

Investigating Methodological Trends of Hedging Strategies in Academic Discourse: A Systematic Literature Review

Zhujun Deng^{1,2}, Afida Mohamad Ali¹ & Zaid Bin Mohd Zin¹

¹ Faculty of Modern Languages and Communication, Universiti Putra Malaysia, Selangor, Malaysia

² International Education School, Qiqihar Medical University, Qiqihar, Heilongjiang, China

Correspondence: Afida Mohamad Ali. Faculty of Modern Languages and Communication, Universiti Putra Malaysia, Selangor, Malaysia.
E-mail: afida@upm.edu.my

Received: November 24, 2024

Accepted: February 6, 2025

Online Published: April 17, 2025

doi:10.5430/wjel.v15n5p322

URL: <https://doi.org/10.5430/wjel.v15n5p322>

Abstract

This systematic literature review investigated the methodological trends regarding hedging strategies in academic discourse from 2014 to 2023. A total of 40 peer-reviewed empirical studies were analyzed, focusing on aspects such as publication year, regional participation, sample size, genre type, research design, category, discipline, section, and analytical framework. The review revealed a fluctuating interest in hedging strategies, peaking in 2023, with significant contributions from Asia and Europe. Research articles dominated the genre types, reflecting a preference for standardized and accessible formats. Mixed methods were the most common research design, followed by quantitative and qualitative approaches. Mono-disciplinary studies were prevalent, highlighting detailed analyses within specific fields, whereas cross-disciplinary, cross-cultural, cross-linguistic and cross-generic studies emphasized comparative approaches. The research spanned both hard and soft sciences, with applied linguistics and chemistry being notably represented. Comprehensive examinations of all sections of academic texts, particularly the discussion section, were frequent. Established frameworks, primarily those by Hyland (1998) and Salager-Meyer (1994), were commonly utilized, underscoring their influence. This review highlighted the need for more cross-disciplinary and cross-generic analyses and the development of comprehensive frameworks to enrich the understanding of hedging strategies in academic writing. Future research should expand cross-disciplinary, cross-cultural, and regional analyses, develop new frameworks, explore emerging genres, integrate technology, diversify methodologies, and address geographical disparities to broaden the global understanding of hedging in academic discourse.

Keywords: hedging strategies, academic discourse, systematic literature review, methodological trends

1. Introduction

Swales (1990) defined a genre as a class of communicative events that share communicative purposes, which were manifested in the genre's rhetorical structure. This structure aligns with socially recognized purposes, enabling the community to fulfill private intentions. Within this framework, academic discourse, a critical genre, includes both written texts and spoken interactions. In recent decades, discourse analysis has increasingly focused on the concept of community, especially in understanding how individuals write, use, and respond to specific genres. Hyland (2004) argued that community and genre mutually defined and constructed each other, providing a framework for understanding how meanings were socially formed and influenced by external forces. These forces shaped objectives, established interactions, and ultimately influenced writing practices.

Meta-discourse refers to the linguistic devices writers use to organize their discourse, engage readers, and convey their stance toward the content. This approach includes elements such as transitions, frame markers, endophoric markers, evidentials, code glosses, hedges, boosters, and attitude markers (Hyland, 2005). Meta-discourse is crucial in academic writing as it helps writers structure their arguments, guide readers through the text, and establish a relationship with their audience. Hedges, or hedging, is a critical aspect of meta-discourse in academic writing. Lakoff (1973) first introduced hedges, defining them as "words that can make things much fuzzier or less fuzzy" (p. 341). Hedges serve as a strategy for expressing uncertainty, caution, and politeness (Jovic et al., 2023; Mulatsih, 2008). Due to various limitations, some writers may not provide the most accurate information. Instead, they may use hedges as a strategy to express their stance on a particular subject, present their claims tentatively, acknowledge the limitations of their research, and mitigate the potential impact of their statements on readers (Livyt'ska, 2019). This approach allows scholars to avoid making absolute statements while providing readers with a sense of precision and objectivity. Skilled writers effectively use hedges of varying degrees to achieve their writing goals (Channell, 2001). Hyland (1996) emphasized the importance of hedging in academic writing, noting that novice writers often struggle with hedging appropriately, which can hinder their ability to conform to academic conventions and engage effectively with the research community. Consequently, the significance of hedging, both as an academic convention and as a marker of humility, moderation, and cautious linguistic production, has been established by numerous scholars in academic writing and meta-discourse studies (e.g., Abdollahzadeh, 2019; Boginskaya, 2023; Yu & Wen, 2022).

Despite the significance of hedging strategies in academic analysis, no comprehensive systematic review has been conducted in this field. It is crucial to critically analyze the existing literature to understand current knowledge and identify future research directions. To address this gap, this study proposes a systematic literature review (SLR) focusing on the study of hedges in academic discourse, including research contexts, categories, designs, disciplines, and frameworks. By examining the research methodologies used in these studies, the review aims to improve the design and planning of future research. To achieve this goal, the study will explore two key research questions:

RQ1: What is the research trend of existing studies on hedging strategies?

RQ2: What are the research methodologies of existing studies on hedging strategies?

The following section details the methodology employed in the current study. The results section presents the findings of the reviewed studies. Subsequently, the discussion section analyzes the research gaps identified from the findings and suggests directions for future research.

2. Method

SLRs supply an exhaustive summary of the literature based on particular research questions, facilitating the presentation and synthesis of research findings (Adams et al., 2016; Durach et al., 2017). An SLR was performed in this paper to examine existing studies on hedging strategies in academic discourse from 2014 to 2023, along with identifying potential research gaps for further investigation. A widely recognized method for SLRs across various academic fields was employed by following the PRISMA (2020) model, which includes three phases: identification, screening, and eligibility, as detailed in the following sections.

2.1 Identification

As depicted in Figure 1, this systematic literature review mainly used two databases in the current study: Scopus and Web of Science (WoS). WoS was chosen because it is the leading index database in academia with advanced search capabilities and excellent article quality (Falagas et al., 2007). Scopus is known for its accurate document categorization and advanced metadata analysis (Baas et al., 2020). This database also provides broader coverage than WoS, particularly in the social sciences (Chadegani et al., 2013). The search, which included key terms such as “hedge” OR “hedges” OR “hedging” AND “research articles” OR “thesis” OR “dissertation” OR “academic writing”, collected 1127 articles that were open accessed from the databases.

2.2 Screening

The screening phase of the study focused on removing duplicate or irrelevant articles. In the first stage, 45 articles were discarded due to duplication. The remaining 1082 articles underwent evaluation based on specific criteria, shown in Table 1, set by the researchers. These criteria included the publication time, limiting the review to articles published from 2014 to 2023. This period captures the latest methodological trends and developments in hedging strategies in academic discourse, providing a contemporary understanding of the topic. Additionally, the study included only research articles with empirical data published in academic journals to ensure rigor and relevance. This approach excludes books, systematic reviews, proceedings, and theses/dissertations, focusing on peer-reviewed empirical research for a more accurate analysis of hedging strategies in academic discourse. To ensure clarity and prevent misunderstandings, the review included only articles written in English. Furthermore, the articles had to align with the study’s focus on hedges or hedging strategies in academic writing. After applying these criteria, 561 articles were excluded, leaving 521 articles for further consideration in the next phase.

