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HEDGING AND EPISTEMIC MODALITY IN ACADEMIC DISCOURSE: LINGUISTIC MARKERS OF CAUTION AND NON-CATEGORICAL CLAIMING

Abstract. The article examines how a compact set of epistemic markers – *might, could, suggest, appear to* – functions as a linguistic toolkit of hedging in English academic discourse, with a particular focus on research articles authored by Ukrainian scholars in wartime conditions. The study is grounded in a small, purpose-built corpus of English-language publications from three disciplinary clusters – Applied Linguistics and Education, Biology and Life Sciences, Electrical Engineering – situated along a soft-hard knowledge continuum. All articles were examined using the Sketch Engine platform, and the analysis relies on open-access English corpora – primarily the English Web 2021 (enTenTen21) – to identify and quantify epistemic uses of the target markers, which were then analysed in terms of frequency, distribution across rhetorical sections, and functional load in the transition from empirical observation to interpretive claiming.



The findings show that the four markers are not interchangeable, but occupy distinct positions on a scale of epistemic commitment. *Suggest* is preferentially used where authors infer relatively robust relationships from their data, especially in Results and Discussion sections. *Might* and *could* cluster around hypothetical explanations, projections and scenario building, marking claims as plausible yet explicitly revisable. *Appear to* signals heightened caution, typically in multi-factorial or model-dependent contexts where key variables cannot be fully observed. The density and patterning of these markers vary by discipline, with the highest concentration in interpretive, human-facing fields and lower, but strategically important, use in engineering texts at the interface between simulation and real-world recommendations.

The article argues that careful calibration of epistemic modality is a central mechanism of responsible scientific communication, particularly under the Russian-Ukrainian war of aggression, when data are fragmented and yet urgently needed for decision-making. The results have direct implications for teaching academic English and academic integrity in Ukrainian universities and outline directions for further corpus-based, contrastive and computational research on hedging in crisis-affected scholarly communities.

Keywords: hedging, epistemic modality, academic discourse, scientific politeness, wartime academic writing.

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ГЕДЖИНГ І ЕПІСТЕМІЧНА МОДАЛЬНІСТЬ В АКАДЕМІЧНОМУ ДИСКУРСІ: ЛІНГВІСТИЧНІ МАРКЕРИ ОБЕРЕЖНОСТІ ТА НЕКАТЕГОРИЧНІ ТВЕРДЖЕННЯ

Анотація. У статті досліджується, як компактний набір епістемічних маркерів – *might*, *could*, *suggest*, *appear to* – функціонує як лінгвістичний інструментарій геджування в англомовному академічному дискурсі, з особливим акцентом на наукові статті, авторами яких є українські дослідники в умовах воєнного часу. Дослідження спирається на невеликий, спеціально сформований корпус англомовних публікацій із трьох дисциплінарних кластерів – прикладна лінгвістика та освіта, біологія та науки про життя, електрична інженерія, – розташованих уздовж континууму «м'яких»-«жорстких» галузей знання. Усі статті було проаналізовано за допомогою платформи Sketch Engine, а дослідження спирається на відкриті корпуси англійської мови – насамперед English Web 2021 (enTenTen21) – для виявлення та кількісної оцінки епістемічних уживань цільових маркерів, які далі аналізувалися з огляду на частотність, розподіл за риторичними розділами та функціональне навантаження в переході від емпіричних спостережень до інтерпретативних тверджень.

Отримані результати засвідчують, що чотири маркери не є взаємозамінними, а займають різні позиції на шкалі епістемічної залученості. *Suggest* уживається переважно там, де автори виводять відносно надійні взаємозв'язки зі своїх даних, особливо в розділах Results та Discussion. *Might* і *could* групуються навколо гіпотетичних пояснень, прогнозів та моделювання сценаріїв, позначаючи твердження як правдоподібні, але явно відкриті до перегляду. *Appear to* вказує на посилену обережність, зазвичай у багатофакторних або модельно-залежних контекстах, де ключові змінні неможливо ретельно відстежити та спостерігати. Щільність уживання та типові патерни цих маркерів варіюють залежно від дисципліни: найвищу концентрацію зафіксовано в інтерпретативних, орієнтованих на людину галузях, а нижчу, проте стратегічно важливу – в інженерних текстах на межі між моделюванням і практичними рекомендаціями.

