

RESEARCH ARTICLE

Digital Scientific Communication in Social Networks: Language Functioning and The Internal Structure of Terminology in Networked Public Discourse

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VOLUME: Vol.06 Issue03 2026

PAGE: 01-10

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Abstract

Digital platforms have reconfigured how scientific meanings circulate, how expertise is performed, and how terms acquire legitimacy in public space. This article examines digital scientific communication in social networks by integrating (a) internet linguistics perspectives on platform-shaped language change, (b) discourse-analytical accounts of power, polarization, and alignment, and (c) terminology theory focused on the internal structure and semantic constituents of terms. Building on scholarship in sociolinguistics, online discourse studies, and terminology studies, the study conceptualizes social networks as hybrid arenas where scientific discourse competes with political, moral, and affective discourses, producing intensified struggles over naming, definition, and categorization (Crystal, 2021; McCulloch, 2020; Van Dijk, 2017). Methodologically, the paper proposes a qualitative, theory-driven framework for analyzing how (i) platform affordances and comment-based interaction shape scientific expression, (ii) alignment/opposition markers and “power of discourse” dynamics influence term uptake, and (iii) contested terminology—especially in technologically mediated discussions—becomes a site of metalinguistic critique. Results are presented as an integrated set of analytical findings: networked scientific talk displays recurring patterns of definitional negotiation, semantic compression, and hybridization with everyday registers; terminological “internal form” is frequently reconstructed through paraphrase, analogy, and evaluative labeling; and discursive polarization amplifies definitional conflict, which can also invite corrective “constructive critique” and community-level meaning repair (Antonyuk & Hoza, 2023; Aubanelle, 2023; Rehak, 2023). The discussion argues that digital scientific communication should be treated not merely as dissemination but as a continuous process of social meaning-making under conditions of visibility, contestation, and uneven expertise. Implications are offered for terminology description, science communication practice, and the study of online discourse as a sociolinguistic phenomenon.

KEYWORDS

Digital discourse; scientific communication; terminology; social networks; discourse power; online interaction; meaning negotiation.

INTRODUCTION

Scientific discourse has never been purely internal to laboratories, academies, or journals. Yet the contemporary communication ecology—shaped by social networks, comment threads, short-form formats, and algorithmic

visibility—has intensified the publicness of scientific talk and amplified the consequences of how terms function in interaction (Crystal, 2021; Mabillard et al., 2024). In social networks, scientific discourse competes in real time with political discourse, identity discourse, moral discourse, and entertainment discourse, which can either enrich public understanding through dialogic clarification or destabilize meanings through polarization, simplification, and strategic reinterpretation (Van Dijk, 2017; Synytsia, 2021). What is newly salient is not only the scale of dissemination but the interactive conditions under which scientific meaning is negotiated: posts and replies are evaluated, recontextualized, quoted, contested, memefied, and reframed through platform-native language practices (McCulloch, 2020; Crystal, 2021).

Within this environment, terminology becomes central. Scientific and technical terms do not simply “refer” to stable entities; they index communities of practice, encode theoretical commitments, and function as boundary markers between “expert” and “non-expert” positions. The internal structure of a term—its semantic constituents and category assumptions—shapes what people think the term allows or disallows, and social networks foreground this structure by forcing constant paraphrase and explanation (Temmerman, 2000; Tsaruk, 2016). At the same time, social networks cultivate a public style of definitional conflict, where users challenge not only conclusions but the labels themselves: what the term means, whether it is misleading, whose interests it serves, and whether it should be replaced (Rehak, 2023). This is especially visible in technologically saturated topics that invite metalinguistic commentary on “the terminology used in the discourse,” where users explicitly critique words as instruments of persuasion or obfuscation (Rehak, 2023; Van Dijk, 2017).

A second defining feature of digital environments is the emergence of intensified alignment and opposition. Scientific claims in public threads are often entangled with identity positions and group membership cues, producing rhetorical patterns of “we/they,” credibility attacks, and polarized stance-taking (Aubanelle, 2023; Synytsia, 2021). The linguistic consequences include increased use of stance markers, sarcasm, evaluative lexis, and interactional devices that position a user as aligned with a camp or as resisting another (Aubanelle, 2023; Van Dijk, 2017). These dynamics matter for scientific communication because terms can become “flags” of

alignment rather than tools of explanation: choosing one label over another can signal a political identity, a moral orientation, or a membership claim.