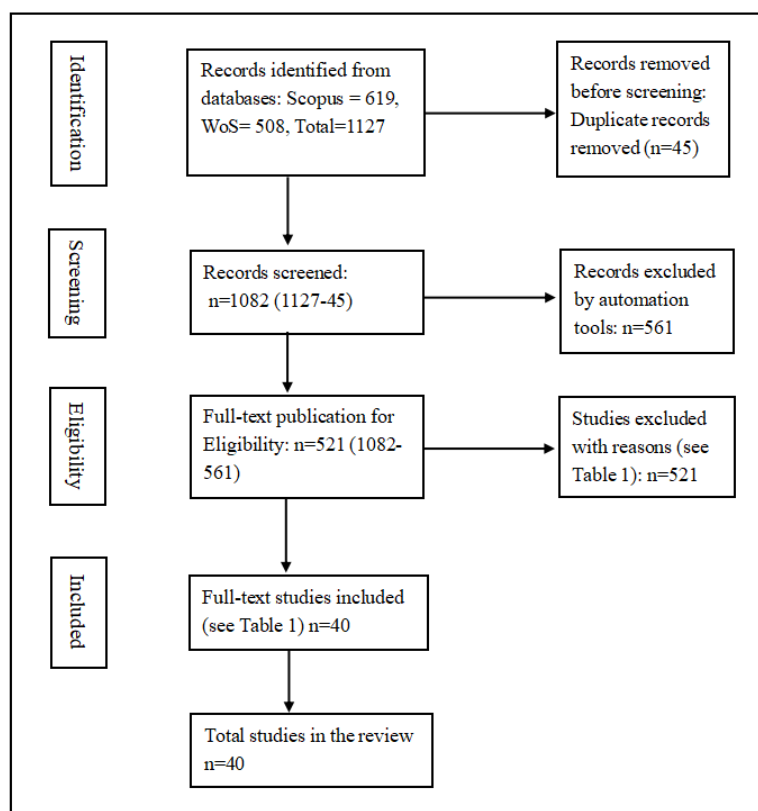


Figure 1. PRISMA flowchart of study selection (adapted from Page et al., 2021).

2.3 Eligibility

The third step involved an eligibility assessment, where two independent reviewers manually evaluated all studies that met the inclusion criteria to ensure they adhered to the specified requirements. Consequently, 481 articles were excluded. This review concentrates solely on hedges, hedging strategies, and hedging practices in academic discourse, aiming for a detailed and specific analysis of these elements. By limiting the scope, the study intentionally avoids broader categories such as meta-discourse, stance markers, and boosters, which could dilute the focus. This targeted approach facilitates a deeper understanding of hedging functions and factors, providing more precise insights into their use in academic discourse. Following this review process, only 40 articles were selected for further evaluation.

Table 1. Inclusion and exclusion criteria

Criteria	Inclusion	Exclusion
Timeline	2014-2023	< 2014
Document type	research articles with empirical data	books, systematic reviews, proceedings, theses/dissertations
Language	English	non-English
Research Fields	Linguistics	non-Linguistics
Scope	studies only focus on hedges, hedging strategy or hedging practice in academic discourse	studies on a broader research object like meta-discourse, stance makers, boosters, etc

2.4 Coding Process and Inter-rater Reliability

Following the eligibility process, the remaining studies were thoroughly examined to address the research questions. This analytical process began with an initial review of the abstracts, followed by a comprehensive reading of the entire articles. Key information was extracted and organized into a Microsoft Excel database, encompassing various critical aspects of each study. These aspects included (1) year of publication, (2) geographical location, (3) sample size, (4) genre type, (5) research design, (6) research category, (7) researched discipline, (8) researched section, and (9) analytical framework(s) or model(s) employed in the research.

In this review, two researchers acted as independent coders to analyze the selected studies. They conducted a comprehensive analysis of

the full texts to identify and exclude any studies that did not meet the established eligibility criteria. Cohen's Kappa was used to evaluate the consistency of article selection between the coders, yielding a value of 0.81, which indicates near-perfect agreement. Any discrepancies that arose during the review process were collaboratively resolved by the coders until unanimous agreement was reached.

3. Results

3.1 Research Trend

This section examines the dynamic trends and distribution of the reviewed studies on hedging strategies, focusing on aspects such as publication year, regional participation, sample size, and genre type.

3.1.1 Publication Timeline

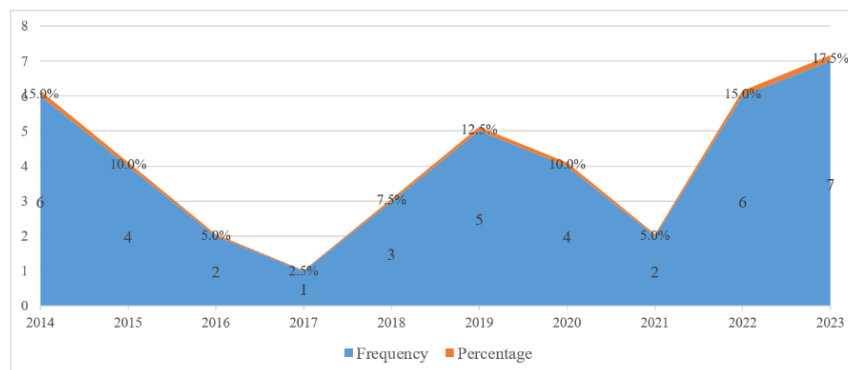


Figure 2. The distribution of publication years

The frequency analysis of the reviewed studies' publication years (see Figure 2) reveals a fluctuating trend from 2014 to 2023. The highest number of publications occurred in 2023 (e.g., Adrian & Fajri, 2023; Yao et al., 2023), with seven studies, representing 17.5% of the total. Both 2014 (e.g., Afshar et al., 2014; Rezaie & Taki, 2014) and 2022 (e.g., Boginskaya, 2022; Tran & Tang, 2022) saw six studies each, accounting for 15% per year. The years 2015 (e.g., Kim & Lim, 2015; Takimoto, 2015) and 2020 (e.g., Varga, 2020; Wiboonwachara & Rungrojsuwan, 2020) had four studies each, making up 10% annually. The frequency dropped in 2016 (e.g., Mirzapour, 2016) and 2021 (e.g., Mur-Dueñas, 2021), with only two studies each year, representing 5%. The lowest publication frequency was in 2017 (Chen & Jun Zhang, 2017), with a single study, accounting for 2.5% of the studies. The intermediate frequencies were observed in 2018 (e.g., Asfina et al., 2018) and 2019 (e.g., Loi & Lim, 2019), with three and five studies respectively, constituting 7.5% and 12.5%. This distribution indicates a growing interest in hedging strategies in academic discourse, peaking in recent years, particularly in 2023.