У статті обґрунтовується, що ретельне калібрування епістемічної модальності є центральним механізмом відповідальної наукової комунікації, особливо в умовах російсько-української агресивної війни, коли дані є фрагментованими, але водночас вкрай потрібними для ухвалення рішень. Отримані результати мають безпосередні наслідки для викладання академічної англійської мови та формування академічної доброчесності в українських університетах і окреслюють напрями подальших корпусних,



контрастивних та комп'ютерно орієнтованих досліджень геджування в наукових спільнотах, що зазнали впливу кризових умов.

Ключові слова: геджування, епістемічна модальність, академічний дискурс, наукова ввічливість, академічне письмо в умовах війни.

Academic discourse is expected to perform two tasks that are sometimes in tension: it must present knowledge clearly and assertively, while at the same time acknowledging uncertainty, methodological limitations, and the provisional nature of scientific claims. In written research communication, this balancing act is largely realised through hedging and epistemic modality, which allow authors to distance themselves from categorical statements, indicate degrees of certainty, and signal openness to alternative interpretations. Rather than being a marginal stylistic feature, hedging is central to how scientific communities construct credibility, negotiate disagreement, and maintain an ethos of intellectual honesty and politeness.

For Ukrainian scholars, this issue is particularly salient in the current historical moment. The Russian-Ukrainian war of aggression has foregrounded the consequences of communicative excess, propaganda, and categorical statements that ignore complexity or empirical evidence. In public discourse, such absolutist formulations can legitimise violence and erase lived experience. In contrast, academic discourse is expected to model a different communicative ethics, where claims are justified, sources are traceable, and the limits of available data are explicitly acknowledged. The same social conditions that demand clear and firm naming of aggression and responsibility also require scholars to distinguish carefully between what is demonstrable and what merely appears plausible in the light of incomplete or disrupted data.

The wartime context in Ukraine has also reshaped the conditions under which research is conducted and reported. Data collection is often fragmented by air-raid alerts, displacement, infrastructural damage, and the psychological impact of prolonged danger. In such settings, hedging becomes not a sign of weakness but an indicator of responsible scholarship: it allows authors to present results obtained under non-ideal circumstances without overstating their generalisability. When a study reports that an intervention might improve learning outcomes in bomb shelter classrooms, or that preliminary findings could suggest a shift in students' linguistic practices under martial law, these modal choices signal both epistemic caution and respect for future research that may confirm, refine, or challenge these early insights.

Within the broader field of discourse analysis, hedging has been described as a key feature of academic writing that manages the interpersonal dimension of scientific communication while encoding the writer's epistemic stance. Modal



verbs and related expressions such as "might", "could", "suggest", and "appear to" are among the most frequent linguistic resources used to express such non-categorical claiming. They indicate that the proposition is not being presented as an unquestionable fact, but as a hypothesis, interpretation, or inference that remains open to revision. At the same time, these items function as markers of scientific politeness: they mitigate potentially face-threatening acts such as contradicting previous research, challenging established theories, or describing methodological shortcomings.

Despite extensive work on hedging in English academic writing, relatively little attention has been paid to the fine-grained analysis of specific modal items as tools for calibrating the strength of claims, especially in contexts of crisis and disruption. Much of the existing literature treats hedging as a broad category that includes a wide range of devices, from modal verbs and adverbs to vague quantifiers and conditionals. While such overviews are valuable, they may obscure the nuanced differences between individual markers. For instance, "might" often encodes a relatively low degree of likelihood, whereas "could" tends to project a somewhat stronger potential or a hypothetical scenario. The verb "suggest" allows authors to attribute interpretative work to the data or the analysis rather than to their personal opinion, while "appear to" foregrounds the indirect or mediated nature of the evidence on which a conclusion is based. These distinctions are especially important in research reports where the robustness of the data is shaped by wartime conditions.

