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Exploring Interpersonal Functions of Negation in Linguistics Research Article Introductions

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ABSTRACT

Researchers often aim to capture readers' attention through the development of introductions that are both engaging and appealing. While prior studies have examined the rhetorical characteristics of introductions in depth, little attention has been drawn to the interpersonal role of negation in introductions. This study seeks to remedy the oversight by exploring how negation functions as an interpersonal resource in research introductions. The study analyzed 70 research article introductions from prestigious linguistics journals (2017–2023). Using an interpersonal model of negation as our analytical framework, we identified negative markers and coded their interpersonal functions. It is found that "not", "no", "little", and "few" are the most frequently used negative markers in introductions. Additionally, in terms of functional uses, expert writers tend to employ interactive negations, with a relatively higher frequency of negative markers that serve as hedging (within the interactional dimension) and as markers of consequence (within the interactive dimension) in their introductions. The analysis also reveals that the choice of negative markers in introductions is a sophisticated process governed by both the intended strength of negation and specific interpersonal purposes. The implications of these findings are further explored in relation to English for Academic Purposes writing research and pedagogy.

Keywords: Negation; Interpersonal Function; Research Article Introductions; Linguistics; Academic Discourse

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1. Introduction

Introductions in research articles play a key role by engaging readers with context and generating interest in the presented research. Scholars have identified introduction as an initial entry point where authors define their research scope and establish a place for new insights [1–3], often using language that conveys interpersonal meaning [4, 5]. From a dialogistic perspective, negation presents an alternative positive view within the dialogue, which it acknowledges and rejects [6]. In academic writing, negation is described as one of "the nuts and bolts of written academic English" [7], illustrating a complex interaction between meaning and structure across various dimensions [8].

Previous studies have largely examined negation in research article abstracts over time [9, 10], across different disciplines in full-length articles [11], or in unpublished doctoral dissertations [12–14]. For instance, research by Jiang and Hyland [9, 15] and Wang et al. [10] has highlighted the interpersonal functions of negation in research abstracts. Compared with other sections, the introduction section has strong interaction with the discipline to convey the author's stance and establish a dialogue with prior research and readers. In the introduction, negation functions for different purposes such as outlining the limitations of existing knowledge, pointing out the absence of specific studies, or underscoring the value of new research as in the phrase "no previous study has focused on" thereby positioning the research as a necessary contribution to the field. It would be valuable to analyze how negation strategically operates as an interpersonal tool to accomplish different rhetorical functions in introductions. Additionally, it is worthwhile to investigate if the interpersonal uses of negation noted in abstracts apply similarly in introductions. In order to expand our understanding of negation's role in academic writing, further research is required, especially within research introductions. This study aims to fill these research gaps by examining how negation is used in the introduction sections of linguistics research articles, building upon Jiang and Hyland's [9] interpersonal model of negation, thereby contributing to enhancing our understanding of negation's interpersonal roles in scholarly writing.

This study offers three key innovations. First, it applies the interpersonal model of negation [9] to the introduction sections, extending its use beyond research article abstracts. Second, this study explores the interpersonal functions of negation in linguistics research article introductions, highlighting how negation shapes the author's stance and facilitates interaction with the academic discourse. Finally, the study provides pedagogical implications by offering insights into how academic writers can strategically use negation to craft compelling and reader-oriented introductions. These contributions not only expand our understanding of negation in academic discourse but also highlight its practical relevance for writing instruction in English for Academic Purposes contexts.

2. Negation in Academic Writing

Negation represents a semantic phenomenon that conveys "the opposite of something or an absence of something" [16]. While negation appears less frequently in writing than in spoken language [17], it plays a significant role in academic writing by structuring arguments in ways that enhance the persuasiveness of authors' viewpoints for their target audience [9].

