Novice and Expert Writers' Citational Practice in the Methods Section of Research Articles

Bao Yue*, Zhang Yi, and Zhang Zequan

***Abstract*—Citations are crucial rhetorical devices in establishing intellectual linkages, contextualizing research, enhancing persuasiveness. The current study compares five novice writers' and five expert writers' form-based citational practice (i.e., frequency and types of citations, and reporting verbs) in the Methods section of research articles. Results show that novice writers cite less in the Methods section as a blind spot than expert writers. Although novice writers share a similar preference for non-integral citations as experts, novice writers in general are less capable of exploiting diverse denotive and evaluative reporting verbs.**

***Index Terms*—Novice writers, expert writers, citational practice, Methods section**

I. Introduction

Citational practice, or referring to others' work, is acknowledged as a prominent feature in writing research articles [1, 2]. Citations are crucial rhetorical devices in "establishing intellectual linkages, contextualizing research, enhancing persuasiveness". However, how to cite properly in research articles is a thorny problem especially for novice writers [3, 4]. According to personal reflection and observation, citational practice in the Methods section seems to be a blind spot for most novice writers who somewhat fail in effectively retrieving what they have learned in Research Methods courses or what they have read about research methods when composing research articles. In Xu's cross-sectional study of Chinese bachelors', masters', and doctoral students' citation competence in English academic writing, bachelor students as less experienced writers occupied a blank spot in citations of the methods section. Xu's findings further signify that novice writers may have not developed sound awareness of citing across sections, and citing in the Methods section could be a blind spot for novice writers [4].

Citational practice has received substantial research attention for decades. Researchers have proposed taxonomies to explore citational practice, such as surface forms, roles of cited authors, reporting verbs, and functions of citations (see Zhang, 2022 for a summary). These taxonomies facilitate a growing number of citational studies across diverse disciplines 8/27/22 8:12:00 PM, languages, and academic expertise such as novice and expert writers [5]. However, few studies have examined citational practice across sections [6]. Particularly lacking is studies that focus on the Methods section which has distinctive rhetorical functions [7] and could be a blind spot for novice writers. Further, another important question to be addressed is the gap for novice writers to be expert in citations of the Methods section. Given such, this study aims to compare novice writers' and expert writers' form-based features of citations in the Methods section.

Manuscript received May 18, 2023; revised July 6, 2023; accepted August 28, 2023.

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A. Taxonomy of Citational Practice: Form-Based Features

Citational practice has been researched in various domains, such as English for Academic Purpose (EAP) [7], bibliometrics or information science and sociology of science [5]. In EAP domain, researchers generally follow Swales' (1986, 1990) seminal work and classify citational practice into integral and nonintegral citations as a dichotomy. Integral citations include author(s)' name(s) in the sentence and author(s)' name(s) takes a grammatical role. On the contrary, the cited author(s)' name(s) is included in parentheses or footnotes as non-integral citations without any grammatical roles in the sentence. Thus, contents rather than authors of contents are underscored in non-integral citations.

Besides the integral and nonintegral dichotomy, scholars represented by Thompson and Ye and Hyland strove to reach a fine-grained understanding of form-based features of citational practice [8]. They scrutinized the main verbs that are associated with the cited author(s), namely reporting verbs. Having analyzed the Introduction sections in research articles of five social and natural science disciplines, Thompson and Ye proposed a taxonomy of reporting verbs based on reporting verbs' denotative, evaluative, and interpretative meanings. Furthermore, Hyland expanded Thompson and Ye's dataset to all sections of research articles, and then modified Thompson and Ye's taxonomy of reporting verbs by considering together authors' research activity and writers' evaluation. Adapting the writer evaluation framework including factive, non-factive, and counter-factive stances from Thompson and Ye's typology, Hyland specified the non-factive category into four types, namely positive, tentative, critical, and neutral stances, which reflect writers' attitude towards cited contents. In this fashion, the evaluative reporting verbs are classified into three subtypes based on (a) whether writers regard the cited work as factive; (b) whether writers oppose the cited work and represent it as counter-factive; and (c) whether writers evaluate the cited work with a positive, tentative, critical, or neutral stance. Following Thompson and Ye and the research activity denoted by a reporting verb, Hyland [7] categorizes denotative reporting verbs into (a) research verbs that delineate research procedures; (b) cognitive verbs that concern authors' mental process; and (c) discourse verbs that involve verbal expression.