English also functions as the primary language of international academic communication, including for Ukrainian researchers who publish in international journals or contribute to multinational projects. For non-native users of English, mastering the pragmatic and epistemic functions of hedging is not trivial. Transferring patterns from Ukrainian, where other resources may be used to signal caution or politeness, can lead either to underuse, resulting in overly categorical statements, or to overuse, which may make texts sound vague, evasive, or unnecessarily tentative. In a context where Ukrainian scholars are increasingly visible in international debates on war, security, reconstruction, and education under fire, the ability to choose and interpret hedging devices appropriately becomes part of both linguistic competence and academic agency.

Against this background, the present article focuses on hedging and epistemic modality in academic discourse, with particular attention to a small but highly productive set of linguistic markers: "might", "could", "suggest", and "appear to". The aim is to examine how these items are used to encode caution and non-categorical claiming in English-language research articles, including texts produced by Ukrainian authors working under conditions of war. The analysis seeks to clarify the specific epistemic values associated with each marker,



their distribution across different sections of research articles, and their role in managing the interpersonal dimension of scientific communication.

The study addresses the following questions. First, in what structural positions and discourse contexts do the markers "might", "could", "suggest", and "appear to" most frequently occur in academic texts, and how do these positions contribute to their hedging function. Second, how do these markers encode different degrees and types of epistemic caution, such as tentative interpretation of findings, limited generalisability, or conditional implications. Third, in what ways do these items participate in scientific politeness, for example when referring to previous studies, presenting critical observations, or formulating recommendations under conditions of incomplete or unstable data, as is often the case in wartime research settings.

By focusing on a limited set of modal items, the article aims to contribute to a more precise description of how epistemic stance is linguistically encoded in academic discourse and how this encoding interacts with the ethical and interpersonal norms of the scientific community. For Ukrainian linguists and educators, such insights can inform the teaching of academic English to students and early career researchers who are learning to write under unprecedented social and institutional pressures. More broadly, the analysis offers a lens through which to view scientific writing as a practice of responsible communication in times when categorical assertions in the public sphere may have lethal consequences, while carefully hedged academic claims can help preserve a space for evidence-based discussion, doubt, and gradual knowledge building.

Problem statement and its relation to key scientific and practical tasks

Although hedging and epistemic modality have been widely recognised as characteristic features of academic discourse, the phenomenon remains insufficiently specified at the level of individual linguistic markers and their context-dependent functions. Much of the existing scholarship treats hedging as a broad category, placing modal verbs, stance verbs, adverbs, vague quantifiers, and conditional constructions under the same analytical umbrella. While such approaches are valuable for mapping the general landscape of academic caution, they often obscure the subtle but crucial differences between specific items such as might, could, suggest, and appear to. As a result, the actual repertoire of linguistic resources available to writers for calibrating the strength of claims, signalling tentativeness, or managing interpersonal relations in scientific texts is not yet described with the granularity required for precise theoretical modelling or pedagogical intervention.

This lack of specificity becomes particularly problematic in the context of English as an additional language, where writers cannot rely on implicit native-speaker intuitions about the pragmatic weight of different hedging devices. For



Ukrainian researchers who are increasingly integrated into international academic communication, the challenge is twofold. On the one hand, they are required to produce texts that conform to the conventions of Anglophone academic discourse, including its expectations of calibrated, non-categorical claiming. On the other hand, they operate in a sociopolitical environment marked by war, where public discourse often demands clear, unhedged naming of aggression, occupation, and responsibility. The tension between these two communicative regimes creates a need for a refined understanding of when and how hedging should be applied: where it protects scientific integrity by acknowledging uncertainty, and where excessive tentativeness may unintentionally weaken legitimate claims or obscure urgent realities. The wartime situation also highlights a more general scientific problem: how to describe and teach responsible epistemic behaviour in conditions where data are unstable, access to participants is irregular, and research designs must be adapted to constant disruption. In such circumstances, the temptation to overstate the reliability or generalisability of findings may be particularly strong, given the emotional and institutional pressures to demonstrate impact and resilience. At the same time, categorical formulations based on fragile evidence are especially risky, as they may guide policy, educational interventions, or public understanding in directions that cannot be sustained by the empirical base.

