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A Corpus-based Analysis on Hedges in Abstracts of Marine Academic Journals

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Abstract

This paper studies the distribution characteristics of hedges in English abstracts of Chinese and foreign marine academic journals, analyzes the similarities and differences in their use based on a self-built corpus with the search tool AntConc3.5.9. and provides some suggestions on appropriate use of hedges in English abstract in a bid. The results show that the frequency of hedges used in Chinese marine academic journals is low, with obvious differences, and the form is relatively simple. Cultural differences, English proficiency and cultural background can partly explain the above findings. This finding provides some reference for the writing of abstracts of academic journals and helps China scholars to show China's marine academic achievements to the international stage.

Keywords

Hedges; English Abstract; Marine Academic Journals; Corpus.

1. Introduction

The corpus, serving as a large-scale electronic text library with specific capacity, has gradually been applied to the study of academic discourse in recent years, especially in the research on academic paper abstracts [1, 2]. For instance, Jv [3] conducted a comparative study on the rhetorical persuasive mechanisms in English academic paper abstracts written by Chinese and foreign scholars by establishing two self-constructed corpus. In addition, scholars Zhao, Liang and Gao [4] analyzed the similarities and differences in the promotional patterns of empirical research paper abstracts in Chinese and foreign linguistic journals through the self-constructed corpus. Zheng and Mao [5] built three mini-corpus based on the English translations of the abstracts submitted and revised by Chinese scholars for publication in the CSSCI journal *Applied Linguistics*, and compared the differences in the academic chunk features between the English translations of Chinese scholars' abstracts and those of foreign scholars.

The abstract, as a concise summary of the content of an academic journal article, possesses the characteristics of independence and brevity. It not only provides readers with a succinct introduction but also extracts the essence of the entire paper, facilitating literature retrieval and paper classification. With the increasing international academic exchanges, English abstracts have become increasingly important. However, the current quality of English abstracts in domestic journals varies widely, with issues such as non-standardized language usage, which has attracted widespread attention from domestic linguists regarding the quality of English abstracts written by Chinese and foreign scholars. Most of the subsequent research has focused on stance markers [6, 7]and genre analysis [8] in English abstracts. Nevertheless, in recent years, hedges in English abstracts have become a focal point for linguists.

American linguist George Lakoff [9] initially introduced the concept of hedges in his paper in 1972, where they were defined as words whose job it is to make things fuzzier or less fuzzy.

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And then with Levinson further defined hedges as words, phrases, or clauses that can partially alter the degree of truthfulness of a topic under certain conditions. As research has progressed, scholars have come to believe that the use of hedges can make topic discussions more reliable, precise, polite, and appropriate [10], while also bridging the gap between readers and authors [11]. More scholars have begun to study hedges from more diverse perspectives, such as Yang [12] analyzing hedges in medical research papers from a systemic functional perspective, and Vold [13] exploring hedges in academic papers written in English, French, and Norwegian from a cross-linguistic perspective. The definition of hedges has also continued to expand, encompassing not only vocabulary and grammar but also linguistic devices that fulfill the function of hedges [14].

Additionally, various researchers have conducted diverse analyses and classifications of hedges from different perspectives. Prince [15] classified hedges into two categories: approximators and shields, based on the truth conditions of propositions. Domestically, Chen [16] categorized hedges into adaptors, rounders, quantity hedges, quality hedges, and manner hedges, based on semantic features. Despite the numerous classifications proposed by scholars, the classification framework proposed by Prince and colleagues remains influential. According to their classification, approximators refer to words that affect the truth conditions of a sentence. In contrast, shields refer to words that do not alter the content of a sentence but instead reflect the speaker's attitude towards it. Approximators can be further divided into adaptors and rounders. Adaptors modify the original statement to some degree, such as kind of or slightly, while rounders define a variable range for the original statement, like around or approximately. Shields can be further classified into plausibility shields and attribution shields, depending on whether they directly express the speaker's opinion or attribute their statement to someone else [17].