A third critical dimension is the affective and harmful content environment in which scientific talk occurs. Hate speech, homophobic discourse, and speech facilitating hatred constitute not only social problems but also linguistic ecosystems that shape norms of interaction, perceived safety, and who speaks (Brändle et al., 2024; Määttä, 2023; Moïse & Hugonnier, 2019). Even when scientific content is not directly about marginalized identities, it is posted into environments where hostility, mockery, and “severity perceptions” influence participation and reception (Brändle et al., 2024). Thus, studying scientific discourse in social networks requires attending to the broader pragmatic setting of public communication risks and perspectives (Mabillard et al., 2024) and to the ways discourse power is enacted through interactional control, agenda setting, and legitimacy claims (Van Dijk, 2017).

Against this background, the article addresses a central problem: how can we analyze the functioning of scientific language in social networks while also accounting for the internal structure of terms and the discursive struggles that shape meaning? Existing work often separates “internet language” from “scientific discourse,” treating the former as informality and the latter as institutional style. However, research indicates that digital discourse is a complex socio-pragmatic environment with distinctive registers and norms (Crystal, 2021; McCulloch, 2020), and scientific discourse itself has identifiable components and evolving vectors (Shepitko, 2010; Stadnichenko et al., 2024). Moreover, terminology theory warns that traditional assumptions about stable categories can misrepresent how real-world usage forms and reforms terms (Temmerman, 2000). These threads suggest a needed integration: scientific communication online must be analyzed as a linguistic phenomenon that includes term-structure, discourse power, interactional stance, and platform effects.

Accordingly, this study pursues four objectives:

1. to theorize social networks as interactional environments that reshape scientific discourse components (Crystal, 2021; Shepitko, 2010);
2. to connect terminology and term internal structure with online meaning negotiation (Temmerman, 2000; Tsaruk,

2016);

3. to examine how alignment/opposition and discourse power affect definitional conflict and term legitimacy (Aubanelle, 2023; Van Dijk, 2017; Synytsia, 2021);

4. to propose an analytic framework that can be applied to comments, threads, and platform-specific texts, including in multilingual settings where social networks form a “novel linguistic phenomenon” (Holubovska, 2015) and where lexical-semantic and discursive aspects differ across languages (Geiko, 2025).

METHODOLOGY

This article adopts a qualitative, theory-driven methodological design that synthesizes discourse analysis, internet linguistics, sociolinguistics, and terminology studies. The methodological stance is interpretive: the aim is not to produce numerical generalizations but to generate a coherent analytical model grounded in established scholarship on online language, discourse power, hate speech pragmatics, and term structure (Crystal, 2021; Van Dijk, 2017; Määttä, 2023; Temmerman, 2000; Tsaruk, 2016). The methodology is presented as a publication-ready research design that can be implemented in empirical studies of scientific communication on social networks.

Research design and analytical logic

The research design proceeds from the assumption that meaning in social networks is interactional and layered: scientific terms function simultaneously as referential labels, stance carriers, identity signals, and boundary markers. This is consistent with the claim that online language is shaped by platform constraints and user adaptation (Crystal, 2021; McCulloch, 2020). It is also consistent with discourse-theoretical accounts of power as control over discourse structures, topic selection, framing, and legitimacy (Van Dijk, 2017). The analytical logic is thus multi-level:

- Micro-level (linguistic choices): lexical selection, evaluative adjectives/adverbs, hedging, definitional paraphrases, metaphor/analogy, and “semantic constituents” embedded within terms (Tsaruk, 2016).
- Meso-level (interaction and thread structure): reply dynamics, quoting, correction sequences, supportive moves, alignment/opposition markers, and escalation/de-escalation patterns (Aubanelle, 2023; Buialska, 2016).

- Macro-level (discursive environment): platform publicness, risks of hate speech and hostility, institutional credibility struggles, and broader “power of discourse” in mass media ecosystems (Mabillard et al., 2024; Määttä, 2023; Brändle et al., 2024; Synytsia, 2021; Van Dijk, 2017).

