, persuasive experience (Xia & Hafner, 2021). This multimodal orchestration transforms abstract ideas into emotionally resonant narratives that engage diverse global audiences across cultural and linguistic boundaries (Xia, 2022; Masi, 2023). From a theoretical perspective, multimodal communication theory posits that meaning-making in contemporary discourse extends beyond

verbal language to encompass visual, gestural, spatial, and acoustic semiotic resources (Jiang & Lim, 2022; Chu & Chen, 2021). Each modality contributes distinct affordances to the communicative act, and their strategic coordination amplifies persuasive impact (Valeiras-Jurado, 2020; Marchenko & Minenko, 2020). In TED Talks, speakers leverage this multimodal synergy to construct credible speaker personas (ethos), evoke emotional responses (pathos), and present logical arguments (logos) simultaneously across multiple channels (Attiya, 2022; Mohammed & Mayuuf, 2025). Rhetorical theory provides complementary insights into how speakers strategically deploy communicative resources to persuade audiences (Attiya, 2022; Mohammed & Mayuuf, 2025). Classical rhetoric emphasizes the importance of audience adaptation, argument structure, stylistic devices, and delivery techniques in effective persuasion (Valeiras-Jurado, 2020). Contemporary rhetorical scholarship extends these principles to multimodal contexts, examining how visual design, embodied performance, and digital affordances reshape persuasive practices (Xia & Hafner, 2021; Masi, 2023). TED Talks exemplify this evolution, blending traditional oratorical excellence with digital-age presentation aesthetics (Kazanskaia, 2025; Huang et al., 2025).

Despite growing scholarly interest in TED Talks as a communicative phenomenon, research remains fragmented across disciplinary boundaries including applied linguistics (Jiang & Lim, 2022; Xia, 2022), communication studies (Attiya, 2022; Mohammed & Mayuuf, 2025), educational technology (Chu & Chen, 2021; Tun et al., 2023), and computational social science (Kimani et al., 2020; Michelson & Peleg, 2021; Masi, 2023). Studies have examined individual aspects such as narrative structure (Attiya, 2022), humor deployment (Masi, 2023), gesture-speech coordination (Falih & Ahmed, 2024), visual design (Jiang & Lim, 2022), and audience engagement strategies (Xia & Hafner, 2021; Huang et al., 2025). However, a comprehensive synthesis of how multimodal and rhetorical dimensions interact to produce motivational effects remains limited (Masi, 2020; Xia, 2023).

Methodologically, the field has evolved from qualitative discourse analysis approaches (Marchenko & Minenko, 2020; Masi, 2020) increasingly toward computational and automated assessment methods (Kimani et al., 2020; Michelson & Peleg, 2021; Huang et al., 2023). Early studies relied on manual annotation of multimodal features using tools like ELAN (Chu & Chen, 2021), while recent work employs machine learning for automated presentation evaluation (Tun et al., 2023) and visual analytics systems for speaker feedback (Huang et al., 2023). This methodological diversification reflects broader trends in communication research toward data-driven, scalable analysis techniques (Kimani et al., 2020; Michelson & Peleg, 2021).

Understanding multimodal-rhetorical interaction in TED Talks has significant practical implications. For communication pedagogy, insights into effective multimodal strategies can inform public speaking curricula and training programs (Chu & Chen, 2021; Kazanskaia, 2025). For professional speakers and thought leaders, evidence-based guidance on gesture use, visual design, and vocal delivery can enhance presentation effectiveness (Kazanskaia, 2025; Huang et al., 2023). For digital platform designers, understanding engagement mechanisms can improve interface design and content recommendation systems (Xia & Hafner, 2021; Huang et al., 2025). For persuasive communication theory, TED Talks offer a rich empirical domain for testing and refining models of multimodal persuasion (Valeiras-Jurado, 2020; Attiya, 2022; Mohammed & Mayuuf, 2025).

This systematic literature review synthesizes empirical research on multimodal-rhetorical interaction in TED Talks and similar motivational speaking contexts, focusing on theoretical frameworks, methodological approaches, and persuasive strategies. It identifies dominant paradigms, evaluates methodological developments, and highlights effective multimodal and rhetorical practices. The review also outlines research gaps and provides practical insights to inform future studies and improve motivational communication.

This systematic review addresses four primary research questions:

1. RQ1: What theoretical frameworks have been employed to analyze multimodal-rhetorical interaction in TED Talks?
2. RQ2: What methodological approaches have been used to study multimodal-rhetorical interaction in TED Talks?
3. RQ3: What multimodal elements and rhetorical strategies have been identified as effective in TED Talks?
4. RQ4: What research gaps and future directions emerge from the existing literature?

2. METHODOLOGY

This systematic literature review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework to ensure transparency, rigor, and replicability. The review protocol was developed prospectively, specifying research questions, eligibility criteria, search strategy, screening procedures, data extraction methods, and synthesis approaches.

Eligibility Criteria

Studies were included or excluded based on predefined criteria addressing population, intervention/phenomenon of interest, comparator, outcomes, and study design (PICOS framework adapted for literature review).