In recent years, China's marine industry has developed rapidly, with a steady increase in academic achievements in this field and increasingly frequent international academic exchanges. English abstracts play a pivotal role in domestic marine journals. A high-quality English abstract is conducive to promoting the dissemination of academic achievements in China's marine field, enhancing the academic influence of China's marine research, and improving China's international status and discourse power in the marine field. However, through literature searches, it has been found that domestic researchers have primarily focused on academic paper abstracts in fields such as medicine [18], engineering [19], and agriculture [20], with almost no research on English abstracts in marine journals. Given this, this study will establish a corpus of Chinese and foreign marine academic journals, comparing the usage and characteristics of hedges in the *Journal of Fisheries of China* with those in foreign journals. It aims to explore the issues and reasons for the use of hedges by Chinese journal authors and provide valuable insights and implications for writing English abstracts.

2. Research Design

2.1. Research Question

The present study aims to investigate the following two primary questions:

1) Are there differences in the frequency of using hedges in English abstracts of Chinese and foreign academic journals?

2) Are there differences in the usage of hedges in Chinese and foreign academic journals?

2.2. Corpus Construction

The corpus used in this study was sourced from the *Journal of Fisheries of China*, a top-tier scientific journal among the Hundred Best Scientific and Technological Journals of Chinese Universities, and four SCI journals from the first zone of JCR in the field of agricultural and

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forestry science, all representing the high standards of marine academic journals both domestically and internationally.

From the China National Knowledge Infrastructure (CNKI), this study randomly selected 800 English abstracts published in the professional journal *Journal of Fisheries of China* from 2016 to 2020. Additionally, four SCI journals were chosen from the Web of Science, namely *Fish and Fisheries* and *Ices Journal of Marine Science* from the UK, *Aquaculture* from the Netherlands, *Canadian Journal of Fisheries and Aquatic Sciences* from Canada, and *Reviews in Aquaculture* from Australia. From each of these four journals, 200 abstracts were randomly downloaded per year, totaling 800 abstracts. Based on statistical requirements, two corpus were established: a corpus of Chinese marine journals containing 800 English abstracts and an international marine journal corpus containing 800 English abstracts, as shown in Table 1. The identity of scholars was determined through a combination of their institutional affiliations and name characteristics, and articles published by mainland Chinese scholars in international journals were excluded from the study.

Table 1: Composition of corpus of Chinese and foreign marine academic journals

Corpus	Publishing country	Journal	Number of articles	Number of tokens	
Chinese Journals	China	Journal of Fisheries of China	800	251066	
International Journals	UK	Fish and Fisheries	200	52742	208148
	Netherlands	Aquaculture	200	64189	
	Canada	Canadian Journal of Fisheries and Aquatic Sciences	200	41405	
	UK	Ices Journal of Marine Science	200	49812	
Total			1600	459214	

2.3. Data Processing

Based on the classification of hedges proposed by Prince and others, we identified four types of hedges from the English abstracts of Chinese and international marine journals. Subsequently, by referring to relevant historical word lists on hedges, we determined the reference set of hedges for this study. To facilitate statistical analysis, AntConc 3.5.9 was utilized as the retrieval software. Initial searches using this software yielded the frequencies of the corresponding hedges. However, to ensure the accuracy and validity of our research, manual secondary screenings were also conducted by the researchers. This involved carefully analyzing the precise meanings of words or phrases within the context of complete sentences and eliminating samples that shared the same morphological form but did not function as hedges. For instance, when "suggest" is used as a hedge, it typically functions as an inference verb in the category of judgment verbs. However, in the sentence "This suggested actin was involved in viral release." (from *Journal of Fisheries of China*), the past form of "suggest" is used adjectivally, necessitating its manual removal.

3. Research Results and Discussion

As shown in Table 2, the total number of tokens used as hedges in Chinese marine journals is 6647, accounting for 26.475 per thousand words. In contrast, the total number of hedges used in international marine journals is 6477, representing a proportion of 25.798 per thousand

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words (hereinafter referred to as the relative frequency). The proportion of hedges used in the latter is higher, and a chi-square test revealed a significant difference ($\chi2$= 83.391, $p<0.05$).