3.1.2 Publication Distribution by Regions

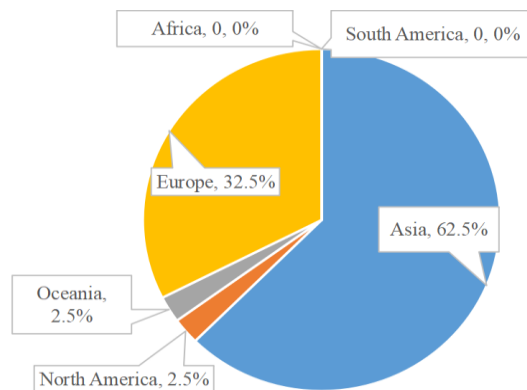


Figure 3. Continent distribution of reviewed studies

According to Figure 3, the continents and countries of the reviewed studies reveal significant geographical disparities. Most studies were conducted in Asia, with a total of 25 studies (62.5%). Notably, Iran led with nine studies, followed by China, Thailand, Malaysia, and Jordan, each contributing two to three studies. Europe accounted for 13 studies (32.5%), with notable contributions from Russia (five studies) and other countries, including the UK, Spain, and Serbia, with each contributing one to two studies. North America and Oceania each had one study (2.5% and 2.5%, respectively), with the United States and New Zealand being the respective contributors. Africa and South America were not represented in the reviewed studies. This distribution indicates a strong research presence in Asia and Europe, highlighting regional research focuses and potential areas for further exploration in underrepresented continents.

3.1.3 Sample Size

The reviewed studies display a varied distribution in sample sizes, as shown in Figure 4. The majority, 17 studies (42%), utilized small sample sizes of fewer than 50. Medium-sized samples, ranging from 51 to 100, were used in 10 studies (25%). Eight studies (20%) had sample sizes between 101 and 300. Larger sample sizes were less common, with three studies (8%) including between 301 and 1000 articles, and only two studies (5%) utilizing over 1000 articles. This distribution highlights a preference for smaller sample sizes in hedging strategy research.

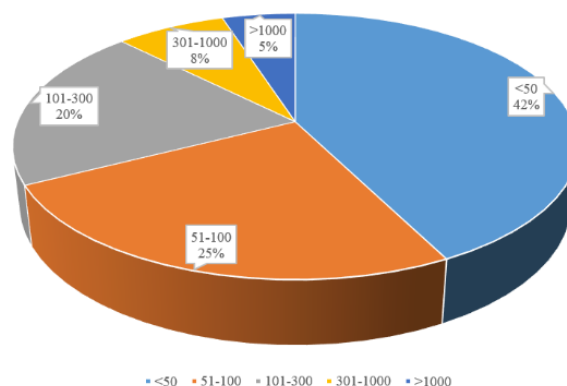


Figure 4. Sample size of reviewed studies

3.1.4 Genre Types

The genre types in the reviewed studies on hedging strategies reveal a dominant focus on research articles (e.g., Boginskaya, 2023; Limnios, 2022; Mirzapour, 2016) with 32 studies (see Figure 5). This high frequency indicates a strong emphasis on empirical research published in academic journals. Other genre types were less represented, with five Master theses (MA theses) (e.g., Lenardič & Fišer, 2021) and two Doctor of Philosophy theses (PhD theses) (e.g., Rezaie & Taki, 2014), Bachelor thesis proposals (e.g., Asfina et al., 2018), and assignments (e.g., Rabab'ah et al., 2022). Additionally, there was one study each focusing on dissertation review (Boginskaya, 2023), Bachelor thesis proposal presentation (Asfina et al., 2018), Bachelor thesis (Lenardič & Fišer, 2021), and PhD defenses (Zainuddin et al., 2019). This distribution reflects a preference for analyzing hedging strategies within formal research articles, likely due to their accessibility and standardized structure, which facilitates comparative analysis.

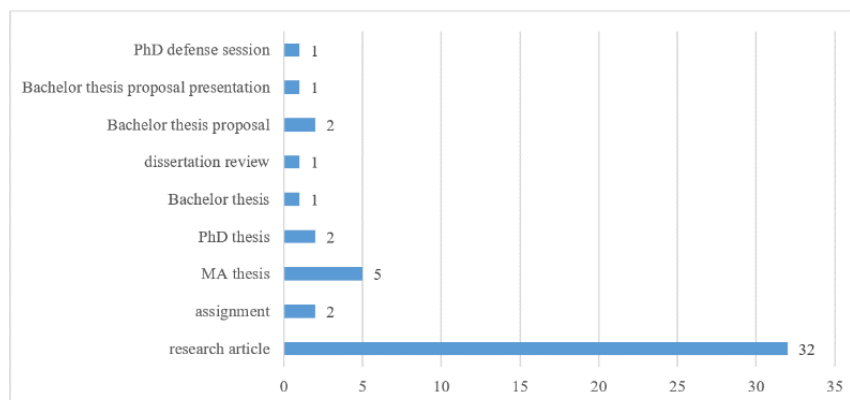


Figure 5. Genre types of reviewed studies

3.2 Research Methodologies

This section presents the results concerning the research design, category, discipline, section, and analytical framework identified in the reviewed studies.

3.2.1 Research Designs

The reviewed studies display a diverse range of research designs, which is shown in Figure 6. Mixed methods dominated, with 16 studies (40%) employing this approach, highlighting the integration of both quantitative and qualitative techniques for comprehensive analysis (e.g., Livytska, 2019; Kozubíková Šandová, 2020). Quantitative designs were the second most common, featured in 10 studies (25%), emphasizing numerical data and statistical analysis (e.g., Ghahraman et al., 2023; Yao et al., 2023). Qualitative research designs were less frequent, with three studies (7.5%) focusing on detailed analysis of textual data (e.g., Kim & Lim, 2015; Varga, 2020). Notably, 11 studies (27.5%) did not specify their research design, indicating a potential area for improvement in reporting standards (e.g., Nguyen Thi Thuy, 2018). This distribution underscores the preference for mixed methods in studying hedging strategies, offering a balanced approach to

understanding complex linguistic phenomena.