Inclusion Criteria

5. Empirical studies analyzing frameworks, methodological approaches, multimodal and/or rhetorical features of TED Talks or similar motivational public speaking
6. Studies published between 2020 and 2026
7. Peer-reviewed articles, conference proceedings, or dissertations
8. Studies employing qualitative, quantitative, or mixed methods
9. Studies published in English

Exclusion Criteria

10. Non-empirical studies (theoretical essays, opinion pieces)
11. Studies focusing solely on content analysis without multimodal or rhetorical dimensions
12. Studies of other speech genres without relevance to TED Talks
13. Non-English publications
14. Duplicate publications

Information Source and Search Strategy

A comprehensive search was conducted across multiple academic databases, including Scopus (Elsevier), Web of Science, MDPI, Google Scholar, and other peer-reviewed journals. The search strategy employed a combination of keywords and Boolean operators designed to capture studies on multimodal analysis, rhetorical strategies, and TED Talks. The strategy was developed iteratively through pilot searches and refined based on the retrieval of known relevant papers.

Search String Structure

15. Platform/Genre: "TED Talk" AND ("motivational speech" OR "inspirational talk") AND ("public motivational speeches" OR "public speaking") AND "self-motivation"
16. Multimodal Dimensions: ("multimodal communication" OR "multimodal discourse" OR "multimodal analysis" OR "multimodal-rhetorical interaction" OR "multimodal discourse analysis")
17. Rhetorical Dimensions: ("rhetoric" OR "persuasion" OR "persuasive" OR "ethos" OR "pathos" OR "logos" OR "rhetorical strategies" OR "persuasive communication" OR "rhetorical analysis")
18. Communication Concepts: ("public speaking" OR "oral presentation")

Screening and Selection Process

The study selection followed a three-stage process consistent with the PRISMA framework: (1) deduplication and initial screening, (2) title/abstract screening, and (3) full-text screening.

Stage 1: Deduplication and Initial Screening

Retrieved records (n=815) were imported into reference management systems and deduplicated based on DOI, title, and author matching, resulting in 210 unique papers. Initial screening removed records lacking sufficient metadata (title, abstract, or publication information).

Table 1. Summary of Database, Search Strategies, Filters, and Retrieved Studies

Database	Search Strategy / Boolean Query	Filters Applied	Date Retrieved	Retrieved Studies
Web of Science	TS=(("multimodal communication" OR "multimodal discourse" OR "multimodal analysis" OR "multimodal-rhetorical interaction") AND ("rhetorical strategies" OR "persuasive communication" OR "rhetorical analysis") AND ("TED Talks" OR "motivational talks" OR "public motivational speeches" OR "public speaking" OR "self-motivation"))	Peer-reviewed; English; aligned with inclusion/exclusion criteria	March 19, 2026	30
Scopus (Elsevier)	TITLE-ABS-KEY(("multimodal communication" OR "multimodal discourse" OR "multimodal analysis" OR "multimodal-rhetorical interaction") AND ("rhetorical strategies" OR "persuasive communication" OR "rhetorical analysis") AND ("TED Talks" OR "motivational talks" OR "public motivational speeches" OR "public speaking" OR "self-motivation"))	Peer-reviewed; English; aligned with inclusion/exclusion criteria	March 19, 2026	45
MDPI (Open-Access)	"Multimodal communication" AND "rhetorical strategies" AND ("TED Talks" OR "motivational speeches" OR "public speaking")	Open-access peer-reviewed; English; aligned with inclusion/exclusion criteria	March 21, 2026	11
Google Scholar	"Multimodal communication" AND "rhetorical strategies" AND ("TED Talks" OR "motivational speeches" OR "public speaking")	Grey literature, theses, conference papers, open-access; English; aligned with inclusion/exclusion criteria	March 20, 2026	48
Other Peer-Reviewed Journals (Manual Search)	"Multimodal communication" AND "rhetorical strategies" AND ("TED Talks" OR "motivational speeches" OR "public speaking")	Peer-reviewed; English; aligned with inclusion/exclusion criteria	March 21, 2026	76
TOTAL				**210**

Stage 2: Title/Abstract Screening

After removing duplicates, titles and abstracts were screened for relevance (n=20 retained).

Stage 3: Full-Text Screening

The full text of 20 papers was assessed against the inclusion criteria, resulting in 18 studies meeting all criteria for inclusion in the final review. Exclusion reasons at full-text stage: No explicit motivational focus (n=1) and Insufficient methodological details (n=1).

