

A Diachronic Study of Interaction in Chinese Academic Writing Through the Lens of Metadiscourse

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Abstract—Metadiscourse provides a framework for understanding interaction in discourse by examining the linguistic resources that the writers employ to organize their text and involve their readers. The studies in metadiscourse use in Chinese academic writing reveal that Chinese scholars maintain an impersonal style and adopt an authoritative stance. We investigated the changes in interaction in Chinese academic writing during the past 40 years by exploring metadiscourse use in 90 Chinese research articles from the top five Chinese academic journals in Applied Linguistics in 1980, 2000, and 2020. The analysis shows significant decreases in metadiscourse use during this period in both interactive and interactional features, and changes in linguistic choices of metadiscourse demonstrate a shift to guidance and persuasion with more logical arguments, objective evidence, and relevant literature, possibly suggesting that Chinese scholars now use metadiscourse mainly to clarify and inform, presenting knowledge as codified facts, privileged rather than negotiated or constructed. We also find that metadiscourse use significantly increased in 2000 before its decrease in 2020, unveiling Chinese scholars' earlier efforts to guide and involve.

Index Terms—interaction, Chinese academic writing, metadiscourse, diachronic study

I. INTRODUCTION

During the past three decades, studies in rhetoric, pragmatics, and academic writing have established that academic writing is more than an impersonal and objective presentation of facts and that academic writers interact with their readers through written texts, organizing their propositional material in such a way as to establish a preferred interpretation, and at the same time, conveying judgments, marking attitude and commitments to involve their readers jointly in the construction of the text. For the interaction to happen, academic writers have in mind the concept of “reader-in-the-text”—a voice that is intended to be attributable to the reader (Thompson & Thetela, 1995), using interactive resources to guide the readers through the text, and interactional resources to involve them collaboratively in the construction of the text (Thompson, 2001; Hyland, 2005). The terms interactive and interactional are later adopted by Hyland (2005) for the classification of the resources in his interpersonal model of metadiscourse, which has become “one of the most commonly employed methods” (Hyland, 2017, p. 16) to examine interaction in academic writing.

The majority of the studies in metadiscourse focus on linguistic items that are searchable in corpora and reveal academic discourse communities' rhetorical preferences, how they view their readers as participants in the discourse, how they choose metadiscourse resources to guide and engage their readers, