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Research Paper

Comparing Native and Non-native English Language Writers' Use of Reporting Verbs in Results and Discussion Sections of Research Papers

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Abstract

Reporting verbs (RVs) have garnered considerable attention in corpus-based studies over the past few decades, owing to their essential role in establishing authors' claims and positioning within academic discourse. The appropriate and accurate use of RVs is critical for conveying stance, argumentation, and attribution in scholarly writing. While RVs have been extensively examined, research specifically focusing on their use by native and non-native English-speaking writers in the *Results and Discussion* sections of scientific articles remains limited. The present study aimed to investigate the frequency and variation of RV usage among native and non-native English academic writers. To this end, a corpus comprising 200 research article excerpts—100 from each group—was compiled from the *Results and Discussion* sections of peer-reviewed scientific papers. The data were analyzed using the framework proposed by Thomas and Hawes (2002), which categorizes reporting verbs into three functional types: (a) empirical and real-world activity verbs, (b) discourse activity verbs, and (c) cognition verbs. The findings indicate that although both groups employed the same categories of reporting verbs, the frequency of usage varied significantly between native and non-native writers. These differences have important pedagogical implications, particularly for novice researchers across scientific disciplines, as they greater awareness of how reporting verbs contribute to effective academic argumentation and credible knowledge presentation.

***Keywords*:** Native Writers; Non-native Writers; Research Articles; Reporting Verbs; Results and Discussion Sections.

1. Introduction

The use of reporting verbs (RVs) for citing the works of other researchers is a crucial component of academic writing (Manan & Noor, 2014; Boghayeri & Yeganeh, 2015). According to Hyland (1999), citation serves as a social validation process that endorses a claim, despite the inherent negotiation among various professionals. In this context, it is essential for authors to anticipate the audience's reaction to their work, underscoring the necessity for academic writing learners to master the application of RVs in citations (Clugston, 2008). Charles (2006) posits that the selection of appropriate RVs reflects the writer's stance regarding the ideas of the cited authors. Furthermore, it has been noted that "non-native learners generally show failure in using RVs in a proper way in their writing" (Yeganeh & Boghayeri, 2015, p. 583). A common finding in related studies indicates that non-native English writers often encounter difficulties in using RVs accurately and appropriately (Tham & Nhi, 2021).

Novice researchers across various fields often lack adequate knowledge regarding the correct quotation and appropriate use of reporting verbs (RVs) (Tahamtan & Bornmann, 2019). Hyland (1999) notes that citing one's own assertions or those of others presents a challenging aspect of academic writing, as it necessitates the careful selection of grammatical devices. Citations serve as important tools for writers to indicate their affiliation with specific discourse communities. Inexperienced researchers, in particular, must exercise caution when formulating their claims and arguments, as all statements reflect the authors' perspectives (Maggio et al., 2017). To gain acceptance from their

audience, it is imperative that they present their claims with accuracy and humility. RVs play a significant role as indicators within citations and have thus garnered considerable attention in citation research and academic language instruction (Docherty, 2019; Hyland, 2002; Thomas & Hawes, 1994; Wong, 2019).

As Hyland (1998) asserts, researchers are required to use RVs appropriately in their academic writing; however, they occasionally underestimate the significance of RVs in their work. Manan and Noor (2014) argue that non-native researchers may struggle to ensure the appropriateness of RVs used in specific contexts within their writings. Similarly, Bloch (2010) observes that some writers frequently employ RVs in academic papers without fully understanding their implications.

Consequently, due to the necessity for precise and appropriate communication skills, scholars across all disciplines must cultivate effective academic literacy skills, particularly for non-native students. Non-native and novice writers, irrespective of their linguistic backgrounds, need to acquire a diverse set of skills to produce suitable texts. Research indicates that beginners often face challenges when integrating information from various sources, leading to the use of incorrect citation methods and inappropriate RVs (Docherty, 2019; Wong, 2019).

Many researchers (Bruce, 1989; Pickard, 1995) believe that non-native speakers often overuse citations without properly evaluating them and tend to rely on a limited set of verbs to introduce them due to their difficulty in giving proper credit to sources in academic writing, which is not solely attributed to having a limited vocabulary. Cultural differences among authors from different backgrounds significantly influence their argumentative use of previous texts (Bloch & Chi, 1995). The current study emphasized the application of RV in the results and discussion sections across various scientific disciplines.

The focus on the results and discussion sections is due to the following reasoning: First, the results section serves as a rhetorical tool that allows researchers to present answers to research questions using both qualitative and quantitative results. We can specifically define this subsection as "exploring the organized materials from various perspectives for eliminating intrinsic facts" in RA writing (Jalilifar 2009, p. 65).

According to Swales (1990), Williams (1999), and Brett (1994), the results section highlights disciplinary differences in clearer writing manners in relation to other sections of RA. The discussion section is the most challenging section of RA, as it integrates and offers information from the literature review, methodology, and results to construct its content (Basturkmen, 2009). Here, researchers emphasize what's important about the results by comparing them against earlier findings reported by others. This subsection helps researchers make claims regarding the contribution of their findings to the disciplinary literature (Hunston 1994; Basturkmen 2012). As stated by Allison and Ruiying (2003), discussion helps writers to institute their significance.