From a linguistic standpoint, this problem is connected with several broader scientific tasks. First, it concerns the need to refine models of stance and evaluation in discourse analysis by specifying the contribution of individual modal forms rather than treating hedging as an undifferentiated category. A detailed account of how *might*, *could*, *suggest*, and *appear* to distribute across rhetorical sections of research articles and across types of propositions can inform more accurate descriptions of academic register and its variation. Second, it relates to ongoing efforts in pragmatics to understand how speakers and writers manage face, politeness, and alignment in expert communication. Scientific politeness is not reducible to courtesy formulas; it is embedded in the micro-choices that determine whether a claim is presented as established, probable, possible, or merely plausible, and whether criticism is formulated as confrontation or as a carefully hedged invitation to reconsider evidence.

From a practical perspective, the problem is directly linked to urgent tasks in academic literacy and research training in Ukraine. As universities operate under martial law, with students and staff studying and working from frontlines, occupied territories, and host communities across Europe, the capacity to produce clear yet cautious research writing in English becomes part of the country's intellectual resilience. Precise knowledge of how particular modal markers function in non-categorical claiming can serve as a basis for designing teaching materials, feedback strategies, and self-assessment tools that support early career



researchers. It can also contribute to institutional policies on academic integrity, where the line between legitimate hedging, strategic vagueness, and misrepresentation of results needs to be articulated in concrete linguistic terms rather than only in abstract ethical guidelines.

Analysis of recent research and publications

Research on hedging and epistemic modality in academic discourse builds on classical work [1] by Lakoff, Salager-Meyer and Hyland, who showed that hedges are central resources for managing fuzzy concepts, textual organisation and stance in scientific articles. More recent studies across disciplines confirm [2] that hedging and boosters jointly shape epistemic stance and scientific politeness, with discipline-specific profiles in fields such as education, engineering and medicine. Diachronic analyses by Hyland and Jiang, Liu and Yang, and others indicate that some hedging devices have declined over recent decades, while others remain stable or increase, reflecting pressures towards greater assertiveness combined with maintained caution. Corpus-based work in applied linguistics shows [3] that hedges function as a disciplined repertoire rather than random "softeners" and that their distribution correlates with perceived credibility and maturity of argumentation in both expert and student writing. Studies of epistemic lexical verbs and modal verbs, including research on *may*, *might* and *could* in L1 and L2 academic writing, reveal that these forms are not interchangeable but encode distinct degrees of commitment and politeness, and that learners often mis-distribute them (e.g. Szczygłowska, 2022; Hollmann et al., 2024; Xie, 2025).

Ukrainian and Central-Eastern European scholars have highlighted hedging as a key competence for international integration, documenting [4, 5, 6] how English-language medical and linguistic texts from the region negotiate approximation, politeness and cross-linguistic differences in signalling uncertainty (e.g. Lysanets & Bieliaieva, 2020; Ivanytska & Paslavaska, 2024; Aksjutina, 2021). At the same time, work on hedging in Ukrainian contexts links mitigation not only to textual convention but also to broader processes of higher education reform, Europeanisation and the need to navigate overlapping academic cultures during war and social transformation. Computational and corpus-driven approaches now attempt to detect epistemic stance automatically, but they still tend to group diverse items into broad categories such as "hedges" or "evidentials," leaving the pragmatic nuances of specific markers underexplored.

Despite this substantial body of work, several aspects of the general problem remain insufficiently addressed and are directly relevant for the present article. First, while many studies include modal verbs and epistemic lexical verbs among hedging devices, relatively few focus specifically on the micro-level semantics and usage patterns of a small set of high-frequency markers – such as *might*, *could*, *suggest* and *appear to* – across different sections and genres of academic discourse.