B. Citational Practice in the Methods Section

As a fundamental element of empirical research articles and the IMRD model (i.e., Introduction-Methods-Results-

doi: 10.18178/ijlll.2023.9.6.444

Discussion model), the Methods section has its communicative purposes and rhetorical functions. Compared with other sections in research articles, the Method section is often devoted to contextualizing, delineating, and justifying methodological choices of a study [9]. This section, as descriptive in nature, is more oriented to research itself and includes fewer citations [10].

While most citation studies targeted research articles as a whole, researchers have stepped forward to explore how citational practice varies from sections and concluded features of citations in the Methods section. Admittedly, a number of studies examined citations in IMRD sections of theses and dissertations, rather than research articles the focal genre of the current study. Still, these studies could inform the current study. To the best of my knowledge, only Kuo and his colleagues and Zhang studied citations in each section of research articles. Kuo and his colleagues analyzed the form and function of citations in 36 applied linguistics research articles across sections. Except for the Results section, the prevalence of non-integral citations was revealed. The function-based analysis showed characteristic functions of citations in each section. Furthermore, Zhang analyzed IMRD sections of 30 social science research articles concerning density, types, reporting verbs and functions of citations, and demonstrated how the form and function of citations differ from each section [11]. According to her analysis, the density of citations in the Methods section is next to the lowest. Regarding types of citations, non-integral citations outnumber integral citations in the Methods section. Further, her results suggest scant cases of cognitive, counter-factive, and tentative non-factive reporting verbs in the Methods section.

Although characteristic features of the Methods section and its citations have been evidenced in research articles by expert writers, there is still a need for further studies to investigate novice writers' citational practice in the Methods section. Furthermore, if there are differences in the citational practice of novice and expert writers, those different citations written by expert writers may offer insights into what could serve as models for novice writers to learn. Therefore, this study, concentrating on form-based features of citations, aims to address the following three research questions:

(1) To what extent does the frequency of citations in the Methods section of novice writers' research articles differ from that of expert writers' research articles?

(2) To what extent do types of citations in the Methods section of novice writers' research articles differ from that of expert writers' research articles?

(3) To what extent do reporting verbs in the Methods section of novice writers' research articles differ from that of expert writers' research articles?

II. Methods

A. Corpus

Due to the paucity of available data, the corpus for the current study consists of ten Methods sections of research articles, five from novice writers and five from expert writers. The novice writer sub-corpus and the expert writer sub-corpus were compiled based on Tertium of Comparation is (i.e., a common platform of comparison) such as disciplines, years of publication, and sections in addition to writing expertise (e.g., novice and expert) [12].

Research articles by novice writers were collected from five graduate students with the same research interest in the field of English for Academic Purpose (EAP). They study at different grades, but in the same English department of a reputable university in northwestern China. At the request of the English department for a master's degree, they have to publish at least one research article regardless of the impact factor or publication language of journals. The five articles included in the novice writer sub-corpus are their first published research articles ranging from 2019 to 2021. Before that, they had not published in Chinese journals either. In other words, that was their first and fresh experience with research article writing as novice writers.

On the contrary, research articles by expert writers in this study were chosen from Journal of English for Academic, a renowned flagship journal in EAP field. Five articles were randomly chosen from 2019 to 2021, the same period when novice writers in this study published their articles.

B. Data Collection and Analyses

Each citation in the corpus was manually identified first to calculate the frequency of citations. In light of Publication Manual of the American Psychological Association (APA, 2020) that dominates citations and references in journal articles of EAP, citations in the current study are operationalized as in-text citations which manifest themselves in sentences containing author(s)' name(s), year(s) of the publication, and sometimes page number(s). Each in-text citation exclusively refers to an entry in the reference list. However, sometimes an entry would be cited multiple times. In such cases, repetitive in-text citations referring to the same entry were counted repeatedly following Hyland's practice. It should be noted that citations in tables or figures were not counted, since they are "textual elements outside of the main text" [12, 13]. In addition, an in-text citation of a website from which data were collected was counted as an occurrence of citation, since the name of the website functions as that of an author. The frequency of citations was determined after normalizing the results to 1000 words for subsequent comparison.