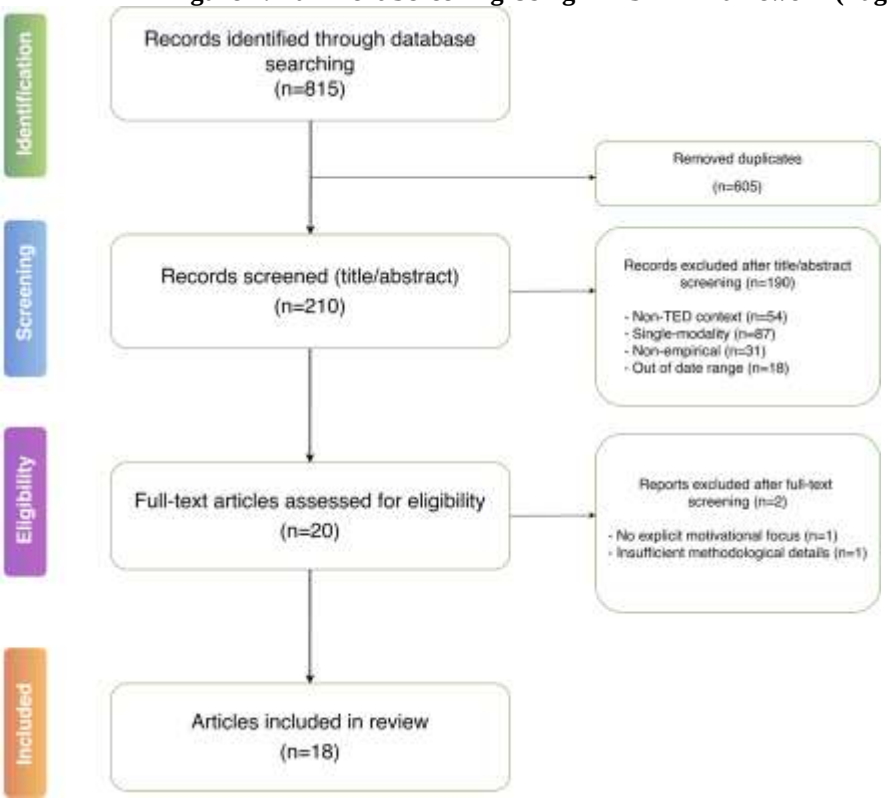
Data Extraction

For each included study, the following data were extracted:

1. Bibliographic information: Authors, year, title, publication venue
2. Theoretical framework: Conceptual models, theories, or analytical frameworks employed
3. Methodology: Research design, corpus size, data collection methods, analytical techniques, and tools used
4. Multimodal elements analyzed: Verbal, visual, gestural, vocal, spatial, and facial features
5. Rhetorical strategies identified: Narrative, ethos-building, pathos appeals, logos, stylistic devices
6. Key findings: Main results regarding effective multimodal-rhetorical strategies

7. Limitations and gaps: Methodological constraints and unanswered research questions

Figure 1: Full-Text Screening Using PRISMA Framework (Page et al., 2021)



Quality Assessment

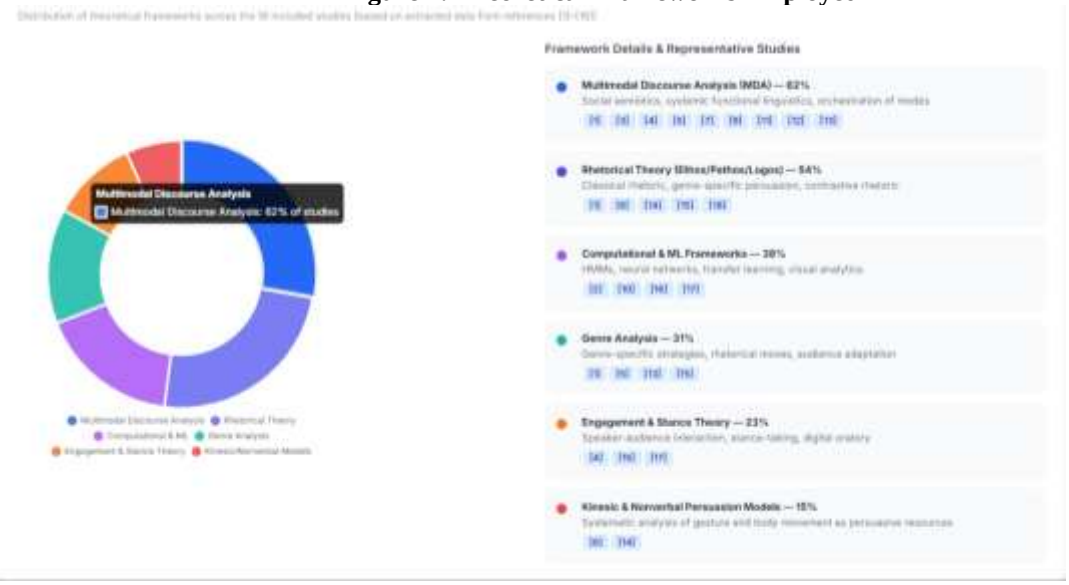
All 18 included studies met minimum quality thresholds for inclusion. Study quality was assessed based on: clarity of research questions and objectives; appropriateness of methodology for research questions; transparency of data collection and analysis procedures; validity and reliability of findings; and acknowledgment of limitations.

3. RESULTS AND DISCUSSION

Descriptive Analysis Results

3.1.1 Theoretical Frameworks Employed

Figure 2: Theoretical Frameworks Employed



The graph presents the distribution of theoretical frameworks across 18 studies, revealing that Multimodal Discourse Analysis (MDA) is the most dominant approach (62%), underscoring the importance of analyzing multiple communication modes such as language, visuals, and gestures together. This is followed by rhetorical theory (ethos, pathos, logos) at 54%, indicating that traditional persuasion principles remain highly relevant in interpreting communication. Computational and machine learning frameworks (38%) show a growing interest in using advanced technologies such as neural networks and visual analytics to study communication patterns. Meanwhile, genre analysis (31%) highlights attention to context-specific strategies and audience adaptation, though it is less widely applied. Engagement and stance theory (23%) and kinesic/nonverbal persuasion models (15%) are the least utilized, suggesting that while interaction dynamics and body movement are recognized, they are not yet central frameworks in most studies. Overall, the graph suggests a strong preference for integrative and theory-driven approaches, particularly those that account for multimodal communication, while more specialized or emerging frameworks remain underrepresented.

3.1.2 Multimodal Elements Analyzed

Figure 3: Multimodal Elements Analyzed Across 18 Studies

The graph shows how different communication modalities are represented across 18 studies, highlighting a clear emphasis on combining multiple modes rather than relying on a single one. Verbal discourse appears in all studies (100%), making it the most consistently used modality, followed by gestures and body language (85%) and visual aids such as slides or images (77%), indicating that nonverbal and visual supports are also widely integrated. Vocal prosody is included in just over half of the studies (54%), suggesting moderate attention to tone and speech variation, while facial expressions and gaze are the least examined (38%), pointing to a relative gap in research focus. Overall, the data suggest that effective persuasion is strongly associated with multimodal communication, where different channels work together, rather than any single mode operating independently.