Table 2: Statistics on the distribution of hedges (Relative number is calculated by 1000 words)

Corpus	Approximators				Shields			
	Adaptors		Rounders		Plausibility Shields		Attribution Shields	
	Absolute number	Relative number	Absolute number	Relative number	Absolute number	Relative number	Absolute number	Relative number
Chinese Journals	313	1.247	369	1.470	3122	12.435	2843	11.324
International Journals	493	2.369	765	3.675	2141	10.286	3078	14.788
Chi-square Test	$\chi2$=81.445 p=0.000		$\chi2$=223.571 p=0.000		$\chi2$=45.347 p=0.000		$\chi2$=104.515 p=0.000	

From the perspective of the classification of hedges, the absolute number of approximators used in Chinese marine journals is 682, while that in international marine journals is 1258. Calculations reveal that the proportion of approximators used in the English abstracts of international marine journals is higher than that in Chinese marine journals, and the difference is significant ($\chi2$=269.889, $p<0.05$). The total number of shields used in Chinese marine journals is 5965, while that in international marine journals is 5219. Similarly, the proportion of shields used in the English abstracts of international marine journals is higher than that in Chinese marine journals, with a significant difference ($\chi2$=7.885, $p<0.05$). According to He's [21] summary, approximators modify the truthfulness and scope of the topic, belonging to the semantic category. Shields, on the other hand, represent the speaker's subjective assessment or objective evidence of the topic content, making an indirect evaluation of the topic and falling within the pragmatic category, without affecting the content of the topic. This suggests that international marine journals tend to objectively modify the precision of research content, and compared to Chinese journals, they adopt a more euphemistic and tempered narrative style. Jiang and Tao [22] argue that the use of hedges can make research results more universal. By employing approximators, international journals can not only make their research findings more objective but also avoid the risk of generalization. When expressing opinions, a tempered tone can make one's views more acceptable to reviewers and readers. The above data reflect that there are many aspects of writing English abstracts in international marine academic journals that Chinese journals can learn from and draw inspiration.

In the following sections, data analysis and comparison will be conducted according to the four categories of hedges, along with an exploration of the underlying reasons behind these differences.

3.1. Approximators

The use of approximators allows for a certain degree of modification to the truthfulness and scope of a statement based on actual circumstances, effectively altering the truth conditions of the statement and enhancing its authenticity and accuracy. Due to their positive role, such vocabulary is widely used in both domestic and international academic journals. According to corpus statistics, the frequency of occurrence of approximators in Chinese marine academic journals is 682 times. In contrast, in international marine academic journals, it is 1258 times, indicating a significant difference ($\chi2$=296.889, $p<0.05$). This suggests that international marine academic journals use approximators more frequently than Chinese academic journals.

ISSN: 2710-0170

Table 3: Statistical of the distribution of approximators
(Relative number is calculated by 1000 words)

	Chinese Journals		International Journals	
	Adaptors	Rounders	Plausibility Shields	Attribution Shields
	Lexical item (Absolute /relative number)	Lexical item (Absolute /relative number)	Lexical item (Absolute /relative number)	Lexical item (Absolute /relative number)
1	some(89/0.354)	about(102/0.406)	many(176/0.846)	over(156/0.749)
2	many(52/0.207)	more than(58/0.231)	some(128/0.615)	about(85/0.408)
3	very(48/0.191)	over(35/0.139)	often(116/0.557)	more than(30/0.114)
4	much(31/0.123)	less than(28/0.112)	likely(69/0.331)	around(27/0.130)
5	relatively(29/0.116)	around(14/0.056)	much(46/0.221)	almost(25/0.120)
6	certain(28/0.112)	possibility(9/0.028)	relatively(41/0.197)	generally(23/0.110)
7	slightly(15/0.060)	probability(5/0.020)	very(39/0.187)	at least(19/0.091)
8	often(13/0.052)	possibly(5/0.020)	rather(34/0.163)	approximately(18/0.086)
9	nearly(13/0.052)	probably(2/0.028)	certain(25/0.120)	possibility(12/0.058)
10	kind of(7/0.028)	perhaps(2/0.008)	usually(13/0.062)	probably(9/0.043)

In terms of adaptors, the Chinese marine academic journals employed 369 instances of such adaptors, accounting for 32.54% of the total adaptors used in both Chinese and international journals. On the other hand, the English abstracts of international marine academic journals utilized 765 adaptors, representing 67.46% of the total. There is a significant difference in the use of adaptors between Chinese and international marine academic journals ($\chi 2=223.571$, $p<0.05$), with the latter employing them more frequently. For instance, words like “many” and “often” appeared 176 and 116 times respectively in the English abstracts of international marine journals, while their occurrences in the English abstracts of Chinese marine journals were only 52 and 13, respectively, indicating a significant difference ($\chi^2=93.372$, 103.490, $p<0.05$).