Over the years, few studies have examined the linguistic forms of negation and their functional classifications. Tottie [18] for instance, categorized negation into two primary forms: affixal and non-affixal. Affixal negation, as Dahl [19] explains, involves morphological negation formed by affixes such as un-, non-, and -less. In contrast, non-affixal negation, referred to as clausal negation [17], includes explicit negative expressions like "not", "no", and "little". Webber [20] identified eight functional categories of negation in academic prose by linguists, exploring how each functioned in scholarly contexts, though she acknowledged "a certain amount of overlap between categories" and admitted that her classification "is far from adequate". This limitation highlights current classifications that fail to clearly distinguish between negation's role in forming cohesive textual links and its function in expressing the writer's stance and a reader-oriented tone. These studies provide a fundamental understanding of negation's linguistic forms and functions but highlight the need for more refined frameworks that address its dual role in cohesion and interpersonal engagement within academic texts.

An alternative approach to interaction, known as metadiscourse, addresses this distinction by categorizing textual elements as either interactive or interactional [21]. In recent work, Jiang and Hyland [9, 15] developed an interpersonal model of negation, informed by Hyland's [5] concept of metadiscourse, to analyze the interpersonal functions of negation in research article abstracts across four disciplines and their historical shifts. The interpersonal model of negation highlights the various rhetorical strategies writers use to position themselves relative to both their content and their audience [5, 9], allowing insight into how writers anticipate readers' assumptions, challenge them, and strategically shape their own stance [5]. Applying this model, Jiang and Hyland observed a diachronic decline in the use of negation within abstracts, yet notable differences remained between disciplines, including those in soft knowledge areas like linguistics and sociology. In a similar study, Li et al. [14] explored how this model could be applied to investigate negation in doctoral theses, examining its presence in different thesis sections. They observed that both Chinese and native-speaking PhD students frequently used negative markers, notably in the results, discussion, literature review, methodology, and conclusion sections. Their findings shed light on the rhetorical purpose of negation in academic writing, offering useful guidance for thesis writing instruction. Wang et al. [10] also applied this interpersonal model to analyze negation patterns in Science journal abstracts over 35 years (1987–2021), observing that while overall negation use remained stable, authors primarily used negation to show consequence in an interactive context. Together, these studies highlight the essential function of negation in building scholarly arguments and conveying the writer's presence within academic discourse. In other words, negation not only enhances internal cohesion within the text but also strengthens the writer's stance, facilitating persuasive communication with readers.

3. Theoretical Framework

The present study adopted an interpersonal model of negation [9], which approaches interaction in writing from a social constructionist perspective. This model integrates the conceptions of metadiscourse to analyze negation in academic texts. This theoretical framework views written interaction as "a collection of rhetorical choices rather than as specific encounters with real readers" [9]. Within this perspective, negation serves as a strategic resource through which writers anticipate and address potential counter-arguments from their putative audience. As Martin and White [6] argue, writers first acknowledge these presumed opposing viewpoints before negating them, thereby guiding readers toward their own argumentative position. This preemptive engagement with alternative perspectives reflects the inherently dialogic nature of academic writing, where authors skillfully manage reader expectations and potential objections.

Within the interpersonal model, negation in texts can be analyzed through both the interactive and interactional dimensions. Interactive negation functions to establish textual coherence and persuasive flow through strategic connections between elements [9]. Jiang and Hyland [9] specifically noted that writers employ interactive negation to strengthen their arguments by emphasizing comparative, additive, and consequential relationships. The three types of negation—comparative, additive, and consequential relationships—are defined under the interactive dimension as follows. The examples provided are drawn from our corpus, as discussed in the method section.

Comparative negation serves to establish and highlight contrastive relationships between textual elements [9]. Writers employ this rhetorical strategy to delineate clear distinctions and emphasize key differences within their arguments, enabling readers to better understand the contrasting aspects of their discussion. For example, in Example 1, the word "not" sets a clear contrast between the positive outcome of one test type and the lack of success in others. Such contrastive structures help readers clearly understand the differential effects of experimental interventions across various testing conditions.

(Example 1) The balanced input led to better performance on a delayed production test but not on an immediate production test or an acceptability judgment test.