Thus, it is highly complicated for researchers to write the results and discussion sections of academic papers, and very limited work has been conducted on studying these parts together in natural and social sciences. Since these sections are argumentative in nature, writers have more flexibility in interpreting the research data rather than simply describing it for purposes of rejection, acceptance, discussion, or confirmation of findings.

Even though RVs are important in academic writing, there aren't many studies looking at how often and in what ways evaluative verbs (EVs) are used by both non-native and native writers in scientific articles from different fields like life sciences, physical sciences, engineering, social sciences, humanities, and health sciences that are published in journals listed in ScienceDirect and Web of Science. The focus of the current work is on lessening the literature gap in this regard by making a comparison between the use of RVs by native and non-native writers in terms of frequencies and functions. Thus, these are the research questions:

1. What are the similarities and differences concerning the frequency of RVs in research papers of different fields of studies written by non-native and native English authors?
2. What are the similarities and differences in terms of functions and positions of reporting verbs in research papers of different fields of studies written by non-native and native English authors?

2. Review of the Related Literature

2.1 Definition and Categorization of RVs

Reporting verbs (RVs) are defined as tools for acknowledging the contributions of other scholars to the advancement of knowledge (Charles, 2006). However, Hyland (1999) and Thompson and Ye (1991) argue that RVs serve as linguistic features that express writers' opinions about other researchers' works. Additionally, they function as lexical devices that aid writers in communicating with their readers and articulating their ideas clearly (Hyland, 2005). According to Tham and Nhi (2019), these descriptions complement one another, providing a comprehensive understanding of RVs as they are applied in research.

Hyland (1999, 2002) and Thompson and Ye (1991) have categorized RVs into several groups. Thompson and Ye (1991) classified RVs into three categories: mental verbs, textual verbs, and research verbs. They identified three distinctions among these RVs: (a) textual verbs indicate a writer's position, (b) mental verbs reflect the writer's thinking, and (c) research verbs pertain to the writer's interpretation. Building on this framework, Hyland (1999, 2002) further classified RVs into three groups: cognition acts, discourse acts, and research acts, replacing the terms "cognition" and "discourse" with "mental" and "textual" verbs, respectively.

Hyland (2002) categorized RVs into three major classes: research acts, cognitive acts, and discourse acts, based on their functional applications. Within this framework, RVs can be divided into two categories: procedure and finding. The former pertains to the methods of presentation used in the quoted works and includes verbs such as "recover," "calculate," "analyze," "investigate," "represent," and "explore." In contrast, the latter category encompasses factive verbs, which support other authors' findings; counterfactual verbs, which reject results; and non-factive verbs, which express a neutral attitude toward the outcomes.

2.1. Previous studies

Within the last decade, some researchers interested in discourse analysis have published papers on RVs in different academic disciplines. As an example, Manan and Noor (2014) examined the application of RVs in master theses compiled by Malaysian students to help instructors provide the students with useful guidelines to write their theses. They recruited 30 papers published in journals related to politics, economics, and linguistics. They also examined the forms, functions, and frequency of Chinese reporting verbs. They also made a comparison between English and RVs. They concluded that Chinese writers used more RVs compared to English writers, indicating Chinese writers prefer to cite other researchers' behaviors rather than evaluate the other researchers' works.

In addition, Boghayeri and Yeganeh (2015) surveyed the frequency and function of RVs in the introduction and literature review sections of papers written by native English and Persian authors. There exist two corpora of 60 papers (30 by native English speakers and 30 by Persian researchers). The results revealed some differences in the application of RVs within the corpora. Specifically, research articles by English authors found more RVs in the argue group than Persian; however, this group of verbs was the most commonly applied by both English and Persian authors. In terms of how they were used, there were some differences in how subjects and verbs were used, but both groups commonly followed a pattern of using a citation, a human subject, and a present [argue] verb.

In another study, Erturk and Yilmaz (2017) conducted a comparative study of the functions, frequencies, and positions of RVs between Turkish and English native speakers. Erturk and Yilmaz (2017) created two corpora for the corpus-based analysis, each containing 160 research articles on English teaching. In terms of frequency, the results showed that more RVs were used by non-native authors than by native speakers. In terms of functions, six RVs that have been commonly used in both corpora have the functions of presentation (e.g., report and show), evaluation and inquiry (e.g., investigate and investigate), and conclusion and suggestion (e.g., find and suggest). Particularly, non-native writers overused three RVs: revealed, indicated, and observed. Regarding positional analysis, we found that both research groups only used RVs in the neuter position, with the exception of one strong RV observed in the native group.