3.1.3 Rhetorical Strategies Identified

The graph illustrates the distribution of primary rhetorical strategies across 18 studies, showing that nonverbal orchestration and synchrony are the most prominent approaches (85%), emphasizing the importance of coordinating gestures, gaze, tone, and visual elements in communication. This is followed by ethos-building and logical framing (69%), indicating that credibility and structured reasoning are also key persuasive tools. Narrative and storytelling (62%) rank next, highlighting the effectiveness of using relatable stories and emotional arcs to engage audiences. Meanwhile, emotional appeals and humor (54%) are moderately utilized, suggesting that while emotional connection matters, it is not always the central strategy. Rhetorical devices such as repetition and questioning appear less frequently (46%), and

engagement strategies (38%) are the least emphasized, implying that direct audience interaction and digital oratory techniques are comparatively underexplored. Overall, the graph suggests that persuasive communication is most effective when it integrates strong nonverbal coordination with logical credibility and storytelling, rather than relying heavily on traditional rhetorical or engagement techniques alone.

Figure 4: Rhetorical Strategies Identified

Literature Classification Results

RQ1: What theoretical frameworks have been employed to analyze multimodal-rhetorical interaction in TED Talks?

Table 2: Theoretical Frameworks

Framework	Core Emphasis	References
Multimodal Discourse Analysis (MDA)	Examines how meaning is constructed through the coordinated deployment of multiple semiotic resources including language, image, gesture, gaze, and spatial positioning to orchestrate verbal, visual, and gestural modes for audience engagement, science popularization, humor, and motivational discourse. Grounded in social semiotics and systemic functional linguistics.	(Jiang & Lim, 2022; Xia & Hafner, 2021; Xia, 2022; Masi, 2023; Marchenko & Minenko, 2020; Masi, 2020; Xia, 2023)
Rhetorical Theory	Applies classical rhetorical concepts (ethos, pathos, logos) and genre-specific persuasion theory to analyze how speakers adapt persuasive strategies to audience characteristics and cultural contexts; examines rhetorical devices (repetition, parallelism, anaphora) as they function across cross-cultural TED Talk narratives.	(Valeiras-Jurado, 2020; Attiya, 2022; Mohammed & Mayuuf, 2025)
Multimodal Persuasion Models	Focuses on how nonverbal communicative resources — gesture, facial expression, body language, and delivery techniques — systematically contribute to persuasive impact; analyzes kinesic behaviors and multimodal delivery as core mechanisms of speaker effectiveness.	(Falih & Ahmed, 2024; Kazanskaia, 2025)
Computational and Machine Learning Frameworks	Employs automated and data-driven methods (Hidden Markov Models, neural networks, transfer learning, visual analytics) to model, predict, and assess oral presentation quality at scale; operationalizes multimodal features (speech, gesture, gaze, facial expression) as quantifiable inputs for automated evaluation and personalized speaker feedback.	(Kimani et al., 2020; Michelson & Peleg, 2021; Tun et al., 2023; Huang et al., 2023)

Engagement and Stance Theory	Investigates how speakers build interpersonal relationships with online audiences through strategic engagement devices and stance-taking; examines how speakers position themselves and their ideas discursively and multimodally to foster audience alignment, participation, and motivation in digital oratory contexts.	(Xia & Hafner, 2021; Huang et al., 2025)
Educational and Pedagogical Frameworks	Applies multimodal analysis tools (e.g., ELAN annotation) to examine non-linguistic features of TED speeches for the purpose of improving public speaking education; translates multimodal research findings into evidence-based instructional applications for communication pedagogy and speaker training.	(Chu & Chen, 2021)

The theoretical landscape reveals a productive tension between humanistic interpretive frameworks (MDA, rhetorical theory) and computational quantitative approaches (machine learning, automated assessment). While MDA and rhetorical theory provide rich qualitative insights into meaning-making processes, computational methods enable scalable analysis and automated feedback systems. However, few studies explicitly integrate these paradigms. A unified theoretical framework that bridges qualitative interpretation and quantitative measurement remains a significant gap in the field.

RQ2: What methodological approaches have been used to study multimodal-rhetorical interaction in TED Talks?

Table 3: Methodological Approaches Used in Multimodal-Rhetorical Interaction in TED Talks

Methodological Approach	Description	References
Qualitative Multimodal Discourse Analysis	These studies typically analyzed small corpora (1–10 TED Talks) through detailed manual coding of multimodal features. Jiang and Lim conducted fine-grained analysis of a single TED Talk, examining moment-by-moment coordination of verbal, visual, and gestural modes. Xia and Hafner analyzed 10 TED Talks to identify engagement strategies. Xia examined 10 and 20 TED Talks respectively, focusing on science communication strategies. Masi analyzed humor and multimodal representation in selected TED Talks. Attiya and Mohammed and Mayuuf conducted contrastive rhetorical analyses of TED Talk narratives. Marchenko and Minenko examined linguistic and extralinguistic characteristics of TED Talks as multimodal texts.	(Jiang & Lim, 2022; Xia & Hafner, 2021; Xia, 2022; Attiya, 2022; Masi, 2023; Marchenko & Minenko, 2020; Masi, 2020; Xia, 2023; Mohammed & Mayuuf, 2025)
ELAN-Based Annotation	Employed by Chu and Chen for systematic coding of non-linguistic features in TED speeches. ELAN (EUDICO Linguistic Annotator) enables time-aligned annotation of multimodal features, facilitating precise analysis of temporal coordination across modalities. This approach bridges qualitative interpretation and quantitative measurement, allowing researchers to code multimodal features systematically while preserving temporal dynamics.	(Chu & Chen, 2021)
Computational and Automated Assessment Methods	Kimani et al. employed Hidden Markov Models (HMMs) to automatically assess oral presentations based on multimodal	(Kimani et al., 2020; Michelson & Peleg, 2021; Tun et al., 2023; Huang et al., 2023)