In the addition function, negation is typically used to "add elements in an argument by presenting two related pieces of information as either surprising or unexpected in some way, often with the second being even more surprising than the first" [9]. Example 2 illustrates writer connects two significant research limitations through additive negation, creating a cumulative effect that strengthens the justification for new research.

(Example 2) Thus, as indicated by Baroni et al. there are neither evidence-based well-designed studies nor large studies that have tested whether VEs indeed increase FL competencies, and TPACK skills in particular, relative to a comparison or control group.

The consequence function of negation is used to demonstrate that something does not result from a particular argument or study [9]. For instance, in Example 3, the negative marker "not" serves to report the absence of expected group distinctions in vowel and consonant production, demonstrating how consequence negation can serve both reporting and interpretative functions in research writing.

(Example 3) Results indicated that the two groups did not show significant differences in their vowel and consonant production, suggesting that they maintained balanced proficiency in both languages.

The interactional dimension centers on how writers actively involve readers as they develop the text [22], placing value on the relationship between writer and reader. This dimension of negation assists writers in presenting themselves, such as "writer's persona and tone" [9]. Writers achieve this through three functions identified by Jiang and Hyland [9]: hedging, boosting, and attitude (affect).

Hedging with negation "contributes to the writer's efforts to limit the full illocutionary force of a statement or evaluation, toning it down to either express reservations about the proposition or provide the reader with a sense their possible alternative view is respected" [9], see Example 4. By combining modal verb "may" with negation ("may not necessarily"), the author creates space for alternative viewpoints while presenting a potentially controversial idea about task performance capabilities. This careful linguistic construction allows the writer to present a challenging perspective while maintaining appropriate scholarly caution.

(Example 4) Thus, advanced learners or native speakers may not necessarily be the expert in interaction as less proficient learners can be more capable of performing certain tasks.

The boosting function of negation serves to "emphasize the expressive force of a proposition, dialing up the commitment to a statement which would otherwise be weaker" ([9], p. 63). Example 5, with the negative phrase "by no means" leaves little room for ambiguity, signaling the writer's firm stance on the divergence between policy and practice from grassroots perspectives.

(Example 5) However, grassroots perspectives show that close alignments between government language policy and actual language practices are by no means assured.

For the function of effect, negation is often employed to express "the writer's attitude toward the presented content, typically to deny the accuracy, adequacy, or clarity of study results" [9]. In Example 6, the use of "not" reflects the writer's negative attitude regarding the findings, conveying that they are "not clear".

(Example 6) As a result, it is not clear whether the observation or the lack of a stroke-number effect was a unique effect for CSL speakers.

4. Materials and Methods

In alignment with earlier studies that analyzed research articles by expert authors [9, 23, 24], journal selection in this study relied on Social Sciences Citation Index (SSCI) rankings based on impact factors. According to InCites Journal Citation Reports (JCR) on Web of Science (WoS), these journals consistently ranked within the top 30 for Journal Impact Factor (JIF) each year from 2017 to 2023 (see **Appendix A** for the list of selected journals). This selection ensures both academic prestige and a comprehensive representation of linguistic scholarship. Focusing on linguistics research articles allows for meaningful comparisons with previous studies, including Jiang and Hyland [9] and Wang et al. [10]. Much prior research has also concentrated on linguistics, particularly examining linguistic features in research articles [25–27]. By continuing this focus on linguistics, the present study can enhance existing findings in the field and provide valuable insights into the distinctive use of negation within this academic discipline. Data collection began in 2017 as part of a larger project analyzing the influence of writer expertise, article section, and disciplinary differences on negation use. Data collection began in 2017 due to the availability of novice-authored research articles in journals from that year. We started to collect data at the end of 2023, which is the rationale for ending the data collection in 2023. The seven-year timeframe (2017–2023) aligns with contemporary research practices in journal linguistic analysis, which typically examine three to ten-year periods to reflect the features of current language use patterns in academic research writing [28–30], as language change tends to occur gradually [31–33]. Given space limitations, this study focuses specifically on expert linguists' use of negation in research article introductions from an interpersonal perspective, providing insights into recent practices among expert writers.