Tham and Nhi (2021) studied the RV application in TESOL research papers by non-native and native writers of English. They compiled two corpora with 30 for the native group and 30 for the nonnative group. They converted the corpus into plain text and processed it using AntConc software 3.5.7. The two corpora showed significant differences in terms of position, frequency, and function. Particularly, the non-native corpus showed more reporting verbs compared to the other corpus. Among the four verb groups of show, argue, think, and find, the top priority was allocated to the argue

group that was applied in TESOL research papers by groups of English writers (native and non-native). Additionally, the results showed that the positions and roles of reporting verbs in both groups had two most common functions: (1) presentation and (2) assessment and investigation, which were mostly found in neutral positions.

Agbaglo (2017) examined the use of RVs in research papers authored by English department lecturers. The author focused on a corpus of 16,811 words from the literature review sections. Hyland's (2002) classification of RVs theoretically underpinned the investigation. The study discovered that the lecturers preferred to utilize the Discourse Acts type of RVs compared to the categories of the Research Acts and Cognitive Acts of RVs. This research, like all others, contributes to the corpus of knowledge about academic discourse. The results show that the research articles analyzed in this study utilized all three groups of RVs defined by Hyland (2002), with Discourse Acts RVs being the most common, followed by Research Acts and Cognitive Acts RVs in the subsequent ranks. In the Discourse Acts RVs, the verb “discuss” appeared as the RV with the most occurrences, but in the Research Acts RVs, the verb “examine” emerged as the RV with the greatest frequency. The verbs “consider” and “believe” were the first cognitive acts RVs came up with, with each documenting three instances.

In a recent attempt, Liu and Wang (2019) studied the sentence patterns and forms, classifications and functions, and frequency distribution of the Chinese RVs. The four forms of Chinese reporting verbs identified were verbal phrases, verbs, lexical chunks, and discontinuous constructions. The results revealed that five fundamental sentence patterns and four forms described Chinese RVs. In terms of function, they can be divided into 3 categories, which reflect the attention a referrer pays to the research of a referee and the referrer’s evaluative perspectives. It was found that discourse verbs, expressing the concerns of the author on the interactive associations of the authors and the scholarly community where they commonly present their assessments, were frequently used. The verbs with the lowest frequency were cognition verbs, utilized by writers for speculation on the cognitive and mental status of the cited individual.

Bloch (2010) studied the RV's use in academic articles. He analyzed academic papers from science disciplines. Bloch compared the use of RVs in the papers with student essays. He found and analyzed 540 samples of RVs, concluding that teaching RVs in academic writing can significantly contribute to the quality of both academic papers and students’ essays.

Un-udom and Un-udom (2020) investigated the RVs with the largest application frequency in applied linguistic articles and their usage over the process of citation. To this end, the researchers employed the concordance function of AntConc software to analyze 52 papers from three applied linguistic journals. The researchers focused on RVs used in the literature review section because they believed this section contained a higher frequency of RVs than other sections of the articles. We analyzed the RVs in the academic papers using concordance lines, then classified them according to Hyland's Framework of Reporting Verbs (2002). It was shown that the application of RVs could be categorized into research acts, with the highest frequency of RVs application, followed by discourse acts and cognition acts.

Ilchenko and Karmar (2022) examined the use of reporting verbs (RVs) such as "argue," "claim," and "believe" in a collection of zero research articles from linguistics journals. Their findings highlighted the significant roles that RVs play in academic writing, particularly regarding rhetorical and discursive functions. They emphasized the importance of teaching the use of RVs in relation to the discursive and rhetorical functions inherent in various academic genres.

Loi (2012) conducted a corpus-based analysis of citation verbs, focusing on the citation practices of English and Chinese authors, especially in the introduction sections of academic papers. The study revealed that non-native authors cited sources five times less frequently than their native counterparts. Additionally, Zhang (2008) compared the use of RVs in theses authored by Chinese and native English speakers, examining their prominence, completeness, functions, and forms. The results indicated that English authors employed more reporting statements than Chinese writers.

Kuhi and Oskueia (2014) investigated citation patterns among native English and Iranian speakers in the field of applied linguistics. Their findings showed that Iranian authors utilized citations more frequently than native English speakers. Furthermore, the authors of Iranian master's theses tended to prioritize grammatical and linguistic aspects of quotations over functional features. They predominantly used verbs in the neuter position, with the exception of one strong verb observed in the native group.

Previous studies have addressed the differences in functions, positions, and frequency of RVs between native and non-native authors. The present work aims to investigate both the similarities and differences in the functions,

positions, and frequency of RVs employed by native and non-native writers in academic papers published across various journals.

2. Research Method

3.1. Research Design

Corpus-based research involves the computerized retrieval and analysis of linguistic structures and elements from corpora (Gries, 2008). Ellis (2008) introduced three corpus-linguistic methods for analyzing data. Firstly, frequency lists and collocations are generated as decontextualized methods that overlook the context in which utterances or sentences occur. Secondly, certain constructions reduce contexts to lexical structures and elements. Lastly, concordances provide the occurrence of a search term within a user-defined context, typically encompassing the entire clause or sentence (Tham & Nhi, 2021, p. 319). In our study, we investigated the functions and frequency of reporting verbs (RVs) used by both native and non-native writers. Additionally, a quantitative approach was employed, which examines research problems based on numerical data and statistics collected during the study (Creswell, 2012).