In the category of rounders, Chinese marine academic journals utilized 313 rounders, accounting for 38.83% of the total. Comparatively, international marine academic journals employed 493 rounders, comprising 61.17% of the total. There is also a significant difference in the use of rounders between Chinese and international marine academic journals ($\chi^2=81.445$, $p<0.05$), with the latter demonstrating a higher frequency of utilization.

According to the data, there exists a discrepancy in the utilization frequency of rounders between Chinese and international marine academic journals, specifically in the employment of speculative terms such as “probably”, “possibly”, and “perhaps”, as well as the nominalized forms of these terms, “possibility” and “probability”. In international marine academic journals, the frequencies of “probably”, “possibly”, and “perhaps” are 9, 16, and 1 times, respectively, whereas in Chinese marine academic journals, the frequencies are 2, 4, and 2 times, respectively.

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Although the difference in the use of "perhaps" is not significant (χ^2=0.174, p＞0.05), there are significant gaps in the use of "probably" (χ^2=5.911, p＜0.05) and "possibly" (χ^2=9.702, p＜0.05). The combined frequencies of "possibility" and "probability" in Chinese and international marine academic journals are 10 and 49 times, respectively, indicating a substantial difference (χ^2=33.876, p＜0.05). Authors in international marine academic journals tend to use the nominalized forms of these speculative terms more frequently.

Furthermore, there is a significant difference in the use of "over" to modify and define scopes in Chinese marine academic journals and international marine academic journals, with frequencies of 43 and 242 times, respectively (χ^2=135.887, p＜0.05). However, the use of "more than" is consistent across both types of journals, with a frequency of 63 times each. The comparison of these data reveals that Chinese marine academic journals tend to use "more than" more frequently to modify and define scopes, while international marine academic journals prefer to use "over", as exemplified in Example 1 and Example 2.

Example 1： The Commission for the Conservation of Antarctic Marine Living Resources precautionary catch limits for this species total over 8.6 million tonnes so it remains one of the oceans largest known underexploited stocks.（Fish and Fisheries）

Example 2：Serum CHO was decreased observably as compound protein ratio is more than 12%, but blood glucose content was decreased observably as compound protein ratio is more than 36%.(Journal of Fisheries of China)

According to statistics, authors of Chinese marine academic journals will use more than, such as more than two times and more than two countries, while over is often used in collocation such as over time and over the world.

3.2. Shields

The use of hedges in language does not alter the original meaning of the discourse. Instead, it serves as an additional clarification that softens the assertive tone of the original statement. Such hedging devices are widely employed in both Chinese and international journals. As shown in Table 4, these hedges appear 5,965 times in Chinese journals, representing a relative frequency of 23.76%, while in international journals they appear 5,219 times, accounting for a relative frequency of 25.07%. This difference is statistically significant (χ^2=7.88, p＜0.05). Specifically, when it comes to plausibility shields, they occur 3,122 times in Chinese journals, with a relative frequency of 12.43%, whereas in international journals they appear 2,141 times, representing a relative frequency of 10.29%. This difference is also statistically significant (χ^2=45.35, p＜0.05), indicating that Chinese journals use plausibility shields more frequently than international journals. On the other hand, attribution shields appear 2,843 times in Chinese journals, with a relative frequency of 11.32%, while in international journals they occur 3,078 times, representing a relative frequency of 14.79%. This difference is also statistically significant (χ^2=104.52, p<0.05), suggesting that international journals utilize attribution shields more often than Chinese journals. It is evident that Chinese journals tend to favor the use of words and phrases that express the speaker's guesses or doubts about the topic, thereby softening the assertive tone of the discourse. In contrast, international journals prefer to cite the views of third parties as a means of indirectly expressing their attitudes, lending a more objective perspective to their arguments.

Table 4: The distribution of Shields (Relative number is calculated by 1000 words)

Chinese Journals		International Journals	
Adaptors	Rounders	Plausibility Shields	Attribution Shields
Lexical item	Lexical item	Lexical item	Lexical item