Data sources as a replicable corpus model

While the present paper focuses on theoretical integration, it specifies a replicable corpus model consistent with social-media discourse research. A typical dataset would include (a) original posts that reference scientific topics (e.g., public health, climate, technology), (b) comment threads with substantial interaction, and (c) platform-specific features such as hashtags, mention replies, reposts/quotes, and moderation signals. This approach is consistent with analyzing “internet speech” and the use of linguistic means in comments and forums (Antonyuk & Hoza, 2023) and with broader public communication concerns (Mabillard et al., 2024). The model accommodates multiple platforms (e.g., microblogging sites, Reddit-like forums) in line with studies of social support and expertise exchange on Reddit (Millette & Boislard, 2023) and political discourse on Twitter (Aubanelle, 2023).

Analytical framework: terminology internal structure in online discourse

A core methodological contribution is a term-centered analytic protocol:

1. Term identification and variant mapping: Identify key scientific/technical terms in a thread and map variants, synonyms, abbreviations, and paraphrases. This is crucial because digital environments promote abbreviation and informal rewording, which can shift perceived meaning (Crystal, 2021; McCulloch, 2020).
2. Semantic constituent analysis: For each focal term, articulate likely semantic constituents (what elements of meaning users treat as core), following approaches that emphasize internal structure and semantic constituents of technical terms (Tsaruk, 2016).
3. Category realism test: Evaluate whether the term is functioning as a stable category or as a contested category. This step follows the critique that traditional terminology theory may impede realistic description when categories are dynamic and negotiated (Temmerman, 2000).
4. Metalinguistic critique coding: Identify explicit user commentary on the term itself—claims that the word is

misleading, ideological, too broad/narrow, or strategically chosen. This aligns with analyses of terminological critique in AI discourse (Rehak, 2023).

5. **Definitional sequence analysis:** Track how definitions are proposed, challenged, repaired, and stabilized (if at all) across thread turns, consistent with interactional analysis of online exchanges (Antonyuk & Hoza, 2023; Millette & Boislard, 2023).

Discourse power and alignment/opposition coding

To account for the “power of discourse” and oppositional dynamics, the framework includes:

- **Alignment/opposition markers:** lexical and pragmatic devices that signal support, dissent, or antagonism (Aubanelle, 2023).
- **Authority claims:** references to institutions, credentials, “expertise,” citations, or dismissals of expertise as elitism—core mechanisms of discourse power (Van Dijk, 2017).
- **Polarization moves:** dichotomizing language, moralization, and identity coding; these are related to mass media opposition patterns (Synytsia, 2021) and to hate/hostility discourse environments (Määttä, 2023; Brändle et al., 2024).
- **Supportive communication patterns:** linguistic expressions of communicative support, which can stabilize participation and facilitate explanation (Buialska, 2016; Feng et al., 2013). Because online support quality can be influenced by profile features and perceived credibility (Feng et al., 2013), the model treats credibility cues as relevant to whether scientific explanations receive constructive engagement.

Ethical and interpretive considerations

Public social media texts raise ethical concerns about harm, harassment, and the reproduction of hateful content. The study therefore treats hate speech and homophobic discourse not as sensational artifacts but as discourse contexts that affect participation, norms, and perceived safety (Määttä, 2023; Moïse & Hugonnier, 2019). Additionally, because “severity of hate speech” is partly a matter of public perception, analysis must avoid assuming uniform reception (Brändle et al., 2024). Interpretively, the framework recognizes that digital public discourse is not a neutral marketplace of ideas but a power-structured environment in which discourse access and legitimacy are uneven (Van Dijk,

2017; Mabillard et al., 2024).

RESULTS

The results are presented as integrated analytical findings derived from the combined theoretical framework. They describe robust patterns expected in digital scientific communication on social networks, grounded in the reference base and articulated as research findings suitable for a publication-ready narrative.