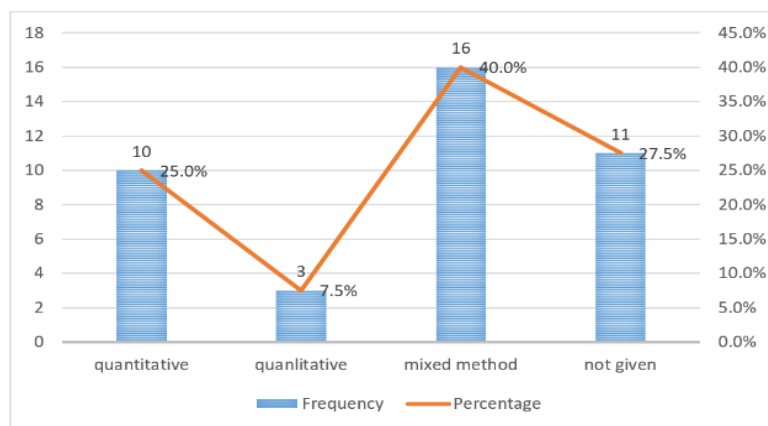


Figure 6. Research designs of reviewed studies

3.2.2 Research Categories

According to Figure 7, the research categories in the reviewed studies reveal a diverse range of foci. Mono-disciplinary studies were the most common, with 25 studies, indicating a strong preference for examining hedging strategies within a single discipline (e.g., Adrian & Fajri, 2023). Cross-cultural studies followed, with 13 studies, highlighting the interest in comparing hedging across different cultural contexts (e.g., Radovanović & Vojnović, 2023). Cross-disciplinary studies were also significant, with 10 studies exploring hedging strategies across multiple disciplines (e.g., Kharidar, 2014). Cross-linguistic studies were represented by eight studies, focusing on hedging in different languages (e.g., Loi & Lim, 2019). There were five cross-generic studies that investigated hedging strategies in different academic genres (e.g., Abdollahzadeh, 2019). Diachronic studies accounted for three studies, examining changes over time (e.g., Boginskaya, 2022). Cross-sectional and cross-empirical each had two studies (e.g., Mur-Dueña, 2021; Wiboonwachara & Rungrojsuwan, 2020), while cross-gender studies were the least common, with only one study (Mirzapour, 2016). As an article may be both cross-linguistic and cross-cultural, the sum of these computations does not correspond to the total of 40 articles. This distribution reflects a robust interest in both single-discipline and comparative approaches to understanding hedging strategies in academic discourse.

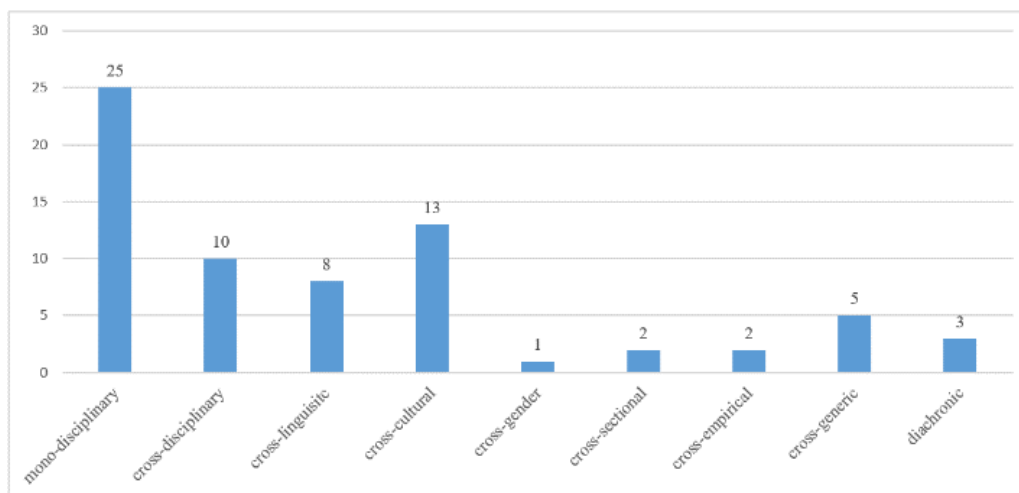


Figure 7. Research categories of reviewed studies

3.2.3 Researched Disciplines

As is shown in Figure 8, the disciplines in the reviewed studies reveal a balanced representation between hard and soft sciences. In total, there were 31 distinct disciplines, with 52% (16 disciplines) categorized as soft sciences and 48% (15 disciplines) categorized as hard sciences.

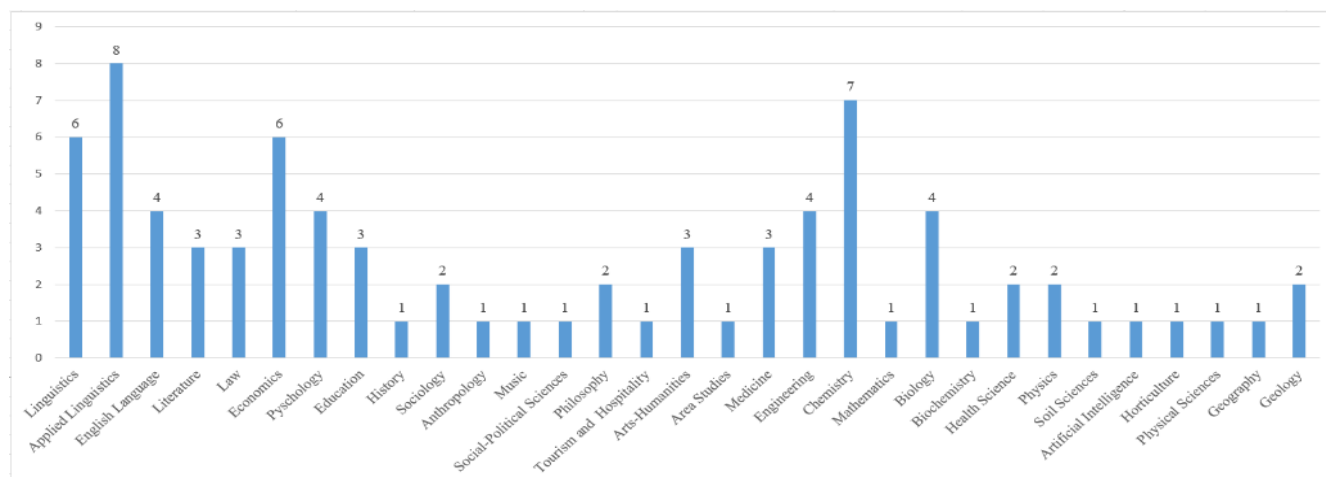


Figure 8. Researched disciplines in reviewed studies

Among the soft sciences, Applied Linguistics led with eight studies, followed by Linguistics and Economics with six studies each. Other notable disciplines included English Language and Psychology with four studies each, and Literature, Law, and Education with three studies each. Additional fields such as Sociology and Philosophy also contributed to the diversity of soft science disciplines. In the hard sciences, Chemistry was the most represented with seven studies, followed by Engineering and Biology with four studies each. Medicine, Physics, and Geology each had two or three studies, while disciplines such as Mathematics, Biochemistry, Soil Science, and others were also included, though less frequently. This distribution highlights the broad interest in hedging strategies across various academic fields. The representation of both hard and soft sciences underscores the interdisciplinary relevance of hedging in academic discourse, pointing to the necessity for further exploration and comparative analysis across different research domains.