3.2. Corpus

The corpus consists of 200 "Results and Discussion" sections of academic papers written by 50 native and 50 non-native writers (writers whose first language is not English). The articles were selected from journals indexed in the Web of Science from 2015 to 2020. The papers were published in the journals of Social Sciences and Humanities, Life Sciences, Health Sciences, and Physical Sciences and Engineering. We used convenience sampling for selecting reporting verbs from prominent journals in the relevant fields published from 2015 to 2020. The papers were selected from different journals, such as Advances in Accounting, Advances in Digestive Medicine, Engineering Software, System, Radiotherapy and Oncology, European Journal of Medical Genetics, Case Studies in Construction Materials, Cancer Genetics, Life Sciences, Ocean & Coastal Management, and Australasian Marketing Journal.

The entire corpus contained 212,492 words (around 10,000 words per each group of authors). The frequency of each function was then examined, and the relative frequency ratio per 10,000 words was assessed and presented. The research data were specialized and small, as supported by the works of various scholars, such as Flowerdew and Forest (2009), who recommend that the corpus containing the texts of the same discipline and genre, regardless of their size, can provide enough data for analysis. Limiting the data to a certain genre in a specific field helps control potential disciplinary variations (Kanoksilapatham, 2005). Also, a small corpus allows for some analyses that necessitate manual coding of RVs that cannot be performed manually in large datasets (Flowerdew & Forest 2009). Therefore, to meet the need for more reliable data, the researcher of the present study selected the results and discussion sections of the RAs.

3.3. Theoretical Framework

To analyze the data and classify RVs, the author used Hylands' (2002) model for functional analysis. There are various research works that established standards for identification and categorization of RVs in scientific contexts (Hyland 1999, 2002; Thomson & Ye 1991). Hyland (2002) classified RVs into three major classes of research, cognitive, and discourse acts based on the functional applications of the verbs. The RVs are also grouped into the procedure and findings. The former refers to presentation methods applied in the quoted works and includes verbs such as recover, calculate, analyze, investigate, represent, and explore. Nevertheless, in the latter category, these verbs are used: factive verbs for supporting other authors' findings, counterfactual verbs for rejecting the results, and non-factive verbs for showing authors' neutral attitude towards the outcomes.

RVs of the second category are used to show the authors' ideas and opinions about the cited work. There are four sub-categories: critique (*dispute, disagree, or not think*), tentative views (*doubt, believe, speculate, suspect, suppose*), positive attitudes (*concur, agree, hold, consider, understand, know*), acceptance of the truth, and neutral position (*conceive, picture, anticipate, reflect*).

Lastly, the authors use the RVs to represent the citation evaluations. In particular, the assurance and doubt categories consist of the verbs directly expressing the author's perspectives. The authors divide the verbs in the doubt category into two subcategories: critical (*exaggerate, evade, not make a point, not account*) and tentative (*postulate, indicate, hypothesize, suggest, intimate*). Nevertheless, the assurance category contains active (affirm, *argue, explain,*

claim, point out, note) and non-factive (*describe, state, discuss, answer, report, summarize, define*) verbs. Note that the counter-category verbs mirror the writer's intentions. Hyland's (2002) framework is outlined in the following figure.

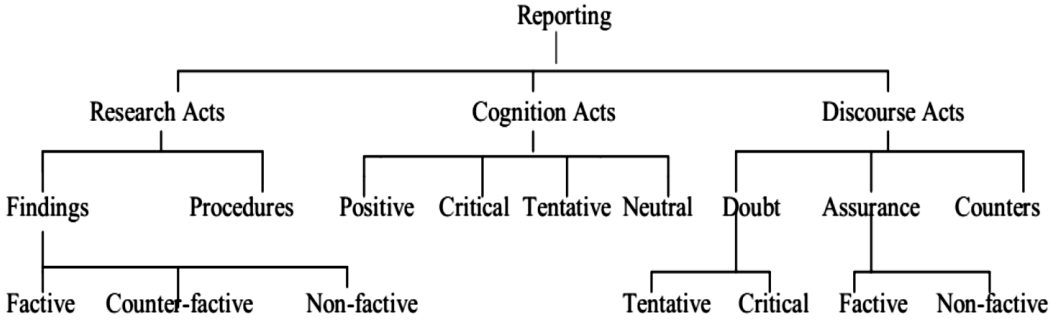

Figure 1. Hyland's Framework for RVs (2002)

3.4. Data Collection

Firstly, we nominated journals relevant to the selected fields of study. The required number of articles authored by both native and non-native writers was downloaded. The corpus for the two groups was compiled by converting the "Results and Discussion" sections into plain text formats. To achieve the research objectives, we identified and compared reporting verbs (RVs) in the research articles under study, resulting in a comprehensive list of RVs and a contrast of their usages.