Next, based on Swales' typology, integral and non-integral citations were specified. The distinction between integral and non-integral citations resides in the grammatical role of cited author(s)' name(s). For instance, Peacock followed a similar approach in identifying the moves... (EXP_S_2019) is classified as an integral citation, in which the author's name (i.e., Peacock) functions as a subject. In there are several ways to define and classify modal verbs… (NOV_XZ_2021), the author's name appears in parentheses and does not take any grammatical role in the sentence, thereby which is categorized as a non-integral citation.

For analyzing reporting verbs, the current study adopted Hyland's rather than Thompson and Ye's typology. Since Thompson and Ye's work is originally based on the Introduction section, this study concentrating on the Methods section is more sensible to adopt Hyland's (1999) revised taxonomy targeting research articles in their entirety as an analytical framework. The operational definitions and

examples of each category are presented in Table 1. Important to note, these categories are not "watertight" as acknowledged by scholars [7]. Thus, each reporting verb was analyzed in context.

TABLE I: DENOTATIVE REPORTING VERBS [7]

Category		*Definition and Example*
Denotation	Research	Delineate procedures or findings e.g., *observe, discover, notice, show, analyze, calculate, explore*
	Cognition	Concern mental processes e.g., *believe, suspect, view, think, recognize, consider, focus*
	Discourse	Involve verbal expression e.g., *discuss, state, suggest, argue, note, report, propose*

TABLE II: EVALUATIVE REPORTING VERBS [7]

Category			*Definition and Example*
Evaluation	Factive		Represent the reported information as true e.g., *acknowledge, point out, establish, demonstrate, solve, confirm*
	Counter-factive		Represent the reported information as true e.g., *fail, misunderstand, ignore, overlook, exaggerate*
	Non-factive	Positive	Without a clear signal, ascribe a positive view to the source author e.g., *advocate, argue, hold, agree, concur, understand*
		Neutral	Without a clear signal, ascribe a neutral view to the source author e.g., *address, cite, comment, discuss, reflect*
		Tentative	Without a clear signal, ascribe a tentative view to the source author e.g., *suggest, believe, hypothesize, speculate, suppose, suspect*
		Critical	Without a clear signal, ascribe a critical view to the source author e.g., *attack, condemn, object, refute, dispute*

If coding schemes are explicitly defined and categories could be easily recognized by textual features, researchers are less likely to suffer ambiguity and potentially can complete coding procedures independently when another coder is out of reach. Thus, with explicit pre-defined coding scheme elaborated above, I coded the frequency of citations, types of citations, and reporting verbs on my own. Furthermore, to enhance the reliability of my coding, one week after initial coding, I re-coded ten texts in the corpus. The consistency between two rounds of coding turns out to be 98%. The inconsistent cases, resulting from omitting certain citations in the first round, were rectified.

III. RESULTS AND DISCUSSIONS

A. Frequency of Citations

Focusing on the Methods section, the analysis of the frequency of citations concurs with previous studies [14] in that novice writers cite far less than expert writers. Table III shows that expert writers devote more words to the Methods section, almost twice as novice writers do. Potentially, expert writers allocate those words for contextualizing, delineating, and justifying research methods by referring to extant research, and thus cite more frequently than novice writers do.

This result proves that citations in the Methods section of research articles could be a blind spot for novice writers who are newcomers to a discipline community. They may have not acquired or learned the convention that, a precise and proper account of research methods demanded in academic writing could be largely achieved by citations [15].

TABLE III: FREQUENCY OF CITATIONS

Sub-corpus	Tokens in corpus (words)	Raw numbers (times)	Density (times/ 1000 words)
Novice writers	2,528	14	5.14
Expert writers	4,766	64	13.43

B. Types of Citations

Although novice writers' citational practice differs greatly from expert writers' in regard to frequency of citations, dominant type of citations used by two sets of writers is the same, namely non-integral citations (see Table IV). The prevalence of non-integral over integral citations in both sub-corpora is not surprising, since previous research has revealed a similar pattern between integral and non-integral dichotomy in a research article as an entirety or cross sections [16]. As for the Methods section, one of its rhetorical purposes is to objectively describe research design [17]. Pertinently, non-integral citations, without ascribing a grammatical role to original authors, can underscore the cited information itself and enhance objectivity required by research articles [18, 19].