These items are often treated as functionally equivalent "markers of tentativeness," although corpus evidence suggests that they encode distinct degrees and types of epistemic commitment, as well as different politeness and face-management strategies. Second, existing research on Ukrainian academic writing in English mostly addresses hedging in medical or engineering discourse in general, without isolating those markers that are particularly important for signalling non-categorical claiming in high-stakes contexts, such as wartime research on security, energy resilience or public health. Third, the intersection of hedging, epistemic modality and scientific politeness under conditions of permanent risk has not yet been systematically explored. In particular, there is a lack of studies that examine how authors calibrate their claims so as to remain truthful and transparent about uncertainty while avoiding both propagandistic over-certainty and paralyzing ambiguity. The present article therefore builds on the theoretical and empirical foundations outlined above but narrows the focus to a detailed analysis of selected epistemic markers – *might*, *could*, *suggest* and *appear to* – in English-language academic discourse. By combining functional-semantic analysis with corpus evidence from texts produced by Ukrainian and other authors working in war-affected and high-risk settings, the study seeks to clarify how these markers operate as tools of scientific politeness and caution, how they distribute across rhetorical moves, and how their use may shift under conditions where the consequences of being wrong are not merely academic but directly affect human security. In doing so, the article addresses the identified gaps and contributes to a more fine-grained understanding of hedging and epistemic modality as linguistic mechanisms that help scholars formulate responsible, non-categorical claims in times of profound uncertainty.

The purpose of this article is to examine how the epistemic markers *might*, *could*, *suggest* and *appear to* function as linguistic tools of hedging in English academic discourse, encoding caution and non-categorical claiming. The study aims to provide a fine-grained description of their semantic and pragmatic profiles across rhetorical sections of research articles, with particular attention to texts produced by Ukrainian and other scholars working under war-affected and high-risk conditions.

The main material of the study focuses on how a small set of recurrent lexical patterns – *might*, *could*, *suggest*, *appear to* – structure epistemic stance in contemporary academic prose and help authors avoid categorical conclusions while still making their claims actionable.

In the present analysis, hedging is treated as an interactional and ethical device rather than a mere stylistic ornament. This is particularly salient for Ukrainian researchers writing during the Russian-Ukrainian war of aggression, when empirical data are fragmentary, conditions change rapidly, and any

overconfident statement about education, mental health or social resilience can have practical consequences for policy and institutional decisions.

Among the most frequent hedging devices also are:

- ✓ modal verbs and verbs with modal meaning: *believe, guess, feel, reckon, suppose, think, imagine*;
- ✓ nominal constructions: *there is a possibility, the thing is*;
- ✓ adverbs: *quite, really, relatively, necessarily, just, only, of course, actually, kind of, sort of, maybe*;
- ✓ passive constructions: *It is widely recognized that, It is believed that, It is known that*;
- ✓ indirect questions carrying modality: *And would you have thought you were very close to him?* (cf. *And were you very close to him?*);
- ✓ double negation: *It's not that I am not afraid*;
- ✓ evaluative subordinate clauses: *You got them to do this cross-group reporting, which was a good idea, but the time was the problem*.

Taken together, these forms provide speakers and writers with a flexible toolkit for adjusting the strength of their claims and for aligning scientific communication with norms of caution, politeness and interpretive openness.

The analysis relies on open-access corpora of English, primarily the English Web 2021 (enTenTen21), and uses linguistic software tools such as Sketch Engine. In total, 93 research articles were examined during the research using Sketch Engine. A first quantitative overview shows clear disciplinary differences in the density of epistemic hedging. When normalised per 1 000 words, markers of the type under investigation are most frequent in Applied Linguistics and Education, less frequent in Biology and Life Sciences, and comparatively rare in Electrical Engineering. In the softest field, occurrences of *might, could, suggest* and *appear* reach approximately 26.34 tokens per 1000 words, whereas Biology papers display around 11.03 tokens and Electrical Engineering articles around 9.01. Although the exact numbers differ from those reported in earlier cross-national studies, the overall gradient remains similar: the more interpretive and context-dependent the disciplinary object, the more systematically writers mobilise these markers to calibrate their claims.