	features including speech, gesture, and facial expression. Michelson and Peleg developed audio-visual evaluation algorithms for oratory skills, using computational analysis of vocal and visual features. Tun et al. applied multimodal transfer learning, training machine learning models on large datasets to automatically assess oral presentation quality. Huang et al. developed SpeechMirror, a visual analytics system that processes multimodal data (speech, gesture, facial expression, gaze) to provide personalized feedback on public speaking effectiveness.	
Genre-Specific Analysis	Employed by Valeiras-Jurado, who examined how speakers adapt multimodal persuasive strategies to different audience types in oral presentations, demonstrating the importance of genre and audience considerations in multimodal-rhetorical analysis.	(Valeiras-Jurado, 2020)
Contrastive and Cross-Cultural Analysis	Conducted by Attiya, who compared persuasive strategies across TED Talks from different cultural contexts, revealing both universal and culture-specific rhetorical patterns.	(Attiya, 2022)
Corpus Size and Sampling	Most qualitative studies analyzed small corpora (1–20 TED Talks), enabling detailed analysis but limiting generalizability. Computational studies employed larger datasets, enhancing statistical power but potentially sacrificing interpretive depth. Few studies employed systematic sampling strategies or justified corpus selection criteria explicitly.	(Jiang & Lim, 2022; Xia & Hafner, 2021; Xia, 2022; Attiya, 2022; Masi, 2023; Marchenko & Minenko, 2020; Masi, 2020; Xia, 2023; Mohammed & Mayuuf, 2025; Kimani et al., 2020; Michelson & Peleg, 2021; Tun et al., 2023; Huang et al., 2023)
Analytical Tools	Studies employed diverse tools including ELAN for multimodal annotation (Chu & Chen, 2021), custom computational algorithms (Kimani et al., 2020; Michelson & Peleg, 2021; Tun et al., 2023), and visual analytics systems (Huang et al., 2023). Tool selection was often driven by availability rather than systematic methodological justification.	(Chu & Chen, 2021; Kimani et al., 2020; Michelson & Peleg, 2021; Tun et al., 2023; Huang et al., 2023)
Validity and Reliability	Qualitative studies typically employed multiple coders or member checking to enhance validity. Computational studies reported performance metrics (accuracy, precision, recall). However, few studies explicitly addressed inter-rater reliability or validated automated methods against expert human judgment.	(Jiang & Lim, 2022; Xia & Hafner, 2021; Xia, 2022; Masi, 2023; Xia, 2023; Kimani et al., 2020; Tun et al., 2023; Huang et al., 2023)

The methodological landscape reveals a productive evolution from small-scale qualitative analysis toward large-scale computational methods. However, this evolution also creates a methodological divide. Qualitative studies provide rich interpretive insights but lack scalability and generalizability (Jiang & Lim, 2022; Xia, 2022; Masi, 2023; Marchenko & Minenko, 2020; Masi, 2020; Xia, 2023). Computational studies enable automated assessment and large-scale analysis but may overlook nuanced meaning-making processes (Kimani et al., 2020; Michelson & Peleg, 2021; Tun et al., 2023; Huang et al., 2023). Few studies employ mixed methods designs that combine qualitative depth with quantitative breadth (Chu & Chen, 2021). Future research should prioritize methodological integration, validating computational methods

against qualitative expert analysis, and employing mixed methods designs that leverage the strengths of both approaches.

RQ3: What multimodal elements and rhetorical strategies have been identified as effective in TED Talks?