It is noteworthy that, despite the dominance of non-integral citations in both sub-corpora, expert writers slightly deploy more integral citations than novice writers. This might indicate novice writers' potential underuse of integral citations that have their own rhetorical functions [20]. As can be seen in the following Example 1 of integral citations by an expert writer, cited authors' names function as objects in the sentence grammatically and are foregrounded. These cited authors are "leading researchers" [21] whose analytical frameworks have been widely accepted. By foregrounding established previous work, the expert writer adeptly justifies and enhances the credibility of the current research design [22, 23].

Example 1: *Lastly, the models of leading researchers of move analysis such as Hopkins and Dudley-Evans (1988), Kanoksilapatham (2015) and Swales and Feak (1994) were chosen but in a combined schema because they best matched the communicative moves of both sect*ions. (EXP_S_2019)

TABLE IV: TYPES OF CITATIONS

	Novice writers		Expert writers	
	Density (times/ 1000 words)	Percentage (%)	Density (times/ 1000 words)	Percentage (%)
Integral	1.19	23.11	5.25	39.1
Non-integral	3.96	76.89	8.18	60.9
Total	5.15	100	13.43	100

C. Reporting Verbs

In addition to the frequency and forms of citations, another form-based difference between novice and expert writers'

citational practice in the Methods section lies in reporting verbs as presented in Tables V and VI. In total, three reporting verbs were identified in the novice writer sub-corpus which is dramatically less than that in the expert writer sub-corpus (35 times).

For denotative reporting verbs, the result in Table V shows that novice and expert writers both prefer research-oriented reporting verbs to the other two types (cognition and discourse). As documented in the literature [24, 25], articles of empirical studies have a preference for research-oriented verbs which are often used to feature methods other than thoughts or arguments of cited research. As shown in Examples 2 and 3, the verbs "analyze" and "use" were utilized to describe research procedures of the cited authors which would be adopted by the writers. Further, unlike in other sections, readers concern more about instruments and procedures adopted by the cited research, which resonates with common prevalence of research-oriented verbs in two sub-corpora [26].

Example 2: *Prince, Frader and Bosk (1982) analyzed a corpus of dialogues between doctors and patients, ... (NOV_CZ_2020)*

Example 3: *Since sentence length was used in a similar previous study (Lu et al., 2020), we decided to keep MLS ... (EXP_SBP_2021)*

There is no occurrence of discourse reporting verbs in the novice writer sub-corpus and only 11.43% of denotative reporting verbs in the expert writer corpus are discourse-oriented (see Table V). This could be due to the novice writers' weakness of exploiting diverse reporting verbs, as noticed by previous research [27].

TABLE V: DENOTATIVE REPORTING VERBS

	Novice writers		Expert writers	
	Density (times/ 1000 words)	**Percentage (%)**	**Density (times/ 1000 words)**	**Percentage (%)**
Research	2	66.67	18	51.43
Cognition	1	33.33	13	37.14
Discourse	0	0	4	11.43
Total	3	100	35	100

Moreover, novice writers' weakness in flexibly utilizing diverse reporting verbs is either shown by the distribution of denotative reporting verbs (see Table VI). Compared with expert writers, novice writers only utilized factive and positive reporting verbs in the corpus. More conspicuous, novice writers did not use any counter-factive reporting verbs. It is the often case that, reporting verbs carrying factive or positive stances are used to introduce previous works to justify methodological choices, while counter-factive ones are seldom employed. Nevertheless, as a definite category of reporting verbs, counter-factive reporting verbs hold a role in citational practice. As demonstrated in Example 4, "not accounted for" with a counter-factive evaluation indicates insufficiency of the existing analytical framework and then enhances the credibility of the writer's own framework. This rhetorical function of citations with counter-factive reporting verbs does not seem to be learned by novice writers.