Table 1

**Disciplinary distribution of epistemic modality markers
(might, could, suggest, appear) per 1 000 words**

Discipline	Knowledge domain type	Frequency	Relative density of epistemic hedging
Applied Linguistics and Education	Soft, highly interpretive, human-facing	26.34	High



Discipline	Knowledge domain type	Frequency	Relative density of epistemic hedging
Biology and Life Sciences	Intermediate, empirically grounded	11.03	Medium
Electrical Engineering	Hard, technical, model driven	9.01	Low

Source: Created by authors

Closer inspection of the Applied Linguistics and Education subcorpus reveals dense clusters of epistemic marking especially in sections where authors interpret small-scale empirical data or position their findings in relation to international literature. Typical patterns include formulations such as “*the results might suggest that students’ engagement is mediated by task authenticity*” or “*these preliminary data could indicate a shift in learners’ preferences towards digital resources under wartime conditions*”. In such cases, *might* and *could* explicitly frame the authors’ statements as hypotheses grounded in the data but open to revision, which is particularly appropriate given the unstable teaching environments and fragmented samples characteristic of wartime Ukraine. The verb *suggest* frequently appears in combinations like “*our findings suggest that microlearning formats can help stabilise vocabulary growth despite frequent interruptions*”, functioning as an evidential bridge between quantitative measures and pedagogical interpretation.

Finally, *appear to* is used more sparingly, typically in constructions such as “*the pattern appears to be driven by students’ access to stable internet connections*”, marking an additional layer of caution where explanatory variables cannot be fully controlled.

In the Biology and Life Sciences subcorpus, the same four markers perform partly overlapping but discipline-specific functions. Experimental papers on, for example, stress physiology or immunological responses of Ukrainian populations under displacement conditions tend to rely on *suggest* and *could* when extrapolating beyond strictly observed effects. Authors write that “*the observed changes in cytokine profiles suggest a cumulative impact of chronic stress and disrupted medical care*” or that “*these findings could point to specific risk groups requiring targeted interventions*”. Here *suggest* indexes relatively strong, data-based interpretations, while *could* marks projections that depend on further confirmatory work. In studies using modelling or secondary data, *appear to* is more frequent, as in “*the association appears to weaken when controlling for pre-war health indicators*”, which signals that the identified pattern may be sensitive to model specifications. *Might* is used in particularly cautious contexts, for instance when indicating possible, but not yet verified, mechanisms behind observed biomedical trends.



Electrical Engineering texts, including research on energy systems, materials and infrastructure resilience, display lower overall frequencies of these markers but they remain salient at the interface between computation and practical recommendation. When authors move from simulation outputs to statements about real-world performance in damaged grids or protective structures, they typically introduce epistemic modality: “*the proposed configuration could reduce thermal losses in emergency supply schemes*” or “*the calculated stress distribution might indicate critical points in bridge elements exposed to repeated shelling*”. In such passages, *could* and *might* signal that model-based predictions are contingent on parameter choices and operational conditions which are difficult to reproduce exactly during war. *Suggest* and *appear to* are encountered where engineers cautiously generalise from limited experimental series, for example “*the test results suggest that the modified alloy retains acceptable performance at lower maintenance intervals*” or “*the degradation pattern appears to correlate with blackout frequency*”, again foregrounding the provisional status of the inference.

Across the corpus, the distribution of *might*, *could*, *suggest* and *appear* confirms that these markers occupy distinct positions on a continuum of epistemic commitment. *Suggest* tends to be used where authors feel entitled to infer a relatively robust relationship from their data, particularly in the Results and Discussion sections. *Might* and *could* dominate in contexts involving scenarios, possible mechanisms or projections, where the evidence is compatible with several competing explanations. *Appear to* typically signals enhanced caution, often in multi-factorial analyses or in studies where key variables cannot be fully observed, which is frequently the case in wartime settings. The combination of these markers thus allows Ukrainian scholars to construct claims that are strong enough to inform educational policy, biomedical strategies or engineering decisions, yet sufficiently qualified to respect limitations of data collected under air raids, displacement and infrastructural instability.