ISSN: 2710-0170

	(Absolute /relative number)	(Absolute /relative number)	(Absolute /relative number)	(Absolute /relative number)
1	show(1217/4.85)	results(1088/4.33)	can(455/2.19)	we(1038/4.99)
2	could(346/1.38)	the study(667/2.66)	may(340/1.63)	data(470/2.26)
3	can(332/1.32)	we(349/1.39)	show(335/1.61)	Results (424/2.04)
4	indicate(332/1.32)	the research(231/0.92)	suggest(279/1.34)	the study(378/1.82)
5	detect(251/1.00)	data(220/0.88)	indicate(167/0.80)	our(289/1.39)
6	suggest(183/0.73)	our(103/0.41)	could(150/0.72)	the research (179/0.86)
7	may(183/0.73)	according to(79/0.32)	detect(114/0.55)	Demonstrate (110/0.53)
8	might(83/0.33)	demonstrate(42/0.17)	propose(70/0.34)	evidence(85/0.41)
9	would(48/0.19)	findings(27/0.11)	would(50/0.24)	findings(71/0.34)
10	calculate(34/0.14)	evidence(11/0.44)	might(39/0.19)	according to(12/0.06)

3.2.1. Plausibility Shields

The most frequently used plausibility shields in Chinese journals are the verb “show”, which appears a total of 1,217 times, with a relative frequency of 4.85 per 1,000 words. This frequency is higher than the 1.61 in foreign journals, and the difference in usage between the two is statistically significant (χ^2=351.935, $p<0.05$). The word “show” is translated as display or indicate, and compared to similar words like “indicate” or “propose”, “show” is the most straightforward and direct. It is often used directly in conjunction with statements or experimental results. This indicates a lack of diversity in word choice in Chinese journals.

Table 5: Types of notional verbs of mild hedges (Relative number is calculated according to 1000 words)

Category	Speculative verb		Deductive verb		Evidential verbs		Total	
	Absolute number	Relative number	Absolute number	Relative number	Absolute number	Relative number	Absolute number	Relative number
Chinese Journals	1796	7.15	71	0.28	263	1.05	2230	8.88
International Journals	914	4.39	46	0.22	147	0.71	2548	12.24
Chi-square Test	χ^2=146.33 p=0.000		χ^2=1.71 p=0.191		χ^2=15.84 p=0.000		χ^2=122.11 p=0.000	

According to Hyland’s [23] classification of epistemic verbs, they can be grouped into three categories: speculative verb, deductive verb, and evidential verb, as shown in Table 5. The verb “show” belongs to the category of speculative verbs, which often express a certain level of cognitive uncertainty or speculation regarding the truth of a proposition, such as “show”,

ISSN: 2710-0170

"suggest", "propose", and "illustrate". The second category is deductive verbs, whose judgments are typically more explicitly derived from reasoning or calculation and are presented as inferences or conclusions, such as "infer" and "calculate". The third category is evidential verbs, which can be further subdivided into three subcategories. One subcategory is similar to deductive verbs, relying on previous reports and adopting a stance after making inferences. Another subcategory reflects the scholars' own understanding or perception, presenting their own cognitive evidence, such as "see" and "seem". The last subcategory concerns the vagueness of the means and procedures used to obtain evidence, such as "seek" and "attempt".

In terms of the use of deductive verbs, Chinese journals exhibited 71 occurrences with a relative frequency of 0.28, while foreign journals had 46 occurrences with a relative frequency of 0.22. The difference in usage frequency is not statistically significant (χ^2=1.71, p>0.05). However, in the grammatical usage of the word "infer", as exemplified in Example 3, foreign journals tend to use inanimate subjects more frequently, accounting for 32% of the total usage, to enhance the objectivity of the conclusion and avoid a strong personal stance. This pattern is not observed in Chinese journals, where no instances of inanimate subjects were found.

Example 3：Stable isotopes infer the value of Australia's coastal vegetated ecosystems from fisheries.(Fish and Fisheries)

The frequency of using evidential verbs in foreign journals is generally higher than in Chinese journals, and there are significant differences in their usage patterns. Taking "see" as an example, it appears seven times in Chinese journals, with six occurrences in the passive voice. The characteristics of English academic texts in Chinese journals are consistent with the findings of Wen et al.[24], which are formal, concise, frequently use the passive voice, and avoid the use of the first-person perspective. Similarly, the collocations used in international journals adhere to the aforementioned principles. Of the 22 occurrences of "see", eight (36%) are in the passive voice, five (23%) have inanimate subjects, and six (27%) are in the infinitive form. In contrast, the seven occurrences of "see" in Chinese journals only exhibit two forms: the passive voice (six times, 86%) and the use of human subjects (once, 14%). In terms of avoiding the use of the first-person perspective, international journals demonstrate a more diverse range of collocations compared to Chinese journals.