All articles were initially in PDF format; therefore, we converted the texts in the corpora to plain text format to facilitate easier analysis of the RV data by researchers. The first author of the study analyzed the collected corpus based on Hyland's framework (2002). Additionally, two researchers familiar with the field of study and data analysis conducted an independent reanalysis of 30% of the collected data to assess the frequencies and functions of RVs, ensuring the reliability of the analysis. The inter-rater agreement, calculated using Cohen's Kappa formula, was found to be 0.91, indicating an acceptable level of agreement in the data analysis.

4. Results

4.1. RQ 1

The first research question aimed to explore the frequency of reporting verbs (RVs) used by non-native and native authors. The results are presented in the tables. Table 1 demonstrates that 296 tokens of RVs were observed in the non-native group, while 209 tokens were found in the corpus compiled for native writers. More specifically, the post-experiment group was the most frequently used, with 466 tokens (93%), followed by the pre-experiment group, which recorded 31 tokens. This indicates that both groups of writers predominantly opt for post-experiment RVs. A detailed analysis is provided in Table 1.

Table 1. *Tentative RVs Used by Native and Non-Native Writers*

Tentative RVs	RVs	Writers	
		Non-native	Native
Pre-experiment	Proposed	10 (2%)	7 (1.4%)
	Postulated	4 (0.8%)	3 (0.6%)
	Hypothesized	4 (0.8%)	3 (0.6)
Post-experiment	Suggest	170 (31.33	130 (28.5%)
	Indicate	100 (17.56%)	66 (15.56%)
Total		296 (52.5%)	209 (47.5%)

As seen in Table 1, non-native writers used more pre-experiment group tentative RVs (18) than native speaker writers (13), suggesting that there is a very slight difference between the number of RVs applied by native and non-native authors. In particular, "suggest" was the most frequently applied RV by both native and non-native authors, despite the slight difference between the two groups of authors (170 tokens used by non-native writers but 130 tokens by native ones). The next frequently used RV by both groups was "indicate," with 100 tokens for non-native writers and 66 tokens for the native corpus. With regard to the pre-experiment RVs, it is seen that "proposed" was used by native writers with

10 tokens (2%) and by non-native writers with 7 tokens, indicating a slight difference between the two groups. Also, the other two RVs (postulated and hypothesized) were equally used by both groups, with 4 tokens for non-native writers and 3 tokens for native writers. Table 2 presents the results of the non-tentative RVs between native and non-native authors used in the results and discussion sections of academic papers. According to Thomas and Hawes's framework, "informing" and "argument" RVs are the subdivisions of certainty or non-tentative RVs. The reporting verbs of *stated, documented, referred to, noted,* and *called attention* are the reporting verbs related to the informing RV. The reporting verbs *maintained, invoked, cited evidence, provided evidence,* and *concluded* are related to the argument RV.

Table 2. *Non-Tentative RVs Used by Native and Non-Native Writers*

Non-Tentative RVs		RVs	Writers	
			Non-native	Native
	Informing	*Stated*	21(10.7%)	9 (4.3%)
		documented	6 (3.2%)	4
		Reported	168 (68.4%)	70(50.3%)
		referred to	2(1.7%)	2
		Noted	20 (12%)	10(19.5%)
		called attention	2 (1.7%)	1(4.3%)
	Argument	*maintained*	2(1.7%)	2
		Cite	0	1
		Invoked	0	0
		cite evidence	0	0
		provide evidence	2(1.7%)	2(4.3%)
		Concluded	10(8.35%)	11(17.3%)
	Total		207(100%)	129 (100%)

According to Table 2, 207 tokens of RVs were found in the non-native corpus, yet 129 tokens were identified in the corpus of native authors, indicating that there is a difference between the number of non-tentative RVs between the two groups of authors. Generally, both native and non-native writers showed more tendency to apply *informing* (313 tokens) rather than *argument* (23) in their research out of the total number of non-tentative RVs (336). Regardless of the fact that both of the two groups of authors used *informing* RVs more than *argument* RVs, it is seen there is a slight difference between the frequencies of the RVs constituting the *informing* group. For instance, the most frequently used *informing* RV was *reported* with 168 tokens for non-native writers and 70 tokens for native writers, followed by stated and noted, respectively. More particularly, the most widely used RVs in the *argument* group were *concluded* with 10 tokens for non-native authors and 11 tokens for native writers. In addition, no evidence of *invoked* and *cite*d evidence while evaluating the data between the two groups of authors was found. Very surprisingly, only 1 instance of cite as an RV was evidenced in the research article that was used by native writers.

4.2. RQ 2

The second research question aimed to explore the functions of the reporting verbs (RVs) used by native and non-native authors. According to the findings derived from the analyzed data, the frequencies of RVs were measured and categorized based on Hyland's model, which includes research acts, cognition acts, and discourse acts. These results are presented in both frequencies and percentages. Table 3 provides the frequency and percentage of research acts used by native and non-native authors.