Example 4:*... and had an additional move not accounted for in the models by Hopkins and Dudley-Evans (1988), Kanoksilapatham (2015) or Swales and Feak (1994), named "Recommendations for practical applications". This additional feature is Move 4 which offers suggestions as to how knowledge claims can be made for explicit purposes. (EXP_S_2019)*

TABLE VI: EVALUATIVE REPORTING VERBS

		Novice writers		Expert writers	
		Density (times/ 1000 words)	**Percentage (%)**	**Density (times/ 1000 words)**	**Percentage (%)**
Factive		2	66.67	13	37.14
Counter-factive		0	0	3	8.57
Non-factive	Positive	1	33.33	11	31.43
	Neutral	0	0	4	11.43
	Tentative	0	0	4	11.43
	Critical	0	0	0	0
Total		3	100	35	100

IV. CONCLUSION

The current study compares five novice writers' and five expert writers' form-based citational practice (i.e., frequency and types of citations, and reporting verbs) in the Methods section of research articles. Results show that novice writers cite less in the Methods section as a blind spot than expert writers. Although novice writers share a similar preference for non-integral citations as experts, novice writers in general are less capable of exploiting diverse denotive and evaluative reporting verbs.

The results might have two implications for instructing novice writers in citational practice of the Methods section. First, it is urgent for teachers to raise novice writers' awareness of citations in the Methods section, so as to enlighten the blind spot. Second, novice writers might benefit from exposure to diverse citation forms such as reporting verbs in learning materials and classrooms, so that they will have more alternatives at their disposal to achieve varied citation functions and purposes.

Although the current study provided insights into the blind spot of novice writers' citational practice in the Methods section, it is not without limitations. First, the scope of this study is relatively small, that is five research articles for each proficiency group in EAP domain. Future research could collect more texts to enhance the generalizability of findings, enroll more proficiency groups for example doctoral candidates to depict a developmental pattern, or explore more disciplines to explore disciplinary variance in citational practice of the Methods section. Second, this study merely examined form-based features of citations in the Methods section, not together with function-based features. Though contended as problematic without direct access to writers' intention [28, 29], exploring and comparing function features of citations in novice writers' and expert writers' research articles will inform and empower novice writers to map form and function in citational practice.

CONFLICT OF INTEREST

The authors declare no conflict of interest

AUTHOR CONTRIBUTIONS

Bao Yue and Zhang Zequan collaborated to conceptualize the paper, collect and analyze the data and complete the writing. Zhang Yi supervised the whole process. All authors had approved the final version.

FUNDING

This paper is sponsored by Practice and Innovation Funds for Graduate Students of Northwestern Polytechnical University numbered PF2023024 and titled "An Analysis of Modality Metaphor in Applied Linguistics Research Articles."

ACKNOWLEDGMENT

Bao Yue would like to show gratitude to Seed Foundation of Innovation and Creation for Graduate Students in Northwestern Polytechnical University.