Linguistic variation in research articles is influenced by their paradigm, whether qualitative or quantitative [28, 34]. Empirical research articles, in particular, are characterized by a structured format aimed at fulfilling specific rhetorical functions [35]. This study narrows its focus to the introduction sections of empirical articles to ensure a broad representation of negation strategies across journals. Only articles with the first author having a minimum of three prior publications in high-impact journals indexed in the Web of Science Core Collection were included. From each year, 10 articles were randomly chosen, totaling 70 articles. These were converted to plain text using AntFileConverter [36], retaining only the introduction sections. The resulting corpus contains 70 introductions comprising 152,389 words, providing a sample large enough for reasonable generalizations [37, 38] while remaining manageable for detailed analysis.

To examine negation in our research, we utilized a selection of 17 common negative markers outlined by Jiang and Hyland [9], specifically focusing on non-affixal or clausal negation types (see **Table 1**). The 17 negative markers have been analyzed in prior studies, including Wang et al. [10] and Jiang and Hyland [15], who investigated the role of negation in research abstracts, as well as Li et al. [14], who examined its usage in unpublished PhD theses.

Table 1. Typical negative markers.

Negative Markers								
barely	little	few	not	no	nowhere	nobody	never	no one
neither	none	nor	nothing	seldom	rarely	hardly	scarcely	

The analytical process began with uploading the selected introductions to AntConc (version 4.0) to identify occurrences of the 17 predetermined negative markers, yielding 728 concordance lines. Following this, two raters independently reviewed each concordance, categorizing the function of each negative marker according to the interpersonal model established by Jiang and Hyland [9]. Instances that did not serve a negating function were also identified and excluded. Specifically, the inclusion criteria for this study are as follows: (a) instances containing any of the 17 predetermined negative markers (see **Table 1**), and (b) instances where these markers serve a negating function. The exclusion criteria are (a) instances where negative markers are used in time-related phrases (e.g., “few years” in Example 7), (b) instances where negative markers form part of proper names or established terms, such as “No Interface Hypothesis” (Example 8), and (c) instances where “few”, when combined with the indefinite article “a” fails to function as a negation marker (e.g., “quite a few” in Example 9).

(Example 7) Over the past few years, schools and universities offering content and language integrated learning (CLIL) courses have mushroomed across Europe.

(Example 8) Interest in this topic rose with Krashen’s ‘No Interface Hypothesis’ according to which less complex rules can be taught whereas ‘hard rules are by their very nature too complex to be successfully taught and thus difficult to learn through traditional explanation and practice pedagogy . . . [and] are thought to be best learned implicitly, embedded in meaning-based practice’.

(Example 9) It is known that quite a few adolescents struggle with FL learning and may attribute this difficulty to low ability.

In Example 7, the word “few” does not function as a marker of negation but instead acts as a temporal modifier, indicating a span of years (“over the past few years”). In Example 8, “no” is embedded in the proper name of a theoretical concept, “No Interface Hypothesis” and therefore does not serve a negating role in this context. Finally, in Example 9, when “few” is combined with the indefinite article “a” (“quite a few”), it no longer functions as a negation marker but instead conveys a non-negative meaning, indicating a relatively significant number. These examples highlight the importance of context in determining whether a negative marker serves a functional negating role or fulfills other purposes.

After removing 20 concordance lines that did not function as negation, 708 negation concordances remained for annotation. The two raters independently coded each concordance line, achieving a high inter-rater agreement (96.33%). For cases lacking clarity, raters conducted broader readings, examining entire introductions to ensure accurate classification of negation functions. Several rounds of discussion were held to minimize errors, and all disagreements were resolved through consensus.

