

Article

Interaction and Persuasion: A Corpus-Based Comparison of Metadiscursive Nouns in Abstracts of Sports Science Master's Thesis in China and the US

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Abstract: Academic writing is marked by a prevalence of abstract nouns that package complex ideas like argument, reason, assumption, suggestion, and conclusion. These rhetorical devices, whose meanings are derived from their contextual references or shared disciplinary knowledge, help writers engage with readers, guide their comprehension, and present arguments persuasively. Although metadiscursive nouns have been widely studied in both intradisciplinary and interdisciplinary contexts, the sports science discipline remains an underexplored area in this field. Thus, based on the integrated frameworks proposed by Jiang & Hyland and Jiang, this study aims to explore the most frequent types of metadiscursive nouns, lexico-grammatical patterns and their functions in the abstract section of sports science master's thesis in China and the US. The findings reveal that "entity nouns", the "Determiner + N" pattern and the "N + post-nominal clause" structure appear most while "relation nouns" and "Determiner + be + N" appear least in both linguistic groups. The prevalence of the stance function of metadiscursive nouns in abstracts, as opposed to the engagement function, can be explained by two key factors: the specific rhetorical aims of the abstract and the characteristics of its intended audience. Regardless of the type or the lexico-grammatical structure, these abstract nouns all play a significant role in the academic writing of both Chinese and American master students. This study aims to provide insights into the academic writing characteristics of the sports science discipline, as well as important pedagogical guidance for students in this field.

Keywords: metadiscursive nouns; the sports science discipline; abstracts of master thesis; a comparative analysis

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1. Introduction

As an important genre in all knowledge fields, academic abstracts can be seen as a form of promotional persuasive discourse. Their key role is to present an idea to potential readers to promote the writer's research in a relatively limited space. Specifically speaking, they assist readers in assessing the relevance and interest of a study, helping them decide whether to keep reading or reject the article outright [1]. For writers, excellent abstracts enable them to establish credibility within their academic communities and convince readers of the validity of their assertions, as they are typically the first section readers encounter [1]. Both Chinese and American sports science master students must repeatedly polish their abstracts before inserting them into their thesis. So, their significance is crystal clear.

Over the past decades, academic writing in the sports science discipline has been underemphasized in academic communities. Few scholars have specifically studied the characteristics of academic writing within the sports science discipline. Due to the unique nature of this discipline, there exists a stereotype that sports science students focus too much on physical training but neglect academic writing. As a matter of fact, with a solid

foundation in academic theories and years of academic training, they can also produce excellent academic writing about sports science. Thus, their academic writing deserves more attention. Meanwhile, against the backdrop of China's flourishing sports industry and with English as the lingua franca, abstract writing can also help students and researchers better promote China's sports science discoveries worldwide. So, there's an urgent and practical need to enhance the abstract writing skills of students in the sports science discipline.

As a subset of abstract nouns, metadiscursive nouns have been proven by scholars to play an important role in academic writing [2-4]. They can help academic writers express their disciplinary stances, engage their audience, and create cohesion and coherence in academic writing. Therefore, scholars have conducted research on metadiscourse nouns across different disciplines, such as applied linguistics, business, biology, musicology, science and engineering and even chemical engineering [5,6]. However, there is still relatively limited research on metadiscursive nouns in the field of sports science [7]. Therefore, based on the research background, this paper adopts a corpus-based comparative study of metadiscursive nouns in the abstract section of sports science master's thesis in China and the US [8]. This study hopes to shed some light on the writing characteristics of the sports science discipline and promote cross-cultural communication [9].

2. Literature Review

2.1. Definitions and Classifications of Metadiscursive Nouns

For the past several decades, metadiscursive nouns have drawn the attention of numerous scholars. Halliday and Hasan were the first to propose the term general noun to define this category of nouns [10]. However, due to the broad generality and fuzziness of these nouns, scholars have attempted to highlight some of their distinctive characteristics and assigned these nouns a variety of terms.

Francis terms anaphoric nouns that retrospectively reference prior information while simultaneously establishing a foundation for new information [11]. She emphasizes the interactive relationship between writers and readers as these nouns facilitate comprehension. Moreover, Francis makes a reclassification of prior anaphoric nouns as labels with cataphoric, anaphoric or even exophoric functions [12]. Ivanič's concept of carrier nouns possesses two types of meaning: a fixed, dictionary-based meaning and a context-dependent, variable meaning that emerges specifically within the discourse in which they are employed [13]. Later, Schmid terms them shell nouns, which provide statements with conceptual shells that enable writers to manage and carry them forward in discourse by labeling content and signaling its nature [14]. He also identifies four typical lexico-grammatical patterns and three primary functions within these abstract nouns. Flowerdew terms them signaling nouns and describes them as a set of abstract nouns whose specific meanings can only be understood by referring to their context [15]. These nouns may pose challenges for both native and non-native speakers due to cognitive complexity. However, regardless of how these nouns are termed, scholars all acknowledge their crucial role in academic writing where they can help organize discourse and guide readers in grasping the structure and key points.