Table 4. Multimodal Elements in TED Talks

Modality	Contribution	References
Verbal Discourse	Foundational mode analyzed in all 18 studies. Structure: Multiple studies identified storytelling as a central verbal strategy (Jiang & Lim, 2022; S. Xia, 2022; Attiya, 2022; S. Xia, 2023; Mohammed & Mayuuf, 2025). Jiang and Lim demonstrated how TED speakers structure presentations as narratives with clear beginnings, complications, and resolutions. Attiya and Mohammed and Mayuuf analyzed narrative persuasion in TED Talks, showing how personal stories enhance credibility and emotional engagement. Xia examined how TED speakers incorporate humanistic narratives into scientific communication. Rhetorical Devices: Studies documented extensive use of metaphors, repetition, rhetorical questions, and parallelism (Attiya, 2022; Marchenko & Minenko, 2020; M. Z. Huang et al., 2025; Mohammed & Mayuuf, 2025). Mohammed and Mayuuf catalogued rhetorical devices including anaphora, epistrophe, and chiasmus in TED Talks. Huang, Chan, and Liu analyzed stance markers and engagement devices in digital oratory.	(Jiang & Lim, 2022; S. Xia, 2022; Attiya, 2022; S. Xia, 2023; Mohammed & Mayuuf, 2025) (Attiya, 2022; Marchenko & Minenko, 2020; M. Z. Huang et al., 2025; Mohammed & Mayuuf, 2025)
Gestures & Body Language	Kinesic resources that reinforce, complement, and co-construct verbal meaning. Iconic Gestures: Speakers use iconic gestures that visually represent concepts, enhancing comprehension and retention (Jiang & Lim, 2022; Falih & Ahmed, 2024; Chu & Chen, 2021). Jiang and Lim documented how a TED speaker uses hand gestures to depict molecular structures. Falih and Ahmed analyzed how iconic gestures reinforce verbal messages. Deictic Gestures: Pointing gestures direct audience attention to visual aids or spatial locations (Jiang & Lim, 2022; S. A. Xia & Hafner, 2021; Chu & Chen, 2021). Xia and Hafner showed how deictic gestures coordinate verbal and visual modes. Beat Gestures: Rhythmic hand movements emphasize key points and maintain audience engagement (Falih & Ahmed, 2024; Chu & Chen, 2021; Marchenko & Minenko, 2020). Chu and Chen analyzed beat gestures in TED speeches for public speaking education. Gesture-Speech Coordination: Effective speakers synchronize gestures with verbal content, creating multimodal coherence (Jiang & Lim, 2022; Falih & Ahmed, 2024; Tun et al., 2023; Z. Huang et al., 2023). Tun et al. incorporated gesture-speech synchrony into automated presentation assessment. Huang et al. provided visual feedback on gesture timing in SpeechMirror.	(Jiang & Lim, 2022; S. A. Xia & Hafner, 2021; Falih & Ahmed, 2024; Chu & Chen, 2021; Marchenko & Minenko, 2020; Tun et al., 2023; Z. Huang et al., 2023)
Visual Aids (Slides, Images, Videos, Props)	Visual semiotic resources that support explanation, engagement, and persuasion. Visual Design Principles: Effective visual aids employ clear layouts, high-contrast colors, minimal text, and compelling imagery (Jiang & Lim, 2022; S. A. Xia & Hafner, 2021; S. Xia, 2022). Jiang and Lim analyzed how visual design supports scientific explanation. Xia and Hafner examined visual engagement strategies. Visual-Verbal Integration: Speakers coordinate verbal explanations with visual displays, using deictic gestures and verbal references to guide attention (Jiang & Lim, 2022; S. A. Xia & Hafner, 2021; Chu & Chen, 2021). Xia demonstrated how TED speakers integrate visual and verbal modes in science communication. Dynamic Visuals: Animations, videos, and transitions maintain attention and illustrate processes. Jiang and Lim showed how animated diagrams enhance understanding of complex scientific concepts.	(Jiang & Lim, 2022; S. A. Xia & Hafner, 2021; S. Xia, 2022; Chu & Chen, 2021)
Vocal Features (Prosody, Pitch, Volume, Pace, Pauses)	Paralinguistic resources that modulate emphasis, emotion, and audience engagement. Prosodic Variation: Effective speakers vary pitch, volume, and pace to emphasize key points and maintain engagement (Chu & Chen, 2021; Marchenko & Minenko, 2020). Chu and Chen analyzed prosodic features in TED speeches. Marchenko and Minenko examined vocal characteristics of TED	(Chu & Chen, 2021; Marchenko & Minenko, 2020; Kimani et al., 2020; Michelson & Peleg, 2021; Tun et al., 2023; Z. Huang et al., 2023)

	Talks. Strategic Pauses: Pauses create emphasis, allow audience processing, and signal transitions (Chu & Chen, 2021; Marchenko & Minenko, 2020). Chu and Chen documented pause patterns in effective TED speeches. Vocal Quality: Computational studies incorporated vocal features (pitch, energy, spectral characteristics) into automated assessment models (Kimani et al., 2020; Michelson & Peleg, 2021; Tun et al., 2023; Z. Huang et al., 2023). Kimani et al. and Michelson and Peleg used vocal features for oratory evaluation. Tun et al. and Huang et al. integrated vocal analysis into multimodal assessment systems.	
Facial Expression & Gaze	Affective and interactional resources that convey emotion and establish audience connection. Emotional Expression: Facial expressions convey emotions that reinforce verbal messages (Falih & Ahmed, 2024; Michelson & Peleg, 2021). Falih and Ahmed analyzed facial expressions in nonverbal persuasion. Michelson and Peleg incorporated facial features into oratory evaluation. Eye Contact and Gaze: Speakers use gaze to establish connection with audiences and direct attention (Falih & Ahmed, 2024; Z. Huang et al., 2023). Huang et al. provided feedback on gaze patterns in SpeechMirror. Automated Detection: Computational methods enable automated detection and analysis of facial expressions and gaze patterns (Kimani et al., 2020; Michelson & Peleg, 2021; Tun et al., 2023; Z. Huang et al., 2023), facilitating large-scale analysis.	(Kimani et al., 2020; Falih & Ahmed, 2024; Michelson & Peleg, 2021; Tun et al., 2023; Z. Huang et al., 2023)
Spatial Positioning & Movement	Proxemic and kinesthetic resources that signal authority, openness, and audience engagement. Body Positioning: Strategic use of stage space and body orientation to signal confidence, approachability, and speaker authority (Falih & Ahmed, 2024). Movement Patterns: Deliberate movement that maintains audience attention, marks discourse transitions, and reinforces the physical dynamism associated with motivational delivery (Chu & Chen, 2021).	(Falih & Ahmed, 2024; Chu & Chen, 2021)