Language functioning in social networks reshapes scientific discourse components

Scientific discourse is often described through components such as conceptual precision, definitional rigor, evidential support, and structured argumentation (Shepitko, 2010; Tomakhiv, 2015). In social networks, these components are reconfigured by the constraints and affordances of online interaction. The most immediate shift is compression: complex scientific claims are reformatted into short posts, headline-like statements, or fragmentary assertions, which encourages semantic condensation—packing multiple assumptions into fewer words (Crystal, 2021; McCulloch, 2020). Semantic condensation affects terminology: when space or attention is limited, users rely on labels as “containers” of meaning. As a consequence, definitional work moves from the main post into comment threads, where meaning is reassembled through paraphrase, dispute, and repair (Antonyuk & Hoza, 2023; Mabillard et al., 2024).

A second shift involves register hybridization. Social network language is characterized by mixing formality levels, playful features, and conversational markers even in serious topics (Crystal, 2021; McCulloch, 2020). Scientific talk thus becomes hybrid: technical nouns appear alongside memes, sarcasm, or emotional intensifiers. This hybridity does not automatically degrade scientific meaning; rather, it changes how credibility and clarity are performed. Users may display “scientificness” through selective term use rather than through full argumentation, creating a stylized scientific register that is legible as expertise but not necessarily transparent (Van Dijk, 2017; Shepitko, 2010).

Third, platformized interaction increases the salience of stance. Scientific claims online are frequently interpreted not only as epistemic propositions but as social positions. As a result, language functioning is increasingly stance-oriented: the same term is used to signal alignment with a group, resistance to another, or moral condemnation of perceived

misinformation (Aubanelle, 2023; Synytsia, 2021). This stance orientation alters how scientific discourse components operate: evidential claims may be treated as identity claims, and definitional debates may be treated as political conflicts (Van Dijk, 2017).

Terminology in social networks becomes a site of definitional negotiation and category conflict

A principal finding is that social networks foreground the internal structure of terminology precisely because terms become contested objects. Users frequently demand “what do you mean by X?” and provide competing “X means...” formulations. This is consistent with the claim that terms contain semantic constituents that can be unpacked and disputed (Tsaruk, 2016). In practice, online definitional negotiation commonly proceeds via three mechanisms:

1. Paraphrase and substitution: Users replace a technical term with an everyday phrase to claim interpretive control. Paraphrase can clarify, but it can also strategically narrow or broaden meaning, shifting the term’s semantic constituents (Tsaruk, 2016; Temmerman, 2000).
2. Analogy and metaphor: Users explain scientific terms through analogies, effectively proposing a new internal structure: they imply which semantic features are central by choosing particular comparisons (Crystal, 2021).
3. Boundary policing: Users treat terms as membership tokens, insisting that correct usage requires specific credentials or that outsiders misusing terms should be dismissed. This is a discourse power mechanism because it controls access to legitimate meaning (Van Dijk, 2017).

Terminology theory suggests that rigid category assumptions can misrepresent actual usage, especially in fields where categories evolve (Temmerman, 2000). Social networks intensify this problem because users may import everyday category logics into scientific categories. A term that is precise in specialist practice may be interpreted through folk category boundaries online, generating conflict not because one side is “ignorant” but because different category models are operating. This conflict becomes visible through explicit definitional disputes, requests for clarification, and accusations that terms are “misleading” or “propaganda,” which connect directly to metalinguistic critique patterns described in contemporary discourse about technological terminology (Rehak, 2023).

Metalinguistic critique and “terminology criticism” emerge as prominent practices

A distinctive feature of digital scientific communication is the visibility of language critique itself. Users do not merely argue about facts; they argue about labels, definitions, and the rhetorical motives behind terms (Rehak, 2023). This aligns with the observation that discourse about technology, especially AI, often contains a “language labyrinth” in which terminology is criticized as obscuring meaning or exaggerating capability (Rehak, 2023). The broader implication is that social networks function as arenas of popular terminology critique: people debate whether a term is too anthropomorphic, too vague, too technical, or politically loaded. Such critique is partly epistemic (seeking clarity) and partly political (seeking to delegitimize an opposing framing), illustrating the intertwining of knowledge and power (Van Dijk, 2017).

Metalinguistic critique also interacts with platform discourse norms. In some communities, “calling out” misleading terminology becomes a norm of corrective participation; in others, it becomes a weaponized strategy to dismiss speakers. The same practice—criticizing a term—can therefore support public understanding or amplify antagonism depending on alignment structures and community moderation (Mabillard et al., 2024; Aubanelle, 2023).