3.2.4 Researched Sections

The distribution of the researched sections in the reviewed studies, see Figure 9, reveals diverse focal points. A significant portion, 16 studies (40.0%), examined all sections of academic texts, indicating a comprehensive approach to understanding hedging strategies across entire documents (e.g., Limnios, 2022). Six studies focused on the discussion (15.0%), reflecting its importance in interpreting and qualifying research findings (e.g., Abdollahzadeh, 2019). The abstract (Afshar & Bagherieh, 2014) and combined sections of introduction, methods, results, and discussion (I+M+R+D) (Rezanejad et al., 2015) were the focus of four studies (10.0%), highlighting the critical role these sections play in summarizing and contextualizing research. One study concentrated on results and discussion (R+D) (e.g., Tran & Tang, 2022) and one study focused on conclusions (Chen & Jun Zhang, 2017), emphasizing the need to hedge final interpretations and claims. The other types were less common, with one study (2.5%) each focusing on introductions, methods, background, and the combined sections of abstract, introduction, discussion, and conclusion (A+I+D+C), results, discussion, and conclusions (R+D+C), as well as methods, results, discussion, and conclusion (M+R+D+C). This distribution underscores the varied interest in how hedging strategies are employed throughout different parts of academic writing, with a notable emphasis on comprehensive and critical sections that articulate and interpret research findings.

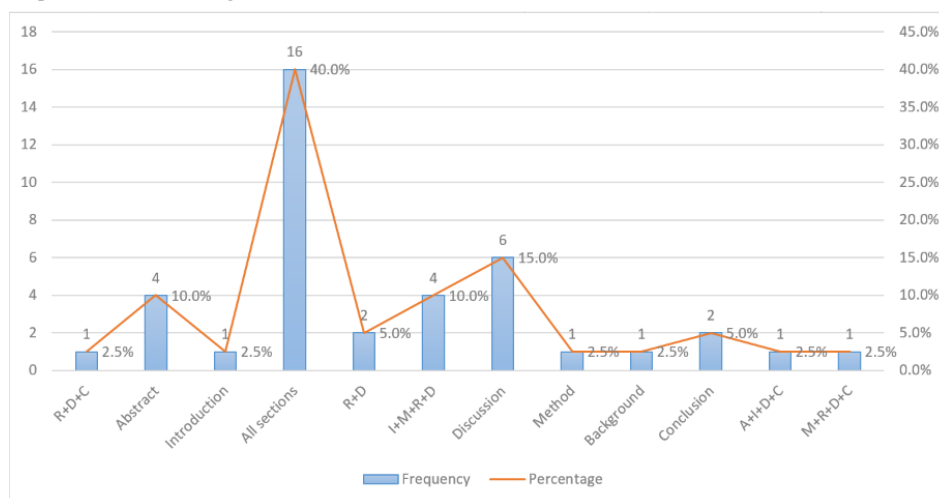


Figure 9. Researched sections in reviewed studies

3.2.5 Research Frameworks

The reviewed studies of this paper reveal a strong reliance on established frameworks. A significant majority, 36 studies (90%), employed specific research frameworks, while only four studies (10%) did not utilize any frameworks. Among the frameworks used (see Figure 10), Hyland's works were prominently featured: Hyland (1998) was the most frequently used in 10 studies, followed by Hyland (2005) and Hyland (1996), which were each employed in seven studies, and Hyland (2018) was applied once. Salager-Meyer's (1994; 1997) frameworks were also notable, with the 1994 work cited in 9 studies and the 1997 work in one study. Varttala's (2001) model was applied in four studies, and the other frameworks were each used only once. This distribution indicates a preference for well-established frameworks, particularly those developed by Hyland (1998) and Salager-Meyer (1994), reflecting their influence and applicability in the study of hedging strategies in academic discourse. Utilizing these frameworks provides a structured approach to analysis, ensuring consistency and comparability across studies.

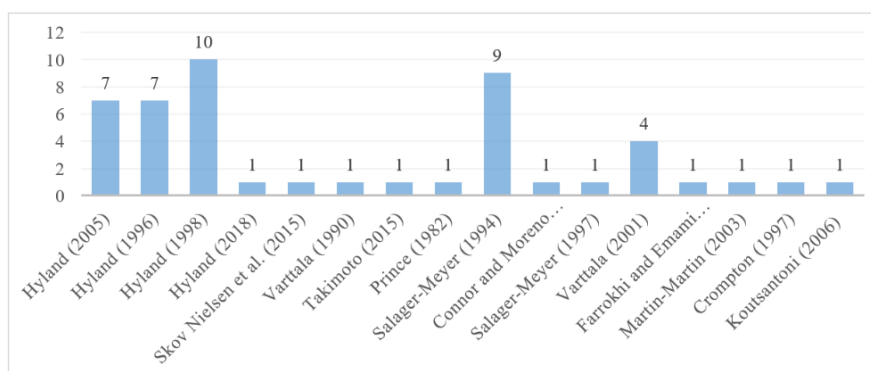


Figure 10. Research frameworks in reviewed studies

4. Discussion

The fluctuating trend in the publication years of studies on hedging strategies may be attributed to several factors. Shifts in academic interest and funding availability likely influenced research activity. Emerging trends and priorities within linguistic and discourse studies could also drive variations. Additionally, the impact of global events, such as the COVID-19 pandemic, may have temporarily diverted research focus and resources. The recent peak in 2023 suggests a growing recognition of the importance of hedging strategies in academic discourse, possibly spurred by advancements in analytical methods or increased awareness of the role of language in scholarly communication.

The geographical distribution of hedging studies is heavily skewed toward Asia and Europe, with minimal contributions from Africa and South America. This disparity is influenced by factors such as strong academic traditions in applied linguistics, institutional funding, and policies emphasizing English proficiency in countries like Iran, China, and Russia. Additionally, research incentives and greater access to high-impact journals contribute to higher output from these regions. In contrast, limited research funding, fewer discourse analysis programs, and restricted journal access may explain the lack of studies from underrepresented regions. This imbalance raises concerns about the generalizability of findings, as cultural and linguistic variations may influence hedging use. To address this gap, future studies should promote cross-regional collaborations and explore hedging strategies in diverse linguistic and cultural contexts, ensuring a more globally representative understanding of academic discourse.