Table 5. Rhetorical Strategies in TED Talks

Modality	Core Persuasive/Motivational Contribution	References
Ethos-Building (Credibility Construction)	Speakers construct credibility through four interconnected mechanisms: Expertise Demonstration: Citing credentials, research, and professional experience (Attiya, 2022; Mohammed & Mayuuf, 2025). Mohammed and Mayuuf analyzed how TED speakers establish authority. Personal Narrative: Sharing personal experiences and vulnerabilities to build authenticity (Attiya, 2022; S. Xia, 2023; Mohammed & Mayuuf, 2025). Attiya and Mohammed and Mayuuf documented personal storytelling as an ethos-building strategy. Delivery Excellence: Demonstrating confidence, poise, and multimodal competence (Kazanskaia, 2025). Kazanskaia examined how delivery techniques enhanced speaker credibility. Stance-Taking: Positioning oneself and one's ideas clearly while acknowledging alternative perspectives (M. Z. Huang et al., 2025). Huang, Chan, and Liu analyzed stance and engagement strategies in digital oratory.	(Valeiras-Jurado, 2020; Attiya, 2022; S. Xia, 2023; Kazanskaia, 2025; M. Z. Huang et al., 2025; Mohammed & Mayuuf, 2025)
Pathos (Emotional Appeals)	Emotional persuasion is realized multimodally through three primary strategies: Humor: Multiple studies identified humor as a powerful engagement and persuasion tool (Masi, 2023; Marchenko & Minenko, 2020; Masi, 2020). Masi conducted a comprehensive multimodal analysis of humor in TED Talks, showing how speakers coordinate verbal jokes, facial expressions, gestures, and timing to elicit laughter and build rapport. Marchenko and Minenko and Masi also noted the prevalence of humor in TED Talks. Emotional Storytelling: Speakers evoke empathy, inspiration, and motivation through emotionally resonant narratives (Attiya, 2022; S. Xia, 2023; Mohammed & Mayuuf, 2025). Attiya and Mohammed and Mayuuf analyzed emotional appeals in TED Talk narratives. Xia showed how TED speakers incorporate humanistic emotional perspectives into scientific topics. Nonverbal Emotional Expression: Facial expressions, vocal tone, and gestures convey emotions that amplify verbal messages (Falih & Ahmed, 2024; Michelson & Peleg, 2021). Falih and Ahmed analyzed nonverbal emotional persuasion.	(Attiya, 2022; Masi, 2023; Falih & Ahmed, 2024; Michelson & Peleg, 2021; Marchenko & Minenko, 2020; Masi, 2020; S. Xia, 2023; Mohammed & Mayuuf, 2025)

Logos (Logical Argumentation)	Logical persuasion, though less foregrounded than ethos and pathos in TED Talk contexts, is realized through two strategies: Evidence and Data: Citing research findings, statistics, and empirical evidence (S. Xia, 2022; Attiya, 2022; S. Xia, 2023; Mohammed & Mayuuf, 2025). Xia analyzed how TED speakers present scientific evidence. Mohammed and Mayuuf examined logical argumentation in TED Talks. Logical Structure: Organizing presentations with clear claims, supporting evidence, and conclusions (Attiya, 2022; Mohammed & Mayuuf, 2025).	(S. Xia, 2022; Attiya, 2022; S. Xia, 2023; Mohammed & Mayuuf, 2025)
Engagement Strategies	Audience engagement is achieved through three multimodal mechanisms: Direct Address: Using second-person pronouns ("you") and rhetorical questions to involve audiences (S. A. Xia & Hafner, 2021; M. Z. Huang et al., 2025). Xia and Hafner analyzed engagement strategies in TED Talk videos. Huang, Chan, and Liu examined engagement devices in digital oratory. Interactive Elements: Inviting audience participation, questions, or reflection (S. A. Xia & Hafner, 2021; Chu & Chen, 2021). Chu and Chen analyzed interactive features in TED speeches for public speaking education. Multimodal Coordination: Synchronizing verbal, visual, gestural, and vocal modes to create immersive experiences (Jiang & Lim, 2022; S. A. Xia & Hafner, 2021; Tun et al., 2023; Z. Huang et al., 2023). Jiang and Lim demonstrated multimodal orchestration in science popularization. Tun et al. and Huang et al. incorporated multimodal coordination into automated assessment.	(Jiang & Lim, 2022; S. A. Xia & Hafner, 2021; Chu & Chen, 2021; M. Z. Huang et al., 2025; Tun et al., 2023; Z. Huang et al., 2023)

The findings reveal that effective persuasion in TED Talks emerges from coordinated multimodal ensembles rather than single modes operating in isolation (Valeiras-Jurado, 2020; Jiang & Lim, 2022; Xia & Hafner, 2021; Falih & Ahmed, 2024; Tun et al., 2023; Huang et al., 2023). Verbal discourse provides the semantic foundation, but gestures, visual aids, vocal prosody, and facial expressions amplify, clarify, and emotionally charge the message (Jiang & Lim, 2022; Falih & Ahmed, 2024; Marchenko & Minenko, 2020). Rhetorical strategies (ethos, pathos, logos, engagement) are realized through multimodal means: credibility is constructed through confident delivery and expert language (Kazanskaia, 2025; Huang et al., 2025; Mohammed & Mayuuf, 2025); emotional appeals are conveyed through storytelling, humor, and nonverbal expression (Attiya, 2022; Masi, 2023; Falih & Ahmed, 2024; Xia, 2023); logical arguments are supported by visual evidence and clear structure (Xia, 2022; Attiya, 2022; Xia, 2023; Mohammed & Mayuuf, 2025); and engagement is achieved through direct address, interactive elements, and multimodal synchrony (Xia & Hafner, 2021; Chu & Chen, 2021; Huang et al., 2025).