5. Results and Discussion

5.1. The Forms and Frequency of Negation in Introductions

Among the 17 negative markers analyzed, 12 were identified in the current introduction corpus. The frequency of negation usage averaged 4.65 occurrences per thousand words (calculated based on 152,389 words), which exceeds the rates reported by Jiang and Hyland [9] and Wang et al. [10] in abstract sections. Two main reasons may explain this greater use of negation in introductions. First, introductions tend to be longer than abstracts, providing more opportunities for negation. Second, introductions characteristically feature stronger engagement with disciplinary literature, as authors position their work by critiquing, refining, or extending previous research claims. This rhetorical function naturally demands more frequent deployment of negative expressions by expert writers.

Table 2 shows the frequency and proportion of negative markers employed by linguistics experts in the introduction sections of academic articles. This data reveals both the preferred negation types and their distribution. In this data set, "not" is the dominant negation marker, representing 65.4% of all instances, with 463 occurrences. The marker "no" follows with 95 uses, accounting for 13.42% of the total. This distribution pattern echoes the findings of Jiang and Hyland [15] in their analysis of abstracts. Additionally, "little" and "few" occur in 9.46% and 6.5% of cases, respectively, often signifying quantitative constraints—where "little" accompanies uncountable nouns (e.g., "little research") and "few" is paired with countable nouns (e.g., "few studies"). Particularly in introductions, these markers underscore research limitations, highlighting gaps to be addressed in future studies. Consistent with the work of Biber et al. [17] and Carter et al. [39], "not" and "no" are recognized as primary negation forms, while Larsen-Freeman and Celce-Murcia [40] describe "few" and "little" as useful in achieving a "softened tone" and "reduced intensity" (p. 198), which helps to maintain collegiality. As illustrated in Examples 10 and 11, "little" and "few" reduce the directness of the author's judgment on the adequacy of existing research, softening the critical tone while still signaling areas needing further exploration.

(Example 10) While much research has been conducted on the motivational force of the ideal L2 self for English, little is known about whether and how the concept applies to understanding the motivation to learn other languages .

(Example 11) Despite prolific research on the L2 integration of a verb and construction in production, few studies have investigated how L2 learners conflate information between a verb and a construction during online sentence processing.

Table 2. Number of occurrences of negative markers.

Negative Markers	Frequency	Proportion (%)
not	463	65.4
no	95	13.42
little	67	9.46
few	46	6.5
rarely	10	1.41
nor	9	1.27
neither	6	0.85
hardly	4	0.56
none	4	0.56
never	2	0.28
nowhere	1	0.14
seldom	1	0.14

5.2. The Distribution of Negation Interpersonal Functions

As mentioned earlier, negation reflects a writer's choice to intervene in specific places, either to provide commentary on previous points or to guide the reader's understanding of the discourse. The distribution of interactive and interactional uses of negation within the corpus is shown in **Figure 1**. It reveals that interactive negation is more prevalent, comprising 56% of all functional uses, highlighting a primary focus on maintaining coherent discourse flow, while interactional negation comprises 44%. The result indicates that linguistics experts tend to utilize more interactive features in introductions to build a structured and coherent text. Although previous studies have explored a range of academic genres as well as various types of metadiscourse markers, findings consistently show that writers tend to favor interactive markers more than interactional markers. Similar findings have been noted in the use of negation within academic abstracts as well[9, 10].

The prominence of interactive negations in academic introductions, as our findings suggest, reflects their utility in crafting a clear and compelling narrative. Writers appear to prioritize coherence within the text itself, ensuring that the arguments presented are logically structured. While interactional negations occur less frequently, they are still essential for establishing a connection between the writer and the reader in introductions. These negations help frame the discourse, signaling the writer's engagement with the audience, addressing potential gaps in knowledge, and inviting further inquiry, which is integral to the academic conversation. This role of interactional negation will be explored further in the following parts.

Figure 1. The overall distribution of negation types.