The justification of the scientific results in this section is therefore twofold. First, the corpus-based illustrations from recent peer-reviewed work in education, psychology, economics and banking supervision demonstrate that the four markers under consideration are systematically used at precisely those discourse points where authors transition from empirical description to interpretive inference. Second, the semantic and pragmatic analysis of these markers shows that they jointly encode a fine-grained scale of epistemic caution, from relatively strong but still non-final results *suggest* that to highly tentative *might suggest* and *appear to*. Mapping this scale onto the realities of war-time academic production in Ukraine highlights how linguistic choice becomes part of a broader infrastructure of responsible knowledge-making: by carefully calibrating



modality and hedging, researchers protect readers from treating provisional, crisis-produced findings as timeless truths, while still contributing to urgently needed discussions of resilience, recovery and reform.

The conclusions of this study can be summarised at several levels. First, the analysis of Ukrainian-authored research articles confirms that *might*, *could*, *suggest* and *appear to* form a compact yet highly flexible repertoire of epistemic markers that systematically encode caution and non-categorical claiming in English academic discourse. These markers are not interchangeable: *suggest* is typically used where authors infer relatively robust relationships from their data, *might* and *could* cluster around hypothetical explanations and projections, and *appear to* highlights particularly fragile or model-dependent inferences. Together they provide writers with a graded scale of commitment that allows them to move from numerical results to verbal claims without overstating what the evidence can legitimately support.

Second, the distribution of these markers across disciplines reflects the nature of the underlying knowledge and methods, with the highest density of hedging in applied linguistics and education, intermediate levels in biology and life sciences, and the lowest frequencies in electrical engineering. In engineering texts, however, these markers remain crucial where authors extrapolate from simulations and laboratory tests to real-world performance in unstable, war-affected environments. This confirms that epistemic modality is sensitive both to disciplinary cultures and to the stability of the phenomena under investigation.

Third, the wartime context of Ukraine gives these linguistic patterns a particular ethical weight, because researchers work with fragmented data, shifting populations and damaged infrastructure while their findings inform policy, medical and engineering decisions. Under such conditions, careful hedging is not indecision but a safeguard against both propaganda-like certainty and paralysing vagueness.

Fourth, the study has practical implications for academic literacy and research training. The documented patterns have practical implications for academic literacy and research training, since they can underpin explicit instruction on how specific hedging forms align with particular rhetorical moves in academic English. In this way, epistemic modality contributes to a broader culture of intellectual honesty and academic integrity in Ukrainian higher education.

Prospects for further exploration in this direction are substantial. At the empirical level, future research could expand the corpus to include a larger number of disciplines and journals, allowing for more fine-grained statistical modelling of how hedging varies across fields, genres and types of study design. A diachronic perspective – for example, comparing articles published before 2014, after the first



phase of aggression, and after the full-scale invasion – would make it possible to trace whether and how epistemic practices shift in response to escalating crisis and internationalisation.

It would also be valuable to contrast expert writing with student theses and conference papers, in order to identify typical overuse or underuse of modality among novice authors in Ukraine.

From a comparative angle, the relationship between English-language hedging and parallel strategies in Ukrainian-language academic texts is an important open question. Systematic contrastive analysis could reveal whether writers rely on different lexical or syntactic means to show caution in Ukrainian, and how this influences transfer when they write in English. Another fruitful line of work would integrate corpus linguistics with interviews or reflective protocols, asking Ukrainian scholars to comment on their own use of might, could, suggest and appear to when writing about war-related topics. Such mixed-method designs would connect observable textual patterns with the underlying epistemic norms and anxieties of a research community under pressure.

Finally, there is clear potential for collaboration with computational linguistics. Automatic detection and classification of epistemic markers in Ukrainian-authored English could support large-scale monitoring of epistemic stance in publications, grant reports or policy briefs. At the same time, insights from this study can help refine annotation schemes and machine learning models so that they do not treat all hedges as a homogeneous category, but recognise the functional differences between markers like suggest and appear to. In combination, these prospective studies would deepen our understanding of hedging and epistemic modality as central mechanisms of responsible knowledge-making in Ukraine and provide transferable insights for other societies conducting research under conditions of conflict, disruption and accelerated change.

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