More recently, Jiang & Hyland coin metadiscursive noun which is based on Tahara's attempts to encompass all dimensions of prior scholars' research [16,17]. However, Jiang and Hyland believe that Tahara didn't capture the full functions of these nouns [1]. While employing the term metadiscursive noun, they also assign it extra rhetorical roles by incorporating both textual and interpersonal aspects that are based on Hyland's concept of metadiscourse [17,18]. They define metadiscursive nouns as "those which refer to the organization of the discourse or the readers' understanding of it [5]. These abstract nouns have both a constant meaning in a particular context and a pragmatic meaning based on contextual lexicalization [19]. At the same time, they label these abstract nouns both inter-

active and interactional dimensions. The interactive dimension relates to how writers organize their text to be cohesive and coherent for the reader. In the interactional dimension, writers aim to express their views and involve readers in their texts. Therefore, there always exists a connection between metadiscursive nouns and supplementary information, which enables writers to arrange ideas cohesively and aids readers in figuring out the connected meanings.

2.2. Applied Studies of Metadiscursive Nouns

Scholars have extensively investigated metadiscursive nouns due their significant importance in academic writing. First of all, disciplinary differences may lead to variations in the use of metadiscursive nouns. Jiang & Hyland examine changes in the use of metadiscursive nouns across applied linguistics, sociology, electrical engineering and biology over 50 years [20]. They demonstrate that different disciplines show varying preferences in using these abstract nouns and reflect their unique ways of constructing knowledge. Gray & Cortes investigate the use of this and these as pronouns versus determiners in academic prose within applied linguistics and materials and civil engineering [21]. They find that pronominal uses are not merely instances of writers deviating from prescriptive rules but serve specific functions. Dong et al. investigate the subdisciplinary variation in the use of shell nouns between science and engineering [8]. In music discipline, Liu and Chen compare the use, frequency, and syntactic patterns of metadiscursive nouns in 40 English abstracts by Chinese and American doctoral students to identify cross-cultural differences [7].

Besides, scholars have also investigated the use of metadiscursive nouns in different genres. Aktas & Cortes compare the frequency, lexico-grammatical patterns, and functions of shell nouns in texts written by published scientists and international graduate students (ESL writers) [2]. Liu and Deng investigate how shell nouns are used in the N-be-that construction across two genres: popular science articles and professional research articles [22]. They find that genre influences evaluative language and authorial stance in scientific communication. More recently, Wang & Hu examine diachronic changes (over 40 years) in the use of shell noun phrases (SNPs) in chemical engineering research articles [9]. They argue that SNP use in scientific writing is dynamic and contextually driven, responding to disciplinary, epistemological, and social shifts. The decline in certain SNPs and rise in verbal alternatives reflect chemical engineering's evolving ethos, particularly its embrace of sustainability and authorial presence.

From the literature, we can see that metadiscursive nouns usage varies by discipline and genre. While metadiscursive nouns have been studied in various disciplines of academic writing, their use in the sports science discipline has been largely unexplored. Considering the importance of abstracts, this study aims to explore the frequencies, functions and common lexico-grammatical patterns of metadiscursive nouns in the abstract section of sports science master's thesis in China and the US.

3. Analytical Framework

This study adopts an analytical framework that integrates both Jiang & Hyland's taxonomy of metadiscursive nouns and five lexico-grammatical patterns of abstract nouns proposed by Jiang [5,19].

As indicated in Table 1, there are three primary categories in this functional taxonomy: entity, attribute, and relation respectively. Entity nouns reflect "the writers' judgment of texts, events, discourses, or aspects of cognition" [5]. This category has four sub-categories, text, event, discourse, cognition. Text nouns are concerned with "metatext or concrete instances of text"; event nouns refer to "either occurrence of actions and processes or mention of real-world cases"; discourse nouns refer to "verbal propositions and speech acts" and cognition nouns are associated with "beliefs, attitudes and elements of mental reasoning" [5].

Table 1. Jiang and Hyland's Functional Categorization of Metadiscursive Nouns [5].

Category	Definition	Examples
Entity		
Text	Concrete metatext	report, paper, extract
Event	Events, processes and evidential cases	change, case, observation, process
Discourse	Verbal propositions and speech acts	argument, claim, conclusion, response
Cognition	Cognitive beliefs and attitudes	decision, idea, notion, doubt, hypothesis
Attribute		
Quality	Traits that are admired or criticized, valued or depreciated	advantage, difficulty, importance, failure
Manner	Circumstances of actions and states of affairs	time, method, way, scenario, extent
Status	Epistemic, deontic and dynamic modality	possibility, capacity, potential, ability
Relation		
Relation	Cause-effect, difference, relevance	reason, result, difference

Attribute nouns are concerned with "writers' evaluation of the quality, status, and formation of entities" [5]. Quality nouns define "whether something is admired or criticized, valued or appreciated, with assessment falling on a scale of plus or minus"; manner nouns deal with "the circumstances and formation of actions and states of affairs"; status serves to reflect "the authors' judgments of epistemic, deontic, and dynamic modality" [5].

Finally, relation nouns are concerned with "how a writer understands the connection or relationship to the formation in a proposition" [5]. To be more specific, they help writers structure their arguments, guide readers through texts, and establish connections between ideas.

Lexico-grammatical patterns play a crucial role in the study of metadiscursive nouns, as they facilitate the interpretation between these abstract nouns and their referential content while enabling efficient corpus retrieval [14]. After Schmid's lexico-grammatical patterns of abstract nouns, Jiang proposes five typical lexico-grammatical patterns that these nouns often appear in (see Table 2) [19].

Table 2. Five Lexico-grammatical Patterns Proposed by Jiang [19].

Lexico-Grammatical Patterns	Variants	Examples
N + post-nominal clause	N + that clause	This study examines the possibility that climate change may lead to the extinction of certain animal species.
	N + to-infinitive clause	
	N + of-preposition clause	
	N + preposition-plus-wh clause	
N + be + complement clause	N + be + that clause	The aim of this study was to investigate the relationship between social media usage and mental health among adolescents.
	N + be + to-infinitive clause	
	N + be + wh-clause	
Determiner + N	this + N/ that + N	This approach focuses on enhancing student participation through interactive classroom activities
	the + N/ such + N	
	these + N/ those + N	
Determiner + be + N	this + be + N/ that + be + N	The theory suggests that higher taxes can reduce income inequality. This is

	such + be + N	the case in some Scandinavian
	these + be + N/ those + be	countries.
	+ N	
There be + N	There be + N	There are some problems of this
		study.

Based on the integrated analytical framework, two questions are proposed in this study: (a) What types of metadiscursive nouns are the most frequent in the abstract section of sports science master’s thesis in China and the US? (b) What are the most frequent lexico-grammatical patterns and functions of metadiscursive nouns in the abstract section of sports science master’s thesis in China and the US?

4. Methodology

Based on Jiang and Hyland’s functional categorization of metadiscursive nouns and Jiang’s five lexico-grammatical patterns, 30 (15 from Chinese master students and 15 from American master students) pieces of abstracts were analyzed with a combination of both qualitative and quantitative analysis [5,19]. All abstracts were randomly obtained from CNKI and ProQuest, all of which were authored by native speakers, and published between 2021 and 2023. This study refers to the abstracts written by Chinese master students as CSA and those by American master students as ASA. For specific corpus information, see Table 3 below.

Table 3. Corpus Information.

Corpus	Number of Words	Average Text Length
Corpus CSA	8934	595.6
Corpus ASA	6486	456.4

Inspired by Jiang’s and Liu & Chen’s research, the whole analytical process involves the following three steps [7,19]:

Step 1: Identification and classification of metadiscursive nouns.

Based on Jiang and Hyland’s categorization, the analysis was carried out using AntConc 4.2.4 [5,23]. This tool offers nearly immediate word frequency lists, and concordances that display a word’s use in context. Each corpus was uploaded into AntConc 4.2.4, and the frequency of each noun from the taxonomy was individually searched within each corpus. Additionally, a manual inspection of the concordance lines was conducted to verify if these nouns served a metadiscursive function. For example, in extract 1, study is just a technical term in sports scientific research without metadiscursive functions. In contrast, study in extract 2 reflects a metadiscursive function as it provides readers with background information about the research methodology.

Extract 1: Based on a case study, the conclusion is drawn that this institutional innovation is a new way to promote the inheritance of folk sports culture in the new era (CSA-2).

Extract 2: This study explored how a 4-week mindfulness training program affected the perception of stress in four preadolescent children playing sports using a multiple case study analysis (ASA-3).

Step 2. Identification of the lexico-grammatical patterns in which these abstract nouns appear.

The part-of-speech tagging was executed by TreeTagger 3.0, a free software designed to label each word with its grammatical category [24]. This step was crucial since the current research primarily relied on syntactic structure analysis [25]. Schmid reported that the TreeTagger tool had an accuracy of 96.36% in corpus tagging tasks although some residual errors may exist [26]. To ensure accuracy, all the tagged texts were manually reviewed so that an accurate annotation result could be achieved. Besides, AntConc 4.2.4

would be employed to identify concordances of metadiscursive nouns within these five lexico-grammatical patterns through contextual analysis.

Step 3: Data calculation and data analysis

The raw frequencies were normalized per 1000 words to facilitate corpus comparison, which could indicate how often specific items appeared within that word count. Besides, Chi-square test in SPSS 27 was employed to examine whether there existed significant differences in the use of metadiscursive nouns between the two linguistic groups [27].

5. Results and Discussions

This section presents an analysis of metadiscursive nouns and the common lexico-grammatical patterns in the corpus and demonstrates how Chinese and American sports science master students utilized these nouns in the abstracts of their master's theses.

5.1. Overall Distributions of Metadiscursive Nouns

The overall results for metadiscursive nouns in the two corpora are summarized in Table 4. As demonstrated in Table 4, 425 instances of metadiscursive nouns were detected based on the taxonomy proposed by Jiang and Hyland, with 272 cases from Chinese master students and 153 cases from American master students [5]. The Chi-square test results ($\chi^2=6.189$, $p<0.05$) from SPSS 27 revealed significant differences in the use of metadiscursive nouns between the two linguistic groups. Besides, metadiscursive nouns appeared at a rate of 30.4 per 1000 words in Chinese master students' thesis while 23.6 per 1000 words in American master students' thesis. The observed frequency counts of metadiscursive nouns between the two linguistic groups suggest that they prefer these rhetorical devices to arrange their texts and put forward arguments.

Table 4. Overall Distributions of Metadiscursive Nouns in the Two Corpora.

Corpus	Number of Words	Metadiscursive Nouns	NORM
Corpus CSA	8934	272	30.4
Corpus ASA	6486	153	23.6

5.2. Distributions of Subcategories of Metadiscursive Nouns

Table 5 presents the detailed frequency counts for each category of metadiscursive nouns in the two linguistic groups. Entity nouns, which reflects writers' judgment of content, are the most frequent category in the study, followed by attribute nouns, indicating writers' personal evaluation of propositional content. In the corpora, the two categories had the highest frequencies, with 16.3 and 12.2 frequency counts per 1000 words in Corpus CSA, and 16.2 and 5.1 in Corpus ASA respectively. However, relation nouns, used to denote connections and relationships within content, are the least frequent category in this study with a frequency of 1.9 per 1000 words in Corpus CSA and 2.3 in Corpus ASA respectively. Notably, both students exhibit comparable trends in utilizing the primary categories of metadiscursive nouns, which aligns with Jiang and Hyland's findings [1].

Table 5. Distribution of Subcategories of Metadiscursive Nouns in the Two Corpora.

Type	Corpus CSA			Number	Corpus ASA	
	RAW	NORM	PERCENTAGE		NORM	PERCENTAGE
ENTITY	146	16.3	53.7%	105	16.2	68.6%
Text	68	7.6	25%	53	8.2	34.6%
Event	48	5.4	17.7%	31	4.8	20.3%
Discourse	3	0.3	1.1%	2	0.3	1.3%
Cognition	27	3	9.9%	19	2.9	12.4%
ATTRIBUTE	109	12.2	40.1%	33	5.1	21.6%

Quality	42	4.7	15.4%	10	1.6	6.6%
Manner	56	6.3	20.6%	19	2.9	12.4%
Status	11	1.2	4.1%	4	0.6	2.6%
RELATION	17	1.9	6.3%	15	2.3	9.8%
Total	272	30.4	100%	153	23.6	100%

5.2.1. Entity Nouns

Among the four subcategories of entity nouns, the use of text nouns is the most notable in the corpora, averaging 7.6 and 8.2 per 1000 words respectively, with study, thesis and research being the most predominant. In the two examples provided, these text nouns serve to highlight the study's aims and demonstrate how it addresses gaps in the existing literature.

Extract 3: This study focuses on the relationship between college students' fitness literacy and depressive mood, using methods such as questionnaire surveys and interviews to conduct a sample survey of full-time college students in Shanghai universities (CSA-4).

Extract 4: To investigate the gender gap, this thesis explores the institutional practices that inform women coaches' working realities (ASA-12).

The second event nouns help writers to highlight the occurrence of actions in scientific studies, with the frequency of 5.4 and 4.8 per 1000 words in the two corpora. Extract 5 below shows some observable facts or events requiring further research and extract 6 illustrates how writers presented the key results and contributions of the research, thereby framing them as significant events in the scholarly process.

Extract 5: However, influenced by various factors for a long time, the phenomenon of fan culture is often accompanied by the complex sociological phenomena, including some negative effects (CSA-3).

Extract 6: The findings illuminate women coaches' daily activities within the university and how the relations of ruling coordinate these realities (ASA-12).

The third cognition nouns, which reflect writers' mental processes such as reasoning, interpretation, and belief in sports scientific research, appeared at a rate of 3 and 2.9 per 1000 words respectively. The subsequent extracts reveal that the writers' reasoning strategies were largely predicated on empirical results or findings in extract 7 and 8. In extract 7, a functional strategy of connecting pieces of information is also demonstrated. Here, the writer highlighted previously mentioned information and connected evidence to interpretation and recommendations.

Extract 7: According to the analysis of the survey results, this study provides corresponding path suggestions for the empowerment practice of sports events in China (CSA-14).

Extract 8: Findings have important implications for clinical management of sport concussion and provide an initial step towards advancing our understanding of the measurement of cognitive performance before and after sport concussion (ASA-9).

The last discourse nouns, observed at the same frequency of 0.3 per 1000 words in both corpora, are used to label verbal propositions and speech acts, such as argument, claim, and conclusion. The extracts below illustrate how writers employed these nouns to structure their arguments. In extract 9, the writer tended to summarize his findings through the use of conclusion. In extract 10, the writer aims to show his support for a specific academic argument that gambling is a complex and multifaceted phenomenon rather than a general public belief.

Extract 9: Based on a case study, the conclusion is drawn that this institutional innovation is a new way to promote the inheritance of folk sports culture in the new era (CSA-2).

Extract 10: This thesis contributes to a greater understanding of online sports betting, and supports the contention that gambling is a multifaceted phenomenon, in which individual factors, as well as structural and situational characteristics should be considered (ASA-1).

5.2.2. Attribute Nouns

Attribute nouns concern writers' evaluations of the quality, status, and formation of entities. Within the attribute category, no significant variation was observed in the corpora when divided into subcategories. However, both writers showed relatively higher preferences for the manner subcategory (6.3 and 2.9 respectively), which reflects "the circumstances and formation of actions and states of affairs" in sports science activities. In extract 11, "extent" quantifies the breadth of application across different methodologies, reflecting researchers' preferences and variations in methodological adoption. In extract 12, "way" refers not only to specific marketing approaches but also reflects the tendency towards more standardized and proactive marketing strategies.

Extract 11: In terms of the main research methodologies, the most used methodology in the study of philosophy of sport in China is hermeneutic methodology, followed by analytical philosophical methodology and phenomenological methodology, with psychoanalytic, structuralist and positivist methodologies being applied to a lesser extent (CSA-6).

Extract 12: The results highlighted that Twitter serves as a platform where gambling operators market their products in a normalized and positive way (ASA-1).

The second quality nouns (4.7 and 1.6 respectively) assess something positively or negatively and the last status nouns (1.2 and 0.6 respectively) show "writers' own judgments of epistemic, deontic, and dynamic modality", both of which are shown in extract 13 and 14 respectively. In extract 13, the writer acknowledges the research value of football fan culture despite the drawbacks mentioned before. In extract 14, "potential" encodes the writer's modality-driven judgment (this could happen under these conditions) rather than an absolute quality (like harm or risk).

Extract 13: This also indicates that football fan culture has a more realistic foundation and research value in football (CSA-3).

Extract 14: The findings of the review indicated that in-play sports betting has the potential to be more harmful than other forms of gambling (e.g., gambling on fixed odds) because of the inherent structural characteristics (ASA-1).

5.2.3. Relation Nouns

While least used, relation nouns also play an important role. They help to express how writers understand the connection or relationship to information in a proposition. They convey relations such as reason, result, and difference. These nouns serve to create a cohesive and coherent discourse by establishing relationships between different parts of the text or between the text and the reader. By using these nouns, writers can effectively express their stance and engage the readers, thus contributing to the overall persuasive and interactive nature of academic writing. The typical examples are shown in extract 15 and 16. In extract 15, the writer uses a statistical or correlational link between variables through the use of relationship to integrate fragmented information into a logical argument, thereby enhancing the rigor of the study. In extract 16, the writer's research aims to explore how these new characteristics and advertising strategies affect people's comprehension and engagement with online sports betting. Impact suggests a causal effect where changes in the features or advertising can lead to changes in the outcomes related to online sports betting.

Extract 15: Mediation analysis found that college students' health condition partially mediates the relationship between fitness literacy and depression (CSA-4).

Extract 16: Therefore, the overall aim of the research presented in this thesis was to contribute to the understanding of online sports betting, particularly in terms of the impact of newer features of online sports betting and sports betting advertising (ASA-1).

5.3. The Interactive Function: Anaphora and Cataphora

Table 6 illustrates the distribution of five lexico-grammatical patterns containing metadiscursive nouns within the two corpora. As stated by Jiang, metadiscursive nouns serve to organize the discourse, create logical connections between ideas, and guide the reader through the structure of the argument [19]. They act as the architectural signposts of a text, making it cohesive and coherent. The current findings (see Table 6) are consistent with Jiang's findings that the interactive dimension of metadiscursive nouns which primarily functions as anaphoric and cataphoric reference is observed most frequently in the "Determiner + N" and "N + post-nominal clause" patterns [19]. So, this section will primarily focus on these two patterns.

Table 6. Frequency of Five Lexico-grammatical Patterns.

Lexico-Grammatical Patterns	Corpus CSA		Corpus ASA	
	RAW	PERCENTAGE	RAW	PERCENTAGE
N + post-nominal clause	63	23.2%	42	27.5%
N + be + complement clause	16	5.9%	16	10.5%
Determiner + N	164	60.3%	72	47.1%
Determiner + be + N	12	4.4%	4	2.6%
There be + N	17	6.2%	18	11.8%
Total	272	100%	153	100%

5.3.1. Determiner + N Structure

As indicated by Table 7, this pattern is overwhelmingly used by both linguistic groups to refer backward to information that has already been mentioned. This allows these writers to encapsulate a previous idea, sentence, or even an entire paragraph into a single noun phrase, which can then be carried forward into the current argument. The most common determiner used for this anaphoric purpose is "this", followed by "the", "these" and "those". This creates a cohesive and logical flow, allowing the writer to build on previously stated information without lengthy repetition. However, cataphoric reference, which can refer forward in the discourse, is less common. The main reason for the infrequent cataphoric use is that its cataphoric linkage is hardly apparent for readers to recognize [19]. This typically requires cohesive modifiers like "following" or "next" to make the forward-pointing signal clear to the reader. Without such modifiers, the structure is not inherently cataphoric. In addition, entity nouns predominantly appear in the "Determiner + N" structure across both corpora, as the primary rhetorical function of an abstract is to promote and summarize the research work itself. Entity nouns, particularly text nouns, like thesis, study, and research, are the most direct linguistic tools for this self-referential and promotional genre. The typical examples are provided in the following discussions.

Table 7. Anaphoric and Cataphoric Use of the “Determiner + N” Structure.

Determiner + N Function	Corpus CSA		Corpus ASA	
	RAW	PERCENTAGE	RAW	PERCENTAGE
Anaphoric	158	96.3%	67	93.1%
Cataphoric	6	3.7%	5	6.9%
Total	164	100%	72	100%

The data for the “Determiner + N” structure in Table 7 indicates that its primary interactive function is anaphoric. In both Corpus CSA and Corpus ASA, the vast majority of instances served to refer back to previously mentioned information, at 96.3% and 93.1% respectively. The use of this structure for a cataphoric purpose was almost negligible in both corpora.

Extract 17: Based on the above findings, this study proposes the following countermeasures and suggestions: (1) Develop a series of fitness... (2) Regularly monitor the depressive mood... (3) The gateway to depressive... (4) Develop college sports and fitness... (CSA-4).

In extract 17, “findings” is used anaphorically, as it explicitly refers backward to the detailed, numbered list of conclusions presented in the preceding paragraph (points 1-5). It functions as an anaphoric encapsulator, summarizing all the previously stated results into a single concept. This allows the writer to create a smooth and logical transition from presenting the results of the research to proposing recommendations that are directly based on those results. “Study” in this context is also used anaphorically. It refers to the entire research project that has been described up to this point in the text. It functions as a self-referential label for the work as a whole. However, “countermeasures and suggestions” are used cataphorically. These two words, especially when paired with the modifier “the following” and the subsequent colon, act as a clear forward-pointing signal. It announces to the reader what kind of information is coming next, setting up the expectation for a list of recommendations. The numbered list (points 1-4) that immediately follows is the specific information that this phrase points to. This function helps to structure the text, manage reader expectations, and provide a clear framework for the paper’s concluding advice.

Extract 18: After researching the coupling relationship between traditional villages and fashion sports, the following conclusions are drawn: (1) The coupling relationship between... (2) A new era of traditional villages... (3) The specific path... (4) The coupling effect...(CSA-12).

In extract 18, “relationship” functions both anaphorically and cataphorically. It refers back to the central research topic that has just been introduced (“to find the coupling relationship...”) and also points forward to the detailed explanation that immediately follows, which breaks down what the relationship consists of. Besides, the phrase “the following conclusions” refers cataphorically to the content enumerated in points (1), (2), (3), and (4). By announcing the conclusions, the writer sets up the reader’s expectations and creates a clear, organized structure for presenting the main takeaways of the research.

Extract 19: Future investigations are encouraged to examine whether there are physical, technical and tactical factors that underpin the coaches’ prescription and assess these relationships within training and performance (ASA-8).

In extract 19, both “prescription” and “relationships” are functioning anaphorically. Specifically, “prescription” refers backward to the concept of prescribing training that was established in the previous sentence while “relationships” refers back to the connection between the concepts introduced in the first part of the same sentence (the various factors and the prescription).

Extract 20: Existing instruments were used to measure the following 13 sport values: (1) Ethics, (2) Honesty, (3) Excellence in performance, (4) Fun/joy, (5) Teamwork, (6) Dedication; (7) Respect for Rules/Laws, (8) Respect for Self, (9) Respect for Other Participants, (10) Community, (11) Courage, (12) Character, and (13) Health (ASA-10).

In extract 20, the function of “values” is cataphoric. It points forward to the detailed, numbered list that has not yet been presented to the reader. It signals what is to come.

5.3.2. N + Post-nominal Clause Structure

As Jiang argues, the primary interactive function of the “N + post-nominal clause” pattern is to create cataphoric cohesion [19]. This means the metadiscursive noun in this structure is used to point forward and signal information that is about to be presented in the subsequent clause.

As detailed in Table 8, the “N to-infinitive clause” was the most prevalent form of the “N + post-nominal clause” structure in both linguistic groups. It constituted 50.8% of instances in Corpus CSA and a notable 64.3% in Corpus ASA. The “N + that clause” showed similar frequencies across the two corpora, at 20.6% and 21.4%, respectively. A significant difference was observed in the use of the “N + of-preposition clause”, which was twice as common in Corpus CSA (28.6%) as it was in Corpus ASA (14.3%). No instances of the “N preposition-plus-wh clause” were identified in either corpus.

Table 8. Distribution of Different Clausal Forms of the “N + post-nominal clause” Structure.

N + post-nominal clause Type	Corpus CSA		Corpus ASA	
	RAW	PERCENTAGE	RAW	PERCENTAGE
N that clause	13	20.6%	9	21.4%
N to-infinitive clause	32	50.8%	27	64.3%
N of-preposition clause	18	28.6%	6	14.3%
N preposition-plus-wh clause	0	0%	0	0%
Total	63	100%	42	100%

Extract 21: In addition to carrying out traditional Chinese sports activities through seasonal festivals, only some female workers have the opportunity to carry out sports practice through intermediary organizations (CSA-7).

In extract 21, by first presenting the general concept (“opportunity”) and then immediately specifying its content, the writer guides the reader’s understanding in a clear and structured way. This allows the writer to steer readers to a preferred interpretation and reading of the discourse to follow.

Extract 22: In the process of implementing “one-hour physical exercise outside school” for urban primary school students in Dazhou City, it is influenced by individual, inter-personal, community and organization (CSA-5).

In extract 22, the interactive function of “process” is to anaphorically connect and summarize a previously established topic, the dilemma of ‘one-hour physical exercise outside school’, thus creating a cohesive and logically structured argument for the reader. The accompanying prepositional phrase clarifies this anaphoric link, which ensures the reader can easily follow the flow of information.

Extract 23: Taken holistically, this thesis substantiates the need to consider multiple spatial and temporal scales when surveying human-wildlife interactions in the marine environment (ASA-15).

In extract 23, “need” alerts the reader that a necessary action or concept is about to be presented. It functions as an interactive clue that prepares the audience for the specific requirement that the writer is advocating for based on his research findings.

Extract 24: The National Collegiate Athletic Association (NCAA) promotes the fact that most student-athletes will not become professional athletes (ASA-6).

In extract 24, “fact” points forward, acting as a predicting signal that prepares the reader for the specific proposition contained in the that-clause. Besides, it frames that upcoming information as an authoritative and undisputed piece of reality, thereby guiding the reader to accept its validity as the argument progresses.

5.4. The Interactional Function: Stance and Engagement

Jiang states that the interactional function of metadiscursive nouns is to manage the interpersonal aspect of academic writing [19]. Writers employ these nominal resources to stamp their personal voice onto their work, evaluate information, and strategically align themselves with their readers and the values of their disciplinary community. Besides, the interactional function is primarily realized through two key rhetorical actions: stance and engagement. The findings indicate that metadiscursive nouns overwhelmingly appear in two main constructions: the “Determiner + N” and “N + post-nominal clause” patterns. Given the statistical insignificance of the remaining three structures, this section will focus exclusively on analyzing the stance and engagement features within these two dominant forms.

5.4.1. Determiner + N Structure

Table 9 illustrates the frequency and distribution of the interactional functions of metadiscursive nouns within the “Determiner + N” pattern across two corpora. The data reveals a clear and consistent trend in both corpora: the stance function is overwhelmingly predominant, while the engagement function is used with very low frequency. Overall, the findings indicate that when writers employ the “Determiner + N” structure, it is almost exclusively used to express their stance rather than explicitly engage the reader.

Table 9. Interactional Use of Metadiscursive Nouns in the “Determiner + N” Structure.

Determiner + N Function	Corpus CSA		Corpus ASA	
	RAW	PERCENTAGE	RAW	PERCENTAGE
Stance	164	100%	71	98.6%
Engagement	0	0	1	1.4%
Total	164	100%	72	100%

Extract 25: Based on a case study, the conclusion (stance) is drawn that this institutional innovation (stance) is a new way to promote the inheritance of folk sports culture in the new era (CSA-2).

In extract 25, “conclusion” signals the writer’s role in structuring the argument. By labeling the subsequent proposition as “the conclusion”, the writer is making a claim about the status of that information. They are presenting it as the final, reasoned outcome derived from the evidence presented. Besides, “innovation” frames these measures as novel, progressive, and beneficial, which reinforces a positive evaluative stance of the writer.

Extract 26: To address these shortcomings (stance), study two (Chapter Three) developed a questionnaire tool to quantify and monitor how coaches prescribe the tactical elements of training (ASA-8).

In extract 26, by using “shortcomings”, the writer is not merely stating a neutral fact (i.e., that there is a lack of evidence); he is actively evaluating this lack of evidence as a deficiency, a fault, or a weakness in the existing body of research. This word carries a negative evaluative weight and clearly signals the writer’s critical judgment of the state of the field. The purpose of this stance is to create a research gap, justifying the necessity and value of the writer’s own work.

Apart from stance markers, this pattern also functions as an engagement maker that brings readers into discourse with a call for shared knowledge [19]. This strategy helps create solidarity and positions the reader as a participant in the conversation. However, occurrences of engagement markers were too sparse within the corpus, which may align with Jiang’s findings that “today authors appear to be far less ready to call up sharedness” [19]. This is perhaps a result of changing audiences with more diffuse background and less knowledge of specialist techniques[1]. Attempting to appeal to a specific base of shared knowledge risks confusing or alienating a large portion of the potential readership.

Extract 27: As training and testing methods continue to improve, the systems used to track athlete performance have also gradually evolved. The development of different stages of the system is closely related to the experimental conditions (engagement) (ASA-11).

In extract 27, while the “experimental conditions” may refer to earlier descriptions of methods, it functions less as a direct anaphoric reference to the methods and more as an appeal to the reader’s immediate comprehension [28]. This strategy necessitates that the audience possess a proficient understanding of the sports experiment to grasp the argument without needing to refer back to earlier sections.

5.4.2. N + Post-nominal Clause Structure

As shown in Table 10, the analysis of the “N + post-nominal clause” structure also reveals a clear predominance of the stance function in both corpora [29]. Stance markers constituted 96.8% of the instances in Corpus CSA and 100% of all occurrences in Corpus ASA. Notably, the engagement function was exceptionally rare in Corpus CSA (3.2%) and completely absent in Corpus ASA. These findings strongly suggest that writers primarily utilize this grammatical structure to express an evaluative or authorial position rather than to directly engage the reader.

Table 10. Interactional Use of Metadiscursive Nouns in the “N + post-nominal clause” Structure.

N + post-nominal clause Function	Corpus CSA		Corpus ASA	
	RAW	PERCENTAGE	RAW	PERCENTAGE
Stance	61	96.8%	42	100%
Engagement	2	3.2%	0	0%
Total	63	100%	42	100%

Extract 28: Industry associations need to strengthen the risk awareness (stance) and the willingness (stance) to control risks to ensure the personal safety of participants (CSA-8).

In extract 28, the writer is making a clear judgment about what is important and necessary for ensuring participant safety. Instead of focusing only on concrete procedures, the writer takes the stance that the committee’s cognitive state and attitude are critical factors. This frames the solution in a specific way, reflecting the writer’s perspective on the root of the problem [30].