The varied distribution in sample sizes among the reviewed studies can be attributed to several factors. Smaller sample sizes (<50) are prevalent due to the qualitative nature of many linguistic studies (e.g., Loi & Lim, 2019), which often involve detailed, in-depth analysis that is more manageable with smaller samples. These studies frequently aim to explore complex, nuanced aspects of language use, requiring close examination of a limited number of texts. Medium-sized samples (51-300) may reflect a balance between depth and breadth, allowing researchers to generalize findings while still conducting thorough analyses (e.g., Smirnova & Strinyuk, 2020). Larger sample sizes (>300) are less common, likely due to the resource-intensive nature of collecting and analyzing extensive data sets (e.g., Lenardič & Fišer, 2021). Such studies may focus on quantitative methods to identify broader patterns and trends in academic discourse. The distribution underscores the methodological diversity in this field, with choices in sample size driven by research objectives, available resources, and the balance between qualitative and quantitative approaches.

4.1 More Studies on Different Genres

The dominant focus in research articles on studies of hedging strategies is likely due to several reasons. Research articles are readily accessible and widely published, providing a standardized and consistent format that facilitates comparative analysis across studies. Additionally, these articles undergo rigorous peer review, ensuring the quality and reliability of the data. However, exploring hedging strategies in other genres, such as PhD theses, is also necessary. Theses and dissertations are recognized as a genre that connects student-produced coursework papers with research articles that are subject to rigorous peer review processes (Xiao & Sun, 2020). PhD theses often contain extensive and detailed discussions, offering rich data for analyzing hedging strategies in complex arguments. They also reflect early-career researchers' practices, providing insights into the development of academic writing skills. Examining a variety of

genres can reveal how hedging strategies differ based on context and purpose, offering a more comprehensive understanding of their use in academic discourse. This broader approach can inform teaching practices and improve academic writing across different stages and formats.

4.2 More Studies from Diverse Perspectives

The strong preference for mono-disciplinary studies on hedging strategies can be attributed to several factors. Mono-disciplinary research allows for in-depth analysis within a specific field, providing detailed insights into how hedging is used in that particular context. This approach facilitates a focused examination of the conventions, expectations, and norms that shape academic writing within a single discipline. Additionally, researchers may find it easier to access and analyze a more homogeneous set of texts, leading to clearer and more precise findings.

However, exploring hedging strategies from other perspectives, like cross-disciplinary and cross-generic categories, is also essential. Cross-disciplinary studies can reveal how hedging strategies vary across different fields, offering a broader understanding of their functions and implications. This approach can uncover discipline-specific conventions and contribute to developing more effective writing strategies that cater to diverse academic audiences. Similarly, cross-generic studies can provide valuable insights into how hedging is employed in various types of academic texts, such as research articles, theses, and conference presentations. This perspective can help identify commonalities and differences in hedging strategies across genres, enhancing our understanding of how writers adapt their language to meet the specific demands of different academic contexts. Broadening the scope to study hedging strategies from diverse perspectives can thus enrich the field's overall understanding in academic discourse, promoting more comprehensive and nuanced insights.

4.3 More Studies on Diverse Disciplines

This study underscores the need for a balanced exploration of hedging strategies across both hard and soft sciences to highlight disciplinary differences. In soft sciences like Applied Linguistics and Psychology, hedging is commonly used to indicate interpretative openness, acknowledge alternative viewpoints, and maintain academic modesty. Writers frequently employ epistemic modality (e.g., “may”, “might”) and approximators (e.g., “some”, “approximately”) to express uncertainty and flexibility. In contrast, hard sciences such as Chemistry, Engineering, and Medicine use hedging primarily to acknowledge methodological limitations, prevent overgeneralization, and maintain objectivity. Modal auxiliaries (e.g., “can”, “could”) and impersonal constructions (e.g., “It is suggested that...”) are more prevalent, reflecting the need for precision and empirical validation. These differences suggest that hedging strategies are shaped by disciplinary conventions and communicative purposes. A comparative analysis of hedges across fields can provide deeper insights into how scholars from different domains navigate epistemic uncertainty. Understanding these variations helps scholars tailor their rhetorical strategies to align with their respective field's conventions, improving clarity, credibility, and engagement in academic discourse.

4.4 More Cross-sectional Studies

Exploring cross-sectional studies is essential for understanding how hedging strategies vary across different parts of academic texts. For instance, comparing sections like the introduction and conclusion can reveal significant differences in how authors manage uncertainty and convey their stance. In introductions, hedging is often used to present background information and review previous research cautiously, setting a foundation for the study without overcommitting to specific claims. This method helps in establishing a research gap and justifying the study's necessity while acknowledging existing knowledge limitations. In contrast, the conclusions require a different hedging approach. Authors must summarize their findings, often cautiously, to avoid overgeneralization and acknowledge the study's limitations and implications for future research. This approach ensures that conclusions are presented tentatively, maintaining academic rigor and credibility. By examining these variations, cross-sectional studies can provide deeper insights into the strategic use of hedging across different sections, enhancing our understanding of academic writing practices and improving the clarity and effectiveness of scholarly communication.

4.5 More Comprehensive and Persuasive Frameworks

Exploring more comprehensive frameworks is essential for advancing hedging research in academic discourse. While Hyland (1996; 1998; 2005) and Salager-Meyer (1994; 1997) provided foundational models, their dominance may restrict analytical scope. Expanding frameworks to integrate linguistic, cultural, and disciplinary variations can enhance the understanding of hedges across contexts. New models should address existing gaps by incorporating interdisciplinary perspectives and adapting to evolving academic writing conventions. A broader range of frameworks can improve research design, refine academic writing instruction, and inform editorial policies. By fostering innovation and inclusivity, such developments ensure that hedging analyses remain relevant and applicable across diverse research domains.

5. Conclusion

This systematic literature review of hedging strategies in academic discourse analyzed studies from 2014 to 2023, revealing several key trends. The publication timeline showed a fluctuating interest, peaking in 2023 with significant contributions from Asia and Europe, particularly Iran and Russia. The studies predominantly used small sample sizes, with a strong preference for analyzing research articles over other genres. Mixed methods were the most common research design, followed by quantitative and qualitative approaches. Mono-disciplinary studies were the most frequent, emphasizing detailed analysis within specific fields, while cross-disciplinary and

cross-cultural studies highlighted comparative approaches. The research encompassed both hard and soft sciences, with Applied Linguistics and Chemistry being notable fields of interest. The studies frequently examined all sections of academic texts, with a specific focus on the discussion section. Established frameworks by Hyland (1996; 1998; 2005) and Salager-Meyer (1994; 1997) were commonly used, underscoring their influence in this field.

The findings of this review provide valuable practical implications for teaching academic writing and conducting cross-cultural research. Educators can develop targeted instructional materials for English for Academic Purposes (EAP) courses, help students use hedging effectively to balance assertiveness and caution in academic writing. Discipline-specific training is essential, particularly in fields like Engineering and Social Sciences, where hedging practices vary. The study also highlights the need for broader cross-cultural research, encouraging inclusion of underrepresented regions such as Africa and South America. Additionally, integrating corpus linguistics and computational tools into academic writing instruction can enhance students' analytical skills. These insights contribute to improving academic discourse, fostering cross-cultural understanding, and refining frameworks for analyzing hedging in academic writing.