REFERENCES

[1] J. Swales and C. B. Feak, *Academic Writing for Graduate Students: Essential Tasks and Skills*, 2nd ed. University of Michigan Press, 2004.
[2] J. M. Swales, "Variation in citational practice in a corpus of student biology papers: From Parenthetical plonking to intertextual storytelling," *Written Communication*, 2014.
[3] J. Bloch and L. Chi, "A comparison of the use of citations in Chinese and English academic discourse," in *Academic Writing in a Second Language*, D. Belcher and G. Braine, Eds., 1995.
[4] F. Xu, "The developmental features of citation competence in L2 academic writing: Cross-sectional and longitudinal evidence," *Journal of Foreign Languages*, vol. 39, no. 3, pp. 73–82, 2016.
[5] C. Bazerman, *Shaping Written Knowledge: The Genre and Activity of the Experimental Article in Science*, University of Wisconsin Press, 1988.
[6] K. Hyland, *Activity and Evaluation: Reporting Practices in Academic Writing*, Academic Discourse: Routledge, 2002.
[7] K. Hyland, "Academic attribution: Citation and the construction of disciplinary knowledge," *Applied Linguistics*, vol. 20, no. 3, pp. 341–367, 1999.
[8] K. Hyland, *Disciplinary Discourses: Social Interactions in Academic Writing*, University of Michigan Press, 2004.
[9] E. Cotos, S. Huffman, and S. Link, "A move/step model for methods sections: Demonstrating Rigour and Credibility," *English for Specific Purposes*, vol. 46, pp. 90–106, 2017.
[10] B. M. Chen and P. M. Grant, "A clustering technique for digital communications channel equalization using radial basis function networks," *IEEE Trans. on Neural Networks*, vol. 4, pp. 570–578, July 1993.
[11] J. E. Casal, X. Lu, X. Qiu, Y. Wang, and G. Zhang, "Syntactic complexity across academic research article part-genres: A cross-disciplinary perspective," *Journal of English for Academic Purposes*, vol. 52, 100996, 2021.
[12] U. M. Connor and A. I. Moreno, "Tertium comparationis: A vital component in contrastive rhetoric research," in *Directions in Applied Linguistics: Essays in Honor of Robert B. Kaplan*, P. Bruthiaux, D. Atkinson, W. Eggington, W. Grabe, and V. Ramanathan, Ed. Bristol, Blue Ridge Summit: Multilingual Matters, 2005, pp. 153–164.
[13] G. Hu and G. Wang, "Disciplinary and ethnolinguistic influences on citation in research articles," *Journal of English for Academic Purposes*, vol. 14, pp. 14–28, 2014.
[14] A. Cumming, R. Kantor, K. Baba, U. Erdosy, K. Eouanzoui, and M. James, "Differences in written discourse in independent and integrated prototype tasks for next generation TOEFL," *Assessing Writing*, vol. 10, issue 1, pp. 5–43, 2005.
[15] B. Petrić, "Rhetorical functions of citations in high- and low-rated master's theses," *Journal of English for Academic Purposes*, vol. 6, no. 3, pp. 238–253, 2007.
[16] G. Zhang, "The citational practice of social science research articles: An analysis by part-genres," *Journal of English for Academic Purposes*, vol. 55, 101076, 2022.
[17] K. Mansourizadeh and U. K. Ahmad, "Citation practices among non-native expert and novice scientific writers," *Journal of English for Academic Purposes*, vol. 10, no. 3, pp. 152–161, 2011.
[18] Q. Li and X. Zhang, "An analysis of citations in Chinese English-major, master's theses and doctoral," *Journal of English for Academic Purposes*, vol. 51, 100982, 2021.
[19] R. Yang and D. Allison, "Research articles in applied linguistics: Moving from results to conclusions," *English for Specific Purposes*, vol. 22, no. 4, pp. 365–385, 2003.
[20] Z. Hu, C. Chen, and Z. Liu, "Where are citations located in the body of scientific articles? A study of the distributions of citation locations," *Journal of Informetrics*, vol. 7, no. 4, pp. 887–896, 2013.
[21] B. Lou, "Reporting verbs in Chinese theses," *Journal of PLA University of Foreign Languages*, vol. 34, no. 5, pp. 64–68, 2011.
[22] C. L. Liardet and S. Black, " 'So and so' says, states and argues: A corpus-assisted engagement analysis of reporting verbs," *Journal of Second Language Writing*, vol. 44, pp. 37–50, 2019.
[23] K. Hyland, "Scientific claims and community values: Articulating an academic culture," *Language & Communication*, vol. 17, no. 1, pp. 19–31, 1997.
[24] K. Flottum, T. Dahl, and T. Kinn, *Academic Voices: Across Languages and Disciplines*, John Benjamins, 2006.
[25] N. Harwood, "An interview-based study of the functions of citations in academic writing across two disciplines," *Journal of Pragmatics*, vol. 41, no. 3, pp. 497–518, 2009.
[26] C.-W. Kuo, S. W. Cheng, and C. H. Kuo, "Citations in research article sections: Dissertations," *Journal of English for Academic Purposes*, vol. 51, 100982, 2011.
[27] G. Myers, *Writing Biology: Texts in the Social Construction of Scientific Knowledge*, University of Wisconsin Press, 1990.
[28] H. D. White, "Citation analysis and discourse analysis revisited," *Applied Linguistics*, vol. 25, no. 1, pp. 89–116, 2004.
[29] Y. Liu and X. Si, "A contrastive study of academic evaluation ability of chinese and english scholars: The case of English reporting verbs in international publication," *Foreign Language in China*, vol. 19, no. 2, pp. 69–77, 2022.