Figure 2 and **Table 3** illustrate the distribution of negation interpersonal functions in academic writing. In the interactive dimension, the type of consequence is the most prominent (26.84%, n = 190). This category signifies relationships between elements, with negation in this context often highlighting the absence of a positive result or the absence of a significant connection. For instance, Example 12 illustrates a lack of significance in delayed meaning recall, while Example 13 points out the absence of notable differences between L1 and L2 readers in word learning. The following consequence is the comparison category (20.06%, n = 142), which supports coherence by managing reader understanding through contrast or by clarifying intentions. Example 14, for instance, contrasts the metalinguistic knowledge of child and adult FL learners. Finally, addition is less common (9.32%, n = 66), suggesting that writers in linguistics research article introductions prioritize illustrating outcomes and drawing comparisons over supplementing additional related points.

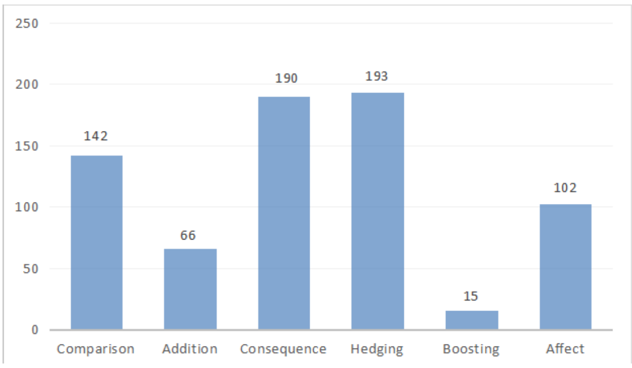

Figure 2. Raw frequencies of six interpersonal negations.

Table 3. Distribution of negation functional categories.

Functional Classifications	Frequency	Proportion (%)
Interactive dimension	398	56.21
Consequence	190	26.84
Comparison	142	20.06
Addition	66	9.32
Interactional dimension	310	43.79
Hedging	193	27.26
Affect	102	14.41
Boosting	15	2.12

(Example 12) However, the effects were not significant in delayed meaning recall.

(Example 13) There were no clear differences between the L1 and L2 readers in word learning.

(Example 14) Child FL learners do not have the same explicit metalinguistic knowledge as teenage or adult FL learners.

In the interactional dimension, hedging is the most frequently used function (27.26%, n = 193), highlighting writers' tendency to soften their claims and recognize alternative perspectives within their introductions. This frequent use of hedging likely reflects the need for writers to make their arguments more palatable and open to interpretation, enhancing reader acceptance and engagement[9]. Examples 15 through 17 demonstrate this function, where writers use hedging to temper the strength of their assertions and acknowledge limitations in the scope of their claims. In contrast, boosting is used sparingly (2.12%, n = 15), suggesting that writers in these contexts prefer presenting their points with subtlety rather than overt emphasis. This minimal use of boosting aligns with a tendency for implicit argumentation, allowing room for reader interpretation and engagement[6]. Affect, at 14.41% (n = 102), also appears less frequently than hedging but more than boosting, underscoring a careful approach to expressing evaluative stances within research introductions.

(Example 15) It is also reflected in the result of the 2003–2010 Korean General Social Survey that Koreans hardly perceive that different ethnic groups can become "ordinary members of society" without homogeneous blood and linguistic origins.

(Example 16) However, the same hardly applies to teachers, who routinely walk as they guide students, hand out materials, present new content on the blackboard, etc.

(Example 17) Thus, advanced learners or native speakers may not necessarily be the expert in interaction as less proficient learners can be more capable of performing certain tasks.

5.3. The Relationship between Negative Markers and Their Interpersonal Functions

Figure 3 illustrates the six functional categories of negation in academic writing, along with the corresponding negative markers associated with each function. As illustrated in **Figure 3**, frequently used negative markers ("not" and "no") demonstrate diverse functional distributions across all six categories (Hedging, Boosting, Affect, Comparison, Addition, and Consequence), while less common negative markers tend to be functionally specialized. For instance, "seldom", "nowhere", and "never" are more specialized and used for single functions (Hedging, Comparison, and Boosting respectively). This distribution suggests that expert writers strategically employ both versatile and specialized negative markers in introductions, demonstrating sophisticated awareness of their rhetorical impact. Their deliberate selection of markers appears tailored to achieve specific communicative goals, particularly in creating research spaces, establishing scholarly credibility, engaging with the broader disciplinary discourse, and constructing persuasive arguments within the introduction section.