Table 3. *The Frequency and Percentage of Research Acts Used by Native and Non-Native Writers*

Research category		Writers	
		Non-native	Native
Procedure		35 (2.2%)	33 (4.8%)
Findings	Factive	337 (57.4%)	110 (58.8%)
	Counter-factive	1 (0.1%)	1 (0.5%)
	Non-factive	236 (40.3%)	67 (35.9%)
Total		587 (100%/)	187 (100%)

As shown in table 3, more research acts were used by non-native authors (578) compared with those applied by native authors (187), which reflects a big difference between native and non-native speakers in terms of research acts. In addition, the frequency of the *findings* subcategory is greater than the *procedure* subcategory used by both native and

non-native writers. However, both native (33) and non-native (35) writers used almost the same tokens of *procedure* RVs. In terms of *findings* subcategory, the distribution of *factive* is higher than *non-factive* and counter-factive for both groups of writers. Counterfactual is the least frequently used RV in writers' articles. Surprisingly, there is a difference in the frequency of factive and non-factive RVs between native and non-native writers' corpora, where their frequency is higher in non-native writers' corpora.

In the second category, authors may apply RVs for conveying the attitudes of authors towards the stated content. The four subcategories include tentative view, neutral stance, critique, and positive attitude. Table 4 displays the findings related to the use of the cognition act by native and non-native authors.

Table 4. *The Frequency and Percentage of Cognition Act by Writers*

Cognition act	Writers	
	Non-native	Native
Positive attitude	2	5 (18%)
Tentative view	21 (92%)	15(64%)
Critique	0	1
Neutral stance	1 (8%/)	5 (18%)
Total	24 (100%)	26 (100%)

Based on the results, a slight difference is seen between non-native (24) and native writers (26) regarding applying cognition acts by writers, suggesting a slight difference between non-native and native writers. Also, the findings show that the most widely used cognition act subcategory by both native and non-native writers is tentative view, where non-native writers used this RV in 21 tokens (92%) and native writers in 15 tokens (64%). The rate of *critique* is the least for both groups of writers, in which only 1 token was used by native writers; however, it was not observed in non-native writers' corpus. In fact, native writers used all subcategories of cognitive acts with higher frequency than non-native writers.

Reporting discourse acts, which are employed for transferring an assessment of the citation, is the other category that needs to be reported. The frequency of discourse acts between native and non-native authors is presented in Table 5.

Table 5. *The Frequency and Percentage of Discourse Acts by Writers*

Discourse acts		Writers	
		Non-native	Native
Doubt	Tentative	135 (50.8%)	85 (57%)
	Critical	0	0
Assurance	Factive	7 (2.6%)	30 (20.2%)
	Non-factive	124 (46.6%)	34 (22.8%)
Counters		0	0
Total		266 (100%)	149 (100%)

According to results in Table 5, non-native writers (266) applied far more discourse acts than native writers (266); thus, there is a big difference between non-native and native writers regarding usage of discourse acts. Among sub-categories of discourse acts, doubt RV has the highest frequency in both groups of writers, where non-native writers used this RV in 135 tokens (50%), and native writers applied it in 85 tokens (57%). The highest frequencies for subcategories of discourse acts for non-native writers are *tentative* (135) and *non-factive* (124), and *tentative* (85) and *non-factive* (34) RVs. Remarkably, neither native nor non-native writers fully utilized counters as a general category of discourse acts. Similarly, *the critical* subcategory is not available in the writers' corpus.

4. Discussion

This study aimed to compare the frequencies and functions of reporting verbs (RVs) used by native and non-native writers when presenting and discussing the results of their studies. The RVs were classified based on Hyland's (2002) model. A total of 200 "Results and Discussion" sections from academic papers were selected, comprising 100 extracts from native writers and 100 excerpts from non-native writers who published articles in journals across Life Science, Physical Science, Engineering, Health Sciences, Social Science, and Humanities indexed in Web of Science.

The findings demonstrated that the post-experiment group was the most frequently used by both groups of writers, although there were differences in usage. Overall, non-native writers employed post-experiment RVs more frequently than native writers. This difference may stem from various factors that warrant further investigation.

Additionally, it was found that non-native writers used more pre-experiment group tentative RVs (such as "suggest," "indicate," and "propose") compared to native writers, indicating a slight difference in the number of RVs utilized by both groups. However, the other two RVs, "postulated" and "hypothesized," were used equally by both groups. The RVs "suggest" and "indicate" appeared frequently in the corpus as both tentative and post-experimental RVs. The verb "indicate" can modulate the strength of a claim, as noted by Bloch (2010), which serves as a significant rhetorical technique to mitigate potential objections (p. 240). Meanwhile, writers can still utilize boosters to reinforce their adherence to a claim.

In general, both native and non-native writers exhibited a greater tendency to apply informing rather than argumentative RVs in their research. While both groups used informing RVs more frequently than argumentative RVs, a slight difference was observed in the frequencies within the informing group. For instance, the most frequently used informing RV was "reported," with 168 tokens for non-native writers and 70 tokens for native writers, followed by "stated" and "noted," respectively. Notably, the most widely used RV in the argumentative group was "concluded."