Extract 29: The dilemma in terms of physiological traits is mainly due to the increase in physical education curriculum hours, after-school physical education services, and physical education homework design, which has led to an increase in the workload of primary and secondary school teachers in the context (engagement) of advancing “double reduction” (CSA-9).

In extract 29, the term “double reduction” refers to a major, specific, and widely known educational policy in China. The writer does not define this policy within the sentence. Instead, he regards the reader as an insider who understands the current landscape of Chinese education, thereby involving them as a discourse participant.

Extract 30: It plays an important role in the sports industry with sports events as the core under the strategic background (engagement) of improving social security system and promoting the healthy China Construction of the whole people (CSA-14).

In extract 30, “background” does not refer to an idea that is being newly introduced or defined within the text itself. Instead, it points to a large-scale, well-known national policy and social context in China (Healthy China 2030 initiative). The writer presumes that the intended reader is already familiar with this strategic background

Extract 31: Close et al. (2019) used the ‘Paper to Podium’ Framework to test the hypothesis (stance) that carbohydrate mouth rinse combined with caffeine reduced the decrements to performance that athletes may experience when restricting carbohydrates or fluids (ASA-7).

In extract 31, labeling the proposition as a “hypothesis” is a deliberate authorial choice. It frames the information for the reader, signaling that it is a specific, testable proposition put forward by Close et al. for scientific investigation.

Extract 32: The findings of the review indicated that in-play sports betting has the potential (stance) to be more harmful than other forms of gambling (e.g., gambling on fixed odds) because of the inherent structural characteristics (ASA-1).

In extract 32, “potential”, a marker of epistemic modality, conveys the writer’s assessment of the likelihood or possibility of something being true. The writer is not making an absolute, factual claim that in-play betting is more harmful. Instead, he employs “potential” to frame the finding with a specific degree of certainty. It signals that the capacity for harm exists, based on the evidence from the literature review.

6. Conclusions

Metadiscursive nouns are not merely passive labels for ideas. Instead, they are powerful rhetorical tools that academic writers strategically employ to organize their text, interact with readers, and persuade them of their claims. This study investigated frequencies, functions and common lexico-grammatical patterns of metadiscursive nouns within the sports science discipline. The results indicate that both Chinese and American master writers employ a range of metadiscursive nouns to organize their discourse, guide reader interpretation, and express their stance.

According to the research findings, the most prevalent type of metadiscursive nouns in this discipline is entity nouns. Both groups of students tend to use thesis, research and study to present their findings about sports science, thereby establishing their disciplinary identity within their academic community. In contrast, they tend to employ fewer relation nouns, even though these nouns also play a significant role in academic writing. For Chinese master students, they prefer to use relationship to describe the connection between sports and other things; whereas in American master students’ academic writing, impact is more commonly used to express the effects brought about by sports activities.

Regarding the most utilized lexico-grammatical patterns of metadiscursive nouns, the “Determiner + N” structure and the “N + post-nominal clause” structure were more favored. However, the “Determiner + be + N” construction is the least favored lexico-grammatical pattern. According to Schmid, this pattern holds “the most conspicuous characterizing potential”. The main reason for using it is “the characterization of a piece of information”. In this pattern, the noun is an explicit “value” that the writer assigns to the proposition mentioned earlier. So, it is more direct, explicit, and obtrusive compared to other structures. Besides, from the perspective of information structure, this construction positions the writer’s evaluation as new information in the rheme part of the sentence. This can make the evaluation feel more intrusive to the reader, which may be potentially a face-threatening rhetorical act.

As for the functions of metadiscursive nouns, the stance function in the lexico-grammatical patterns is far more prevalent than the engagement function in the abstract section due to the specific rhetorical purpose of the abstract and the nature of its audience. An abstract is a compacted genre section that serves as an “efficient ambassador for the document it represents”. To be effective, academic writers must make their views explicit and convey judgments about their research. Stance markers allow writers to frame their work, evaluate its significance, and shape the reader’s response to the text, all of which are essential tasks in a promotional genre designed to “hook the reader”. Engagement aims to involve readers as discourse participants and create a solidary binding. This is a conversational move that takes time and space to develop. In the highly concise abstract section,

efficiency is paramount. There is simply no room for less direct, dialogic strategies. The focus must be on the clear and rapid transmission of the paper's core claims.

When it comes to pedagogical implications, this research suggests that teaching metadiscursive nouns in a structured and explicit way can be crucial for producing cohesive academic writing. For students, it is essential to be familiar with the common metadiscursive nouns used in academic genres and their specific functions. Additionally, they should be aware of the typical lexico-grammatical patterns associated with these abstract nouns. They can use metadiscursive nouns strategically to express their perspectives, build convincing arguments, and project a credible voice within their disciplinary community. From the readers' perspective, understanding these abstract nouns and their common lexico-grammatical patterns can help them track the organization of the argument and anticipate upcoming information. This reduces cognitive load and aids in constructing coherent mental representations of the text. In future research, the size of the corpus can be expanded to make the findings more convincing. Additionally, metadiscursive nouns in other sections of the thesis, such as introduction or conclusion, could also be explored.

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