To further examine the relationship between negative markers and their interpersonal functions in research introductions. A correspondence analysis (CA) was conducted, defined as "an explanatory statistical approach intended to analyze multi-way tables that illustrate the correspondence between rows (item 1) and columns (item 2)"[41]. For the current study, negative markers served as item 1, while the six interpersonal functions of negation were used as item 2. This method, conducted with SPSS 26, allowed us to map the relationships between negative markers and their functions onto a reduced two-dimensional correspondence plot, with the x and y axes representing different dimensions[42].

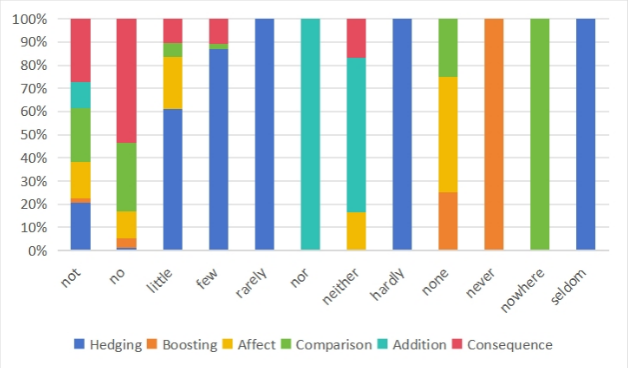

Figure 3. Distribution of six interpersonal functions across negative markers.

The analysis of the correspondence (see **Figure 4**) reveals a two-dimensional structure in how negative markers function in academic writing. Dimension 1, accounting for 46.2% of the variance, may represent the intensity of negation, with hedging markers like "hardly", "few", "little", and "seldom" positioned on the right indicating tentative negation, while stronger negative markers such as "never", "no", and "none" appear on the left showing absolute negation. This distribution suggests a conscious choice by authors, who select negation markers based on the intended strength of negation. As Hands and Sinclair[16] note, broad markers like "little" are often used to render statements "almost negative", offering a less assertive stance. In Example 18, the use of "little" tempers the statement by hedging the author's evaluation of the research background. Similarly, hedging markers like "seldom" and "rarely" (Examples 19 and 20) allow authors to maintain scholarly caution when identifying research gaps in introduction writing. By contrast, "no" and "not" in Examples 21 and 22 convey a more decisive claim about the absence and the author's assessment of the current research background in the field, thereby reinforcing the author's critique of existing literature.

(Example 18) The rapid pace of internationalization and the different labels (for example CLIL or EMI) one can find in the literature reveal that little is known about how international programs are actually being implemented.

(Example 19) However, the role of pronunciation in meaning negotiation has seldom been the focus of learner-learner interaction research.

(Example 20) However, the role of teacher talk has rarely been examined in relation to teachers' qualifications and children's language outcomes.

(Example 21) To date, no research has investigated how explicitness influences the use of AWCF by L2 students.

(Example 22) Despite extensive investigative attention paid to these beliefs in the literature, they have not been investigated in relation to grammar instruction through explicit and implicit instructional conditions.

Dimension 2, explaining 28.1% of the variance, captures the functional purposes of negation, with markers distributed vertically according to their rhetorical functions. The top area is characterized by "never" and the boosting function for emphasis and the bottom area features "nor", and "neither" and the addition function for coordination. Together, these dimensions create a comprehensive semantic map explaining 74.3% of the total variance, which is widely regarded as a very reasonable amount for interpretative purposes [42]. The findings indicate that the selection of negative markers in introductions is a complex process, influenced by both the intended negation strength and the specific interpersonal functions the author aims to achieve.