These results align with the findings of Manan and Noor (2014), Boghayeri and Yeganeh (2015), and Yilmaz and Erturk (2017), who noted that native and non-native writers differ in their usage of RVs regarding frequency, purpose, and placement. The results also corroborate the findings reported by Nhi and Tham (2021), who conducted a comparative analysis of RV application in TESOL academic papers between non-native and native English writers, revealing significant differences in terms of functions, positions, and frequencies of RVs.

5. Conclusion and Implications

The present study focused on illustrating the frequencies and functions of RVs used by native and non-native authors in reporting their results and discussing their findings. Findings revealed similarities and differences between the native and non-native writers' use of RVs. The results indicated both native and non-native writers tend to use post-experiment RVs. Results also revealed that, despite the slight differences between the two groups, both native and non-native writers used RVs more frequently for reporting than arguing. Therefore, one could argue that factors like the writers' culture and first language influence their use of RVs (Hyland, 2000). In other words, it can be concluded that writers' belief systems, cultural norms, and values might inevitably affect the writers' rhetorical choices when reporting the results and interpreting their findings (Dor, 2014). Academic papers clearly demonstrate an interaction between disciplinary cultures that collectively shape rhetorical techniques and discourse structures, especially in the context of academic writing (Flottum, 2012; Yakhontova, 2006). The cultural and linguistic practices of the writers' first language are believed to influence their writing in a foreign/second language.

Also, in the findings section, factive verbs (which show agreement with others' results) are used more often than non-factive verbs (which make neutral comments about the results) by both groups of writers. One justification for this can be the nature of citations and research articles. In citations, the authors try to accept the findings of other scholars for supporting their findings. Nevertheless, the majority of authors tend to avoid adopting a neutral position. These findings are consistent with those of Kučírková and Jarkovská (2020), who studied the use of reporting verbs by EFL learners in writing their master's theses. These scholars found a notable dominance of discourse act verbs compared to the other two categories, with the latter being the least frequent.

We also found that tentative views have a high frequency, with low rates of critique (e.g., dispute, disagree) among the writers. Besides, neutral stance and positive attitude showed approximately the same distributions in the data. This finding echoes the findings by Kučírková and Jarkovská (2020), who reported the high frequencies of tentative views in the corpus.

The discourse act category, applied for presenting citation assessment, is the other category of this framework. The distribution of tentative language used by both groups of writers accounts for more than half of the total occurrences. The subcategories of counters and critical were somehow absent in the papers written by native and non-native authors. The two groups of writers somehow used the identical rates of the non-factive subcategory in the assurance category. The results, therefore, do not match what Manan and Noor (2015) found, which was that master's theses had more research

act verbs than cognition or discourse acts, which were the least common. These varying findings may originate from differences in corpus research content and size, as well as disparities in the initial language backgrounds of scholars compared to those of the students studied in Noor and Manan (2015).

Despite the merits and good findings, we encountered some limitations that need to be considered before making any generalizations. In the present work, we only compared native and non-native writers' use of RVs based on Hyland's 2002 model. The other researchers are recommended to analyze the data using other models to see whether native and non-native authors use the RVs in different sections of academic papers. In addition, we failed to compare native and non-native writers' use of RVs across different fields of the studies. Reanalysis of the data focusing on the interaction between the writers' L1 and types of academic papers might yield rather different findings.

In this study, the interaction between the writers' first language and types of RVs in different journals was not investigated. Therefore, we suggest that other researchers investigate whether native and non-native authors apply the same or different RVs in different journals. The researchers also failed to make a distinction between the native and non-native writers in terms of their local language, culture, and country. Further studies might reveal how native and non-native writers from different countries use RVs in their academic papers.

References

Abdollahzadeh E. (2011). Poring over the findings: Interpersonal authorial engagement in applied linguistics papers. *Journal of Pragmatics 43*(1), 288–297. https://doi.org/10.1016/j. pragma.2010.07.019

Bloch, J. (2009). The design of an online concordance program for teaching about reporting verbs. *Language Learning and Technology, 13*(1), 59-78.

Charles, M. (2006). Phraseological patterns in reporting clauses used in citation: A corpus-based study of theses in two disciplines. *English for Specific Purposes, 25*(1), 310- 331. https://doi.org/10.1016/j.esp.2005.05.003

Clugston, M. F. (2008). An analysis of citation forms in health science journals. *Journal of Academic Language and Learning, 2*, 11-22. https://journal.aall.org.au/index.php/jall/article/view/54

Creswell, W. (2012). Education research: Planning, conducting and evaluating quantitative and qualitative research (4th ed.). Pearson Education Inc.

Docherty, P. (2019). An exploratory study in the use of direct quotation by L2 entry-level Bachelor students. *Journal of English for Academic Purposes*, *40*, 26-40. https://doi.org/10.1016/j.jeap.2019.05.002

Doró, K. (2014). Citation practices in EFL undergraduate theses: A focus on reporting verbs. In J. Dombi, J. Horváth, & M. Nikolov (Eds.), *UPRT 2013: Empirical Studies in English Applied Linguistics* (pp. 32–42). Lingua Franca Csoport.