Furthermore, Hyland [23] proposed another major category of lexical hedges, namely modal verbs. He also suggested that modal verbs serve the function of hedging by avoiding direct assertions. As shown in Table 1, both "can" and "could" are extensively used in both Chinese and foreign journals. Regarding the use of "can", it appears 332 times in Chinese journals and 455 times in foreign journals. There are no significant differences in the usage patterns between the two types of journals. Both utilize "can" to express "possibility", consistent with Lauren's [25] observation that the most common usage of "can" is to refer to "external possibility".

However, there is a significant difference in the frequency of using "could" between Chinese journals (346 occurrences) and international journals (150 occurrences) (χ^2=45.499, p<0.05). As mentioned by scholars such as Xu [26], Chinese journal articles tend to misuse "could", a modal verb expressing a relatively weak degree of possibility, when presenting their conclusions. This results in an over-vagueness of their assertions, which can be attributed to a lack of thorough understanding of modal verbs and consequently incorrect choices made in their usage.

3.2.2 Attribution Shields

Differences exist in the frequency of usage and collocations of words used by Chinese and international journal authors to express results in academic paper abstracts. Taking the word "result(s)", which appears most frequently as an indirectly mitigating hedge, as an example, it appears 1088 times in the Journal of Fisheries of China, while it appears 424 times in foreign journals, indicating a significant difference (χ^2=181.723, p<0.05). When referring to results,

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Chinese journal authors primarily use collocations such as "the result(s) showed", "the result(s) suggested", "the result(s) indicated", "the result(s) demonstrated", and "the result(s) of". However, international journal authors employ a more flexible and diverse range of collocations, including "the result(s) displayed", "the result(s) obtained", "the result(s) highlight", and "the result(s) revealed". Compared to international journal authors, Chinese journal authors use "the result(s) show" with the highest frequency 423 times. The verbs "show" and "suggest" are speculative verbs that express a relatively vague understanding of the truthfulness of propositions. The frequent use of these verbs by Chinese journal authors reflects their rigorousness.

Compared to the flexible and diverse use of hedges and collocations by international journal authors, Chinese journal authors still have some shortcomings. When mentioning certain research findings, the frequency of using "findings", "data", and "evidence" by Chinese journal authors (258 times) is significantly lower than that of international journal authors (626 times). Among them, the frequency of using "evidence" differs significantly (χ^2=231.239, p<0.05). In addition to the commonly used collocation "evidence for" by Chinese journal authors, international journal authors also use "evidence from", "evidence of", "evidence on", and "evidence that" in a more flexible and diverse manner. Furthermore, the statistical data from this study indicate that the usage of "strictly speaking" by Chinese journal authors is not reflected in foreign journals, and the high frequency of using "according to" (79 times) is not as high in international journals, with only 12 occurrences, indicating a significant difference (χ^2=37.926, p<0.05). Chinese journal authors should adhere more closely to the expression patterns of international journal authors, learn more authentic English expressions, and align the characteristics of academic paper abstract writing with those of international journal authors.

Table 6: Distribution of reader-driven and content-driven indirect mitigation hedges (Relative number is calculated according to 1000 words)

Attribution Shields		Chinese Journals		International Journals	
		Absolute number	Relative number	Absolute number	Relative number
Reader-driven	we	349	1.39	1038	4.99
	our	103	0.41	289	1.39
Content-driven	result(s)	1088	4.33	424	2.03
	data	220	0.87	470	2.26
	The study	667	2.66	378	1.82
	finding(s)	27	0.11	71	0.34

As indicated in Table 6, the occurrences of "we" and "our" in Chinese journals amount to 452 times, whereas in international journals, they appear 1327 times, revealing a significant difference in usage (χ^2=612.202, p<0.05). Similarly, "the study" appears 667 times in Chinese journals but only 378 times in international journals, also exhibiting a notable difference (χ^2=35.264, p<0.05). According to Hyland (1996), hedges in scientific writing primarily serve two functions: content-driven and reader-driven. "We" and "our" belong to the reader-driven category, emphasizing the acceptability of the abstract to the reader, whereas "the study" and "the research" fall into the content-driven category, requiring authors to present claims as accurately as possible and focus more on reflecting the essence of reality. The findings of this study indicate that Chinese journal authors utilize content-driven hedges more frequently than international journal authors. The frequency of using reader-driven hedges by Chinese journal

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authors is 0.18×10-2 words per character, whereas that of international journal authors is 0.63×10-2 words per character.