Alignment/opposition dynamics shape scientific talk, not only political talk

Although alignment and opposition markers are commonly studied in political discourse on platforms like Twitter (Aubanelle, 2023), the same dynamics appear in scientific threads because science is socially embedded and often politically implicated. Users construct in-groups (“those who trust science,” “those who think critically”) and out-groups (“sheep,” “elites,” “anti-science”), and these categories are enacted through linguistic stance and evaluative labels (Van Dijk, 2017; Synytsia, 2021). This produces two consequences for terminology:

- Term polarization: competing terms are associated with camps. Choosing one term signals allegiance, while choosing another signals dissent. Over time, this reduces the term’s purely referential function and increases its indexical function as an identity marker (Aubanelle, 2023; Van Dijk, 2017).
- Definitional hardening: once terms become camp-markers, definitional negotiation becomes less flexible.

Participants interpret requests for definition as attacks, and definitions as propaganda. This is a classic discourse power mechanism because it converts epistemic debate into legitimacy struggle (Van Dijk, 2017).

The “discursive opposition” phenomenon in mass media contexts provides a useful lens: discourse opposition is not merely disagreement but a structured pattern of antagonistic framing and power contestation (Synytsia, 2021). Social networks intensify this because algorithms promote engagement, and engagement often correlates with conflict (Mabillard et al., 2024). In such environments, scientific terminology is especially vulnerable to being appropriated into oppositional frames.

Hostility, hate speech environments, and perceived severity alter participation conditions

Public communication in social networks entails risks—harassment, hate speech, stigmatization—affecting who speaks and whose explanations persist. Research on hate speech properties indicates that hate can be expressed and facilitated through discursive strategies across languages and boards (Määttä, 2023). Additionally, perceptions of hate speech severity vary among populations and shape public judgments (Brändle et al., 2024). These findings imply that scientific communication is not merely about clarity; it is about safe participation in a discourse environment that may punish certain identities or positions. Even when a thread’s topic is technical, the surrounding platform culture can normalize hostility, making scientific correction risky and discouraging sustained explanation (Mabillard et al., 2024; Määttä, 2023).

Homophobic discourse research underscores that testimony and alternative discourse strategies can counter harmful speech (Moïse & Hugonnier, 2019). Analogously, in scientific threads, “alternative discourse” may involve supportive interventions—participants reframing hostility, modeling respectful explanation, and re-establishing norms of evidence-based talk. Such supportive communication aligns with broader findings that expressions of communicative support have interdiscursive potential and can be strategically deployed to sustain dialogue (Buialska, 2016). In social networks, this is not a peripheral matter: supportive discourse can determine whether definitional negotiation yields understanding or collapses into polarization.

Profiles, credibility cues, and support quality influence science-related help-seeking and explanation

Digital scientific communication is not always debate; it is also help-seeking: individuals ask for explanations, resources, and guidance. Research suggests that profile features can influence the quality of support messages received, implying that perceived identity and credibility shape interaction outcomes (Feng et al., 2013). In scientific contexts, this translates into asymmetries: some users are treated as legitimate inquirers, others are dismissed. This mechanism contributes to discourse power, because it affects whose questions are answered and whose participation is validated (Van Dijk, 2017). On platforms like Reddit, exchanges about sensitive topics show how “social support and expertises” emerge through community interaction and how expertise is negotiated rather than simply possessed (Millette & Boislard, 2023). Scientific communication in social networks thus includes community-based expertise production, which depends on discourse norms, supportive language, and participation structures.

DISCUSSION

The findings support a central interpretive claim: digital scientific communication in social networks is a form of public meaning-making in which terminology functions as both a cognitive tool and a social instrument. The discussion elaborates theoretical implications, counter-arguments, limitations, and future scope, using the provided references as anchors.

Reconceptualizing “scientific communication” as interactive, power-structured meaning work

Traditional accounts may implicitly treat scientific communication as dissemination: experts transmit information, publics receive it. Social network environments disrupt this model by making reception visible and participatory. Comments, replies, quote-posts, and thread debates show that meaning is co-constructed, contested, and repaired in public view (Antonyuk & Hoza, 2023; Mabillard et al., 2024). This necessitates a shift from transmission models toward interactional models, consistent with internet linguistics approaches emphasizing how users reshape language under platform conditions (Crystal, 2021; McCulloch, 2020).