Flottum, K. (2012). Variation of stance and voice across cultures. In *Stance and voice in written academic genres* (pp. 218-231). Palgrave Macmillan.

Flowerdew, L. (2005). An integration of corpus-based and genre-based approaches to text analysis in EAP/ESP: Countering criticisms against corpus-based methodologies. *English for specific purposes*, *24*(3), 321-332. https://doi.org/10.1016/j.esp.2004.09.002

Ellis, N. C. (2008). Usage-based and form-focused SLA: The associative learning of constructions, learned attention and the limited L2 Endstate. In P. Robinson & N. C. Ellis (Eds.), *Handbook of cognitive linguistics and second language acquisition* (pp. 372-405). Routledge.

Francis, G., Hunston, S., & Manning, E., (1996). *Collins COBUILD grammar patterns 1: Verbs*. Harper Collins

Gries, S. T. (2008). Corpus-based methods in analyses of second language acquisition data. In P. Robinson & N. C. Ellis (Eds.), *Handbook of cognitive linguistics and second language acquisition* (pp. 406-431). Routledge

Hyland, K. (1999). Academic attribution: Citation and the construction of disciplinary knowledge. *Applied Linguistics, 20*(3), 341- 367. https://doi.org/10.1093/applin/20.3.341.

Hyland, K. (2002). Authority and invisibility: Authorial identity in academic writing. *Journal of Pragmatics, 1*(1), 1-18. https://doi.org/10.1016/S0378- 2166(02)00035-8.

Hyland, K. (2005). *Metadiscourse: Exploring interaction in writing*. Continuum.

Liu, R., & Wang, S. (2019). How citation is signaled: A Corpus-based study on reporting verbs in Chinese academic papers. In H. Tao, H. H.-J. Chen (Eds.), *Chinese for specific and professional purposes* (pp. 53-71). Springer.

Loi, C. K. (2012) A corpus-based analysis: the use of citations. In: Conference proceeding International Conference: Innovative Research in a Changing and Challenging World, 16–18 May 2012, Phuket, Thailand.

Maggio, L. A., Meyer, H. S., & Artino, A. R. (2017). Beyond citation rates: a real-time impact analysis of health professions education research using altmetrics. *Academic Medicine*, *92*(10), 1449-1455. https://doi.org/10.1097/acm.0000000000001897

Manan, N. A., & Noor, N. M. (2014). Analysis of reporting verbs in Master's theses. *Procedia-Social and Behavioral Sciences*, *134*, 140-145. http://doi.org/10.1016/j.sbspro.2014.04.232

Oskueia, M. H. H. & Kuhi, D. (2014). The use of citations in academic writing: Analysis of introduction sections of Iranian and native English master's theses. *Journal of Social Issues & Humanities*, *2*(3), 216-220.

Tahamtan, I., & Bornmann, L. (2019). What do citation count measure? An updated review of studies on citations in scientific documents published between 2006 and 2018. *Scientometrics*, *121*(3), 1635-1684. https://doi.org/10.48550/arXiv.1906.04588

Tham, D. M., & Nhi, T.P. (2021). A corpus-based study on reporting verbs used in TESOL research articles by native and non-native writers. *VNU Journal of Foreign Studies, 37*, (3), 35-48. https://doi.org/10.25073/2525-2445/vnufs.4729

Thomas, S., & Hawes, T. P. (1994). Reporting verbs in medical journal articles. *English for Specific Purposes, 13*(2), 129-148. https://doi.org/10.1016/0889-4906(94)90012-4

Thompson, G., & Yiyun, Y. (1991). Evaluation in the reporting verbs used in academic papers. *Applied linguistics*, *12*(4), 365-382.

Thompson, G., & Ye, Y. (1991). Evaluation in the reporting verbs used in academic papers. *Applied Linguistics, 4*(1), 365-382. https://doi.org/10.1093/applin/12.4.365.

Wong, L. L. (2019). Implementing disciplinary data-driven learning for postgraduate thesis writing. *Specialized English: New Directions in ESP and EAP Research and Practice*.

Un-udom, S., & Un-udom, N. (2020). A corpus-based study on the use of reporting verbs in applied linguistics articles. *English Language Teaching*, *13*(4), 162-169. http://doi.org/10.5539/elt.v13n4p162

Yeganeh, M. T., & Boghayeri, M. (2015). The frequency and function of reporting verbs in research articles written by native Persian and English speakers. *Procedia – Social and Behavioral Sciences, 192,* 582-586. https://doi.org/10.1016/j.sbspro.2015.06.097

Yilmaz, M., & Erturk, Z. (2017). A contrastive corpus-based analysis of the use of reporting verbs by native and non-native ELT researchers. *Novitas-ROYAL, 11*(2), 112-127.

Zhang, X. (2008). A contrastive study of reporting in master's theses in native Chinese and in native English. [Unpublished master's thesis]. The University of Edinburgh, Edinburgh.