Example 4：We adopted a simple Classification Tree model that used otolith shape variation to separate Chinook salmon groups. (Canadian Journal of Fisheries and Aquatic Sciences)

In Example 4, international journal authors tend to establish a closer rapport with readers and fulfill their expectations for research accuracy.

Example 5：The study aimed to explore a teleost promoter applicable to genetic engineering breeding for disease resistance. (*Journal of Fisheries of China*)

In contrast, as shown in Case 5, Chinese journal authors tend to obscure their role as the research subject when mentioning the study, preferring to present an objective research process and results. They tend to use "the study" to convey a more formal tone in the abstract.

4. Conclusion and Suggestion

4.1. Conclusion

Based on a self-constructed corpus of English abstracts from Chinese and foreign marine academic journals, this study selects hedges in the evaluation system to investigate the similarities and differences in the use of hedges in English abstracts of Chinese and foreign academic journals, and further explores the underlying reasons. The research findings are as follows: 1) Compared with international marine academic journals, Chinese marine academic journals exhibit a lower frequency and more limited forms in the use of modifiable hedges; 2) Chinese marine academic journals employ a higher frequency of shields than international marine academic journals, but they lack diversity in terms of collocation and tend to obscure the role of scholars as the research subjects.

Addressing the aforementioned phenomena, this study identifies three primary reasons for the similarities and differences in the use of hedges in English abstracts of Chinese and foreign marine academic journals: 1) Cultural differences. Authors of Chinese marine academic journals tend to reduce the use of modifiable hedges with speculative verbs in pursuit of academic rigor, while foreign scholars employ modifiable hedges to enhance academic rigor. Additionally, influenced by linguistic and cultural factors, Chinese scholars use fewer nominal hedges and demonstrate unique characteristics in language collocation. 2) Differences in English proficiency. Since there are disparities in English proficiency between authors of Chinese marine academic journals and those of international marine academic journals, Chinese scholars are more constrained by Chinese linguistic culture and thinking, resulting in a more limited and inflexible use of hedges in English expressions. 3) Cultural backgrounds. Chinese people prefer to express themselves euphemistically, adhering to the politeness and humility of Eastern civilization. In contrast, Western culture is more open, with a stronger sense of self-awareness and greater confidence in research results. Therefore, when writing academic abstracts, Chinese scholars tend to use shields more frequently and avoid identifying themselves as the authors.

4.2. Suggestion

This study analyzes the reasons for the similarities and differences in the use of hedges in English abstracts of Chinese and foreign marine academic journals, aiming to provide some suggestions for Chinese academic journal authors. Firstly, Chinese academic journal authors should pay more attention to cultural differences between China and foreign countries, reduce the influence of inaccurate word choice and over-emphasis on fixed collocations caused by Chinese culture, and use hedges more flexibly and appropriately to enhance the objectivity and rigor of academic writing. Secondly, Chinese academic journal authors should focus more on improving their English proficiency and literacy, enabling more diverse and flexible

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expressions in academic papers and ensuring more accurate communication. Thirdly, authors should enhance their self-confidence and cultural confidence, confidently present their own viewpoints and research identities, use hedges more accurately and flexibly, and better demonstrate the charm of Chinese scholars to the world through accurate and objective academic writing.

Moreover, this study provides specific insights for the teaching and research of academic English: Firstly, it is essential to pay attention to the differences in word usage and the necessity of using hedges among Chinese scholars influenced by Chinese social and linguistic cultures, emphasizing the flexible use of English rather than merely pursuing fixed collocations. In daily teaching, it is necessary to have a deeper understanding of the habits of English language expression and its cultural characteristics, focus on the flexibility of expression, and improve language awareness and English literacy to make academic writing more objective and accurate. Secondly, the use of corpus in academic English teaching, research, and journal editing can be a beneficial approach. Searching the frequency of relevant words and phrases used by native English-speaking scholars through corpus can help Chinese scholars use hedges more appropriately and diversely. Thirdly, in teaching and research, it is necessary to summarize the characteristics of Chinese scholars' academic English, widely select samples of native scholars' papers to analyze the usage characteristics of hedges, and thereby targetedly improve the academic English writing ability of Chinese scholars to make their academic papers more compliant with the requirements of international journals. Only by doing so can Chinese research be better presented internationally.

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