This review has several limitations. First, the study is restricted to articles published between 2014 and 2023, potentially overlooking relevant research outside this timeframe. Second, the inclusion criteria limited the review to English-language articles, which may exclude significant findings from non-English sources. Finally, the focus on peer-reviewed empirical research excluded books, systematic reviews, and theses, possibly omitting valuable insights. Future research should address these limitations to provide a more comprehensive understanding of hedging strategies in academic discourse.

Acknowledgments

We would like to thank every team member for their valuable contributions to the article.

Authors' contributions

The authors confirm contribution to the paper as follows: research conception and design: Zhujun Deng, Associate Prof. Afida and Dr. Zaid; data collection, analysis and interpretation of results: Zhujun Deng, Associate Prof. Afida and Dr. Zaid; draft manuscript preparation: Zhujun Deng. All authors reviewed the results and approved the final version of the manuscript.

Funding

Not applicable

Competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Informed consent

Obtained.

Ethics approval

The Publication Ethics Committee of the Sciedu Press.

The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

Provenance and peer review

Not commissioned; externally double-blind peer reviewed.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

Open access

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

References

- Abdollahzadeh, E. (2019). A cross-cultural study of hedging in discussion sections by junior and senior academic writers. *Ib árica*, 38, 177-202.
- Adams, R. J., Smart, P., & Huff, A. S. (2016). Shades of Grey: Guidelines for Working with the Grey Literature in Systematic Reviews for Management and Organizational Studies. *International Journal of Management Reviews*, 19(4), 432-454.

<https://doi.org/10.1111/ijmr.12102>

- Adrian, D., & Fajri, M. S. A. (2023). Hedging practices in soft science research articles: A corpus-based analysis of Indonesian authors. *Cogent Arts & Humanities*, 10(1), 1-14. <https://doi.org/10.1080/23311983.2023.2249630>
- Afshar, H. S., & Bagherieh, M. (2014). The Use of Hedging Devices in English and Persian Abstracts of Persian Literature and Civil Engineering MA/MS Theses of Iranian Writers. *Procedia - Social and Behavioral Sciences*, 98, 1820-1827. <https://doi.org/10.1016/j.sbspro.2014.03.611>
- Afshar, H. S., Asakereh, A., & Rahimi, M. (2014). The Impact of Discipline and being Native/Non-native on the Use of Hedging Devices. *Procedia - Social and Behavioral Sciences*, 136, 260-264. <https://doi.org/10.1016/j.sbspro.2014.05.325>
- Asfina, R., Kadarisman, A. E., & Astuti, U. P. (2018). Hedges Used By Indonesian EFL Students In Written And Spoken Discourses. *Indonesian Journal of Applied Linguistics*, 7(3). <https://doi.org/10.17509/ijal.v7i3.9815>
- Baas, J., Schotten, M., Plume, A., Côté, G., & Karimi, R. (2020). Scopus as a curated, high-quality bibliometric data source for academic research in quantitative science studies. *Quantitative Science Studies*, 1(1), 377-386. https://doi.org/10.1162/qss_a_00019
- Boginskaya, O. (2022). A diachronic analysis of hedging in non-native authors' research article abstracts. *Cultura, Lenguaje y Representación*, 27, 7-22. <https://doi.org/10.6035/clr.6221>
- Boginskaya, O. A. (2023). Lexical realizations of hedging: A cross-disciplinary study of research article abstracts by Russian authors. *Vestnik of Saint Petersburg University. Language and Literature*, 20(2), 380-396. <https://doi.org/10.21638/spbu09.2023.211>
- Boginskaya, O. A. (2023). Russian lexical and syntactic hedges in dissertation reviews. *Russian Language Studies*, 21(1), 18-32. <https://doi.org/10.22363/2618-8163-2023-21-1-18-32>
- Chadegani, A. A., Salehi, H., Yunus, M. M., Farhadi, H., Fooladi, M., Farhadi, M., & Ebrahim, N. A. (2013). A Comparison between Two Main Academic Literature Collections: Web of Science and Scopus Databases. *Asian Social Science*, 9(5). <https://doi.org/10.5539/ass.v9n5p18>
- Channell, J. (2001). Corpus-based analysis of evaluative lexis. In S. Hunston & G. Thompson (Eds). *Evaluation in text: Authorial stance and the construction of discourse*. Oxford University Press. <https://doi.org/10.1093/oso/9780198238546.003.0003>
- Chen, C., & Jun Zhang, L. (2017). An intercultural analysis of the use of hedging by Chinese and Anglophone academic English writers. *Applied Linguistics Review*, 8(1), 1-34. <https://doi.org/10.1515/applirev-2016-2009>
- Durach, C. F., Kembro, J., & Wieland, A. (2017). A New Paradigm for Systematic Literature Reviews in Supply Chain Management. *Journal of Supply Chain Management*, 53(4), 67-85. <https://doi.org/10.1111/jscm.12145>
- Falagas, M. E., Pitsouni, E. I., Malietzis, G. A., & Pappas, G. (2007). Comparison of PubMed, Scopus, Web of Science, and Google Scholar: Strengths and weaknesses. *The FASEB Journal*, 22(2), 338-342. Portico. <https://doi.org/10.1096/fj.07-9492lsf>
- Ghahraman, V., Karlsson, M., Kazemi, A., Saeedi, S., & Elhami, A. (2023). On the functions of hedging in research articles (RAs): A study on RA discussions. *International Journal of Language Studies*, 17(1), 165-187.
- Hyland, K. (1996). Writing without conviction? Hedging in science research articles. *Applied linguistics*, 17(4), 433-454. <https://doi.org/10.1093/applin/17.4.433>
- Hyland, K. (1998). *Hedging in Scientific Research Articles*. John Benjamins. <https://doi.org/10.1075/pbns.54>
- Hyland, K. (2004). *Genre and second language writing*. University of Michigan Press. <https://doi.org/10.3998/mpub.23927>
- Hyland, K. (2005). Stance and engagement: A model of interaction in academic discourse. *Discourse Studies*, 7(2), 173-192. <https://doi.org/10.1177/1461445605050365>
- Hyland, K. (2018). *Metadiscourse: Exploring Interaction in Writing*. London: Bloomsbury Academic. <http://doi.org/10.5040/9781350063617>
- Jovic, M., Kurtishi, I., & AlAfnan, M. A. (2023). The Persuasive Power of Hedges: Insights from TED Talks. *World Journal of English Language*, 13(5), 200-212. <https://doi.org/10.5430/wjel.v13n5p200>
- Kharidar, F. (2014). A comparison of using hedges in different English academic articles written by Iranian scholars. *Life Science Journal*, 11(6s), 16-29.
- Kim, L. C., & Lim, J. M. H. (2015). Hedging in Academic Writing - A Pedagogically-Motivated Qualitative Study. *Procedia - Social and Behavioral Sciences*, 197, 600-607. <https://doi.org/10.1016/j.sbspro.2015.07.200>
- Kozubková, Šandová, J. (2020). Cross-cultural differences in the use of rhetorical strategies in academic texts. An English and Czech contrastive study. *Linguistica Silesiana*, 41, 177-195. <https://doi.org/10.24425/linsi.2020.133271>
- Lakoff, G. (1973). Hedges: A study in meaning criteria and the logic of fuzzy concepts. *Journal of Philosophical Logic*, 2(4), 458-508. <https://doi.org/10.1007/bf00262952>
- Lenardič, J., & Fišer, D. (2021). Hedging modal adverbs in Slovenian academic discourse. *Slovenščina 2.0: Empirical, Applied and*