However, the literature reveals uneven attention to different modalities. Verbal discourse and gestures dominate research attention, while vocal prosody, facial expression, and spatial positioning receive less systematic analysis. This imbalance may reflect methodological constraints (qualitative analysis of vocal and facial features is labor-intensive) rather than their actual importance in persuasive effectiveness. Computational methods offer promise for more comprehensive multimodal analysis, but require validation against expert human judgment.

RQ4: What research gaps and future directions emerge from existing literature?

The study identified several significant research gaps and promising directions for future investigation.

Table 6. Research Gaps and Future Directions

Research Gaps & Future Directions	Results
Small/Narrow Corpora	38% of studies analyzed only 1–5 talks. Limited generalizability across speakers, topics, and audiences.
No Unified Framework	No widely adopted model integrates multimodal resources, rhetorical functions, and temporal dynamics.
Indirect Outcome Proxies	View counts used as success proxies may reflect topic popularity or algorithmic promotion rather than oratory quality.
Genre Concentration	All 18 studies focus exclusively on TED/TEDx. No cross-genre comparative studies included.

Limited Experimental Designs	Most studies are correlational or qualitative. Causal effects of multimodal configurations on motivation remain untested.
Cultural/Linguistic Gaps	Predominantly English-language Western studies. Limited cross-cultural and cross-linguistic diversity in corpus.

Research Gaps

A major limitation in current research on TED Talks and similar motivational discourse is the reliance on small, qualitative corpora, typically analyzing only a limited number of talks, which constrains generalizability (Jiang & Lim, 2022; Xia & Hafner, 2021; Xia, 2022; Attiya, 2022; Masi, 2023; Marchenko & Minenko, 2020; Masi, 2020; Xia, 2023; Mohammed & Mayuuf, 2025). This is further compounded by a strong genre concentration and the dominance of observational designs that describe multimodal and rhetorical features without testing causal effects, alongside the limited measurement of audience responses such as comprehension, engagement, and behavioral intention (Kimani et al., 2020; Michelson & Peleg, 2021; Tun et al., 2023).

Further gaps include the lack of temporal-sequential analysis, as studies often examine multimodal features in aggregate rather than tracking their dynamic progression across speech stages (Jiang & Lim, 2022; Chu & Chen, 2021). While computational approaches have emerged to automate multimodal-rhetorical analysis (Kimani et al., 2020; Michelson & Peleg, 2021; Tun et al., 2023; Huang et al., 2023), these remain under-validated against expert judgment and audience outcomes, highlighting the need for larger corpora, cross-genre comparisons, experimental designs, integrated audience measures, and stronger validation frameworks.

Future Directions

Future research on TED Talks and related motivational discourse should prioritize large-scale multimethod studies that integrate qualitative and computational approaches across extensive corpora, alongside experimental research to establish causal effects of multimodal-rhetorical strategies on audience outcomes. There is also a need to develop integrated theoretical frameworks that account for the interaction of multimodal resources, rhetorical functions, audience characteristics, and context, as well as to expand cross-genre and cross-cultural comparisons to distinguish universal and context-specific practices. Additionally, future work should incorporate temporal-sequential analysis of speech dynamics, adopt audience-centered methods to validate speaker-focused findings, and translate insights into pedagogical applications such as instructional materials and training systems, while ensuring rigorous validation of computational tools and examining how platform affordances influence multimodal-rhetorical effectiveness.

4. CONCLUSIONS

This systematic literature review synthesized 18 empirical studies published between 2020 and 2026 examining multimodal-rhetorical interaction in TED Talks and similar motivational public speaking. The review addressed four research questions concerning theoretical frameworks, methodological approaches, effective multimodal elements, rhetorical strategies, and research gaps.

Key Findings

Theoretical Diversity

The field employs diverse frameworks, including multimodal discourse analysis, rhetorical theory, computational models, and engagement theory. However, integration across paradigms remains limited, and unified multimodal-rhetorical frameworks are lacking.

Methodological Evolution

Research has evolved from small-scale qualitative discourse analysis toward computational and automated assessment methods. While this evolution enables scalability, it also creates a

methodological divide between interpretive depth and quantitative breadth. Mixed-methods integration remains rare.

Multimodal Orchestration

Effective persuasion emerges from coordinated multimodal ensembles rather than single modes. Verbal discourse provides semantic foundations, while gestures, visual aids, vocal prosody, and facial expressions amplify, clarify, and emotionally charge messages. However, research attention is unevenly distributed, with verbal discourse and gestures dominating while vocal, facial, and spatial modalities receive less systematic analysis.

Rhetorical Strategies

Key strategies include narrative storytelling, ethos-building through expertise and personal narrative, emotional appeals including humor and empathy, logical argumentation with evidence, and engagement through direct address and interactivity. These strategies are realized multimodally, demonstrating the inseparability of multimodal and rhetorical dimensions.

Research Gaps

Significant gaps include small corpus sizes, genre concentration on TED Talks, limited experimental designs testing causal effects, insufficient audience response measurement, absence of unified theoretical frameworks, underexplored modalities (vocal, facial, spatial), and limited cross-cultural research.

Future research may expand to larger, cross-genre corpora; develop unified theoretical frameworks; employ multimethod designs combining qualitative and computational approaches; and test causal effects of multimodal configurations on audience motivation and behavior.

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