However, an interactional model must also be a power model. Discourse power is not an abstract theme but an operational reality in platforms: controlling topic framing, defining terms, dismissing opponents, and restricting legitimacy are all power

acts (Van Dijk, 2017). In scientific threads, power appears when one group imposes a definition, labels alternative definitions as ignorance, or frames certain terms as morally suspect. The implication is that terminology is not neutral. Terms are tools of categorization, and categorization is a site of power (Temmerman, 2000; Van Dijk, 2017).

A counter-argument might claim that scientific definitions are simply correct or incorrect and that power analysis risks relativism. The present framework does not deny correctness; rather, it observes that correctness is socially mediated in online contexts. Even correct definitions must be accepted through interaction, and acceptance is shaped by alignment structures, hostility environments, and credibility judgments (Aubanelle, 2023; Brändle et al., 2024; Feng et al., 2013). Thus, a power-aware model is not a denial of truth but an account of how truth claims travel and are contested.

Terminology internal structure as the “pressure point” of digital scientific discourse

A major theoretical implication is that the internal structure of terminology becomes the pressure point where scientific and everyday meaning systems collide. When users debate what a term “really means,” they are often debating its semantic constituents—what features are essential, what boundaries define category membership, what causal assumptions are implied (Tsaruk, 2016). Social networks force these implicit structures into explicit discourse because misunderstandings and strategic reframings quickly surface.

Temmerman’s critique of traditional terminology theory is particularly relevant: if terminology theory assumes stable categories, it may fail to describe how categories are negotiated in practice (Temmerman, 2000). Social networks make category negotiation visible and frequent, suggesting that descriptive terminology must include discourse-based evidence, not only expert taxonomies. This does not mean abandoning precision; it means acknowledging that public discourse is a layer of terminological life that affects how terms are understood and used. In digital scientific communication, term meanings may split into multiple “public senses,” each linked to distinct stances and communities. This fragmentation has practical consequences for science communication and education.

Rehak’s analysis of “terminology used in AI discourse” demonstrates how language critique becomes a central practice in fields characterized by hype, uncertainty, and

public concern (Rehak, 2023). Similar dynamics can occur in other scientific domains: users may suspect that institutions choose terms to persuade rather than to describe. Such suspicion is not inherently irrational; it reflects a recognition that language frames perception. Consequently, effective science communication online must include transparent definitional work and an awareness of how terms can be interpreted as political instruments.

Alignment/opposition, polarization, and the conversion of epistemic disagreement into identity conflict

The analysis of alignment and opposition in political discourse on Twitter provides a transferable insight: stance markers are not merely stylistic; they structure group boundaries and channel interaction (Aubanelle, 2023). When scientific talk becomes entangled with political identity, the thread’s interaction can convert epistemic disagreement into identity conflict. This conversion often manifests as term polarization: the same scientific label is interpreted as a signal of ideological allegiance. Synytsia’s work on discursive opposition and the “power of discourse” in mass media suggests that opposition is a patterned phenomenon that can be amplified by media ecosystems (Synytsia, 2021). Social networks intensify the pattern by enabling rapid coalition formation and by rewarding conflict with visibility (Mabillard et al., 2024).

A potential counter-view is that polarization reflects substantive disagreements about policy, not merely language. This is partly true. Yet the present study argues that language is the mechanism by which disagreements are interpreted and enacted. Terms and labels are the handles people use to grasp complex issues. If those handles are contested, the entire discourse becomes unstable. Thus, polarization is both about content and about the linguistic forms through which content is framed (Van Dijk, 2017).

Hostile discourse environments and the ecology of participation

The presence of hate speech and hostility is not an external “noise” but an ecological condition that shapes the discourse. Research indicates that hate speech has identifiable linguistic and discursive properties and that discourse facilitating hatred operates in online boards across languages (Määttä, 2023). Brändle et al.’s findings on perceived severity remind us that audiences do not respond uniformly; perception mediates impact (Brändle et al., 2024). For scientific communication, this implies that participation is uneven: some users may

disengage due to hostile climates, and others may dominate through aggression. This affects term negotiation, because definitional work requires sustained cooperative interaction.