- Interdisciplinary Research*, 9(1), 145-180. <https://doi.org/10.4312/slo2.0.2021.1.145-180>
- Limnios, O. A. (2022). Fictionality Markers in Professional Scientific Articles: A New Approach to Hedging. *ESP Today*, 10(2), 245-262. <https://doi.org/10.18485/esptoday.2022.10.2.3>
- Livytska, I. (2019). The use of hedging in research articles on applied linguistics. *Journal of Language and Cultural Education*, 7(1), 35-53. <https://doi.org/10.2478/jolace-2019-0003>
- Loi, C. K., & Lim, J. M. H. (2019). Hedging in the Discussion Sections of English and Malay Educational Research Articles. *GEMA Online Journal of Language Studies*, 19(1), 36-61. <https://doi.org/10.17576/gema-2019-1901-03>
- Mirzapour, F. (2016). Gender differences in the use of hedges and first person pronouns in research articles of applied linguistics and chemistry. *International Journal of Applied Linguistics and English Literature*, 5(6), 166-173. <https://doi.org/10.7575/aiac.ijalel.v.5n.6p.166>
- Mulatsih, S. (2008). Hedges: The Expressions of Doubt and Certainty. *LITE: Jurnal Bahasa, Sastra, Dan Budaya*, 4(2), 73-81.
- Mur-Dueñas, P. (2021). There may be differences: Analysing the use of hedges in English and Spanish research articles. *Lingua*, 260, 1-16. <https://doi.org/10.1016/j.lingua.2021.103131>
- Nguyen Thi Thuy, T. (2018). A Corpus-Based Study on Cross-Cultural Divergence in the Use of Hedges in Academic Research Articles Written by Vietnamese and Native English-Speaking Authors. *Social Sciences*, 7(4), 1-13. <https://doi.org/10.3390/socsci7040070>
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., ... Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *Bmj*, 372. <https://doi.org/10.1016/j.jclinepi.2021.03.001>
- Rabab'ah, G., Jaser, H., & Altakhaineh, A. R. M. (2022). The Use of Hedging Devices by Female Saudi EFL Learners. *The International Journal of Humanities Education*, 20(1), 81-96. <https://doi.org/10.18848/2327-0063/cgp/v20i01/81-96>
- Radovanović, A., & Vuković Vojnović, D. (2023). Hedges in Tourism and Hospitality-Related Research Articles. *British and American Studies*, 29, 209-220. <https://doi.org/10.35923/bas.29.20>
- Rezaie, M., & Taki, S. (2014). Hedging Expressions in English and Persian MA and PhD Theses: The Case of Iranian Learners. *Mediterranean Journal of Social Sciences*, 5(20), 2339-2349 <https://doi.org/10.5901/mjss.2014.v5n20p2339>
- Rezanejad, A., Lari, Z., & Mosalli, Z. (2015). A Cross-cultural Analysis of the Use of Hedging Devices in Scientific Research Articles. *Journal of Language Teaching and Research*, 6(6), 1384-1392. <https://doi.org/10.17507/jltr.0606.29>
- Salager-Meyer, F. (1994). Hedges and textual communicative function in medical English written discourse. *English for Specific Purposes*, 13(2), 149-170. [https://doi.org/10.1016/0889-4906\(94\)90013-2](https://doi.org/10.1016/0889-4906(94)90013-2)
- Salager-Meyer, F. (1997). I think that perhaps you should: A study of hedges in written scientific discourse. *Functional approaches to written text: Classroom applications*, 1, 127-143.
- Smirnova, E., & Strinyuk, S. (2020). Hedges in Russian EAP writing: A corpus-based study of research papers in management. *Journal of English as a Lingua Franca*, 9(1), 81-101. <https://doi.org/10.1515/jelf-2020-2033>
- Swales, J. (1990). *Genre analysis: English in academic and research settings*. Cambridge University Press. <https://doi.org/10.1017/S0272263100011773>
- Takimoto, M. (2015). A corpus-based analysis of hedges and boosters in English academic articles. *Indonesian Journal of Applied Linguistics*, 5(1), 95-105. <https://doi.org/10.17509/ijal.v5i1.836>
- Tran, T. Q., & Tang, T. B. (2022). Hedging in the Results and Discussion Section of English Applied Linguistics Research Articles by Vietnamese and Foreign Writers. *Journal of Language Teaching and Research*, 13(1), 119-124. <https://doi.org/10.17507/jltr.1301.14>
- Varga, M. (2020). Hedging functions of extraposed that-clauses in English and declarative subject da-clauses in Croatian academic writing. *ExELL (Explorations in English Language and Linguistics)*, 8(2), 83-109. <https://doi.org/10.2478/exell-2021-0001>
- Varttala, T. (2001). *Hedging in scientifically oriented discourse. Exploring variation according to discipline and intended audience*. Tampere University Press.
- Wiboonwachara, L., & Rungrojsuwan, S. (2020). Hedging in English research articles of Thai academic writers. *The New English Teacher ISSN 2985-0959 (Online)*, 14(2), 82-98.
- Xiao, W., & Sun, S. (2020). Dynamic lexical features of PhD theses across disciplines: A text mining approach. *Journal of Quantitative Linguistics*, 27(2), 114-133. <https://doi.org/10.1080/09296174.2018.1531618>
- Yao, M., Wei, Y., & Wang, H. (2023). Promoting research by reducing uncertainty in academic writing: A large-scale diachronic case study on hedging in Science research articles across 25 years. *Scientometrics*, 128(8), 4541-4558. <https://doi.org/10.1007/s11192-023-04759-6>
- Yu, Q., & Wen, R. (2022). A corpus-based quantitative study on the interpersonal functions of hedges in Chinese and German academic discourse. *Heliyon*, 8(9), 1-23. <https://doi.org/10.1016/j.heliyon.2022.e10698>

Zainuddin, S. Z., Damiano-Nittoli, A. C., & Zainal, A. Z. (2019). Hedging Functions in Malaysian Doctoral Candidature Defense Sessions. *SAGE Open*, 9(4), 1-13. <https://doi.org/10.1177/2158244019894275>