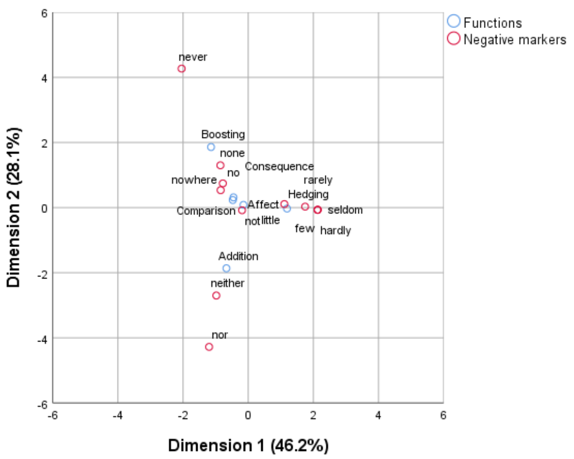

Figure 4. Correspondence analysis of negative markers and their interpersonal functions.

6. Conclusions

The present investigation explores how negation functions as an interpersonal resource in linguistics research article introductions, focusing on their frequency, distribution, and interpersonal functions. The results underscore the complex interpersonal role of negation, which operates not only to structure a coherent and logical text but also to actively engage readers and convey the author's position. From the interpersonal perspective, hedging is the most frequent function, followed by consequence, while boosting is notably minimal, reflecting academic writers' preference for cautious claims over strong assertions. Additionally, these findings extend the work of Jiang and Hyland [9] by validating the interpersonal model in the introduction of academic writing, underscoring negation's rhetorical versatility.

This study highlights several pedagogical implications for academic writing instruction, particularly for guiding students or novices in understanding expert writers' strategic use of negation in linguistics research article introductions. The results indicate that expert writers tend to use hedges in introductions to soften their assertions, creating space for reader engagement and stance negotiation. This suggests that instruction on negation can empower novice writers and students to structure their texts thoughtfully, fostering an academic style. By studying these varied functions of negation, learners can better craft introductions that are engaging, balanced, and open to reader negotiation. In addition, placing additional emphasis on the use of negation in English for Academic Purposes classrooms could therefore enhance students' ability to achieve more nuanced expression in their writing. Given that negation typically emerges later in language acquisition and poses challenges for mastery [43], targeted instruction on this feature may significantly benefit learners in developing more precise and sophisticated academic language. Finally, this research supports a "bottom-up" pedagogical approach, where students can explore negation patterns inductively through authentic examples from expert writing. This data-driven methodology enables learners to discover how successful writers deploy negative markers to establish research territory, engage with existing literature, and maintain scholarly dialogue, ultimately developing more sophisticated academic writing skills.

Although the study offers valuable insights regarding the role of negation in linguistics research article introductions, this study also has limitations. The analysis focused on linguistics, and a cross-disciplinary comparison could offer insights into how disciplinary conventions shape the use of negation in academic texts. Furthermore, aspects such as author experience level, publication timing, and social influences may also affect the deployment of negation in research writing. Future research that explores these additional dimensions would likely deepen our understanding of negation's interpersonal functions and its rhetorical effectiveness. Finally, in our exploration of negation from an interpersonal functional perspective, we have uncovered several key insights into how negation operates within communicative exchanges in research introductions. Building on the findings, an anonymous reviewer offered an insightful suggestion that future research articles can employ different textual parameters [44] in the context of our work. We believe that such an expanded analysis will not only complement our current findings but also contribute significantly to the broader field of psycholinguistics and cognitive science.

Author Contributions

Z.C. created the corpus used, conducted the analysis, and wrote initial drafts of the paper. A.B.H. and A.N.B.C.A.R. guided the data analysis, and the writing and revision of the article.

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Data Availability Statement

The authors confirm that the data supporting the findings of this study are included in the article. Additional data can be provided by the corresponding author, Chen Zhemin, upon reasonable request.

Conflicts of Interest

The authors declare no conflict of interest.

Appendix A

Journal list

1. Computer Assisted Language Learning
2. Journal of Second Language Writing
3. Modern Language Journal
4. Studies in Second Language Acquisition
5. Applied Linguistics
6. Language Learning & Technology
7. Language Teaching Research
8. Annual Review of Linguistics
9. TESOL Quarterly
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