Moïse and Hugonnier's focus on testimony as alternative discourse offers a conceptual resource: alternative discourse strategies can re-humanize interaction and counter harmful patterns (Moïse & Hugonnier, 2019). In science communication threads, analogous strategies include respectful correction, acknowledgement of uncertainty, and communicative support. Buialska's work on communicative support suggests that supportive expressions have interdiscursive potential: they can travel across contexts and stabilize interaction (Buialska, 2016). Thus, support is not merely politeness; it is infrastructure for meaning-making.

LIMITATIONS

This article is theoretical and integrative, which entails limitations. First, without a specific empirical corpus, the results remain analytic generalizations grounded in the cited literature rather than platform-specific statistical patterns. Nonetheless, the proposed framework is designed to be operationalized in empirical research consistent with studies of online comments, discourse markers, and platform communication risks (Antonyuk & Hoza, 2023; Aubanelle, 2023; Mabillard et al., 2024). Second, the references include diverse genres (books, dissertations, arXiv preprints, journal articles), implying variability in methodological standards; the study mitigates this by using each source for its conceptual contribution rather than treating all as equivalent evidence (Suzen et al., 2020; Crystal, 2021). Third, the multilingual dimension is acknowledged but not exhaustively developed; future empirical work should compare how terminology functions across languages in social media, building on language-specific analyses such as French lexical-semantic and discursive aspects (Geiko, 2025) and sociolinguistic integrative perspectives (Matsiuk, 2021).

Future scope

Future research can build on this framework in several directions:

- **Cross-platform comparison:** Analyze how the same scientific term behaves differently across platform cultures (e.g., microblogging vs. forum-style discussion), leveraging the public communication risk framework (Mabillard et al., 2024).

- **Term life-cycle in public discourse:** Track how a term's semantic constituents shift over time as it moves between scientific texts and social networks, integrating informational-space approaches for scientific texts (Suzen et al., 2020) with terminology analysis (Tsaruk, 2016).

- **Supportive discourse interventions:** Investigate how communicative support affects definitional negotiation outcomes, building on online support quality research (Feng et al., 2013) and interdiscursive support expression (Buialska, 2016).

- **Hostility and participation equity:** Examine how hate speech environments suppress or distort scientific communication, using hate speech discourse properties as analytic anchors (Määttä, 2023; Brändle et al., 2024).

- **Terminological critique as literacy practice:** Study how constructive critique of terminology functions as a form of public scientific literacy, extending the critique-of-terminology perspective (Rehak, 2023).

CONCLUSION

Digital scientific communication in social networks is not simply the online translation of scientific writing; it is a distinct communicative practice shaped by platform affordances, interactive dynamics, discourse power, and contested terminology. The analysis demonstrates that language functioning online reorganizes scientific discourse components through compression, register hybridization, and intensified stance-taking (Crystal, 2021; McCulloch, 2020; Shepitko, 2010). At the core of these transformations lies terminology: scientific terms become focal points of definitional negotiation, category conflict, and metalinguistic critique, revealing the internal structure of terms as an active site of public meaning-making (Tsaruk, 2016; Temmerman, 2000; Rehak, 2023). Alignment/opposition dynamics and discursive polarization further shape how terms circulate, often converting epistemic disagreement into identity conflict and altering the perceived legitimacy of definitions (Aubanelle, 2023; Synytsia, 2021; Van Dijk, 2017). Finally, hostile discourse environments—including hate speech and discriminatory discourse—create participation conditions that influence who can explain, who can question, and which meanings stabilize (Määttä, 2023; Brändle et al., 2024; Moïse & Hugonnier, 2019).

By integrating internet linguistics, sociolinguistics, discourse power theory, and terminology studies, this article offers a coherent analytical framework for studying how scientific

meaning is made, contested, and repaired in social networks. The overarching conclusion is that scientific communication online must be understood as interactional, power-structured terminology work—an ongoing public negotiation of meaning under conditions of visibility, contestation, and uneven expertise (Van Dijk, 2017; Mabillard et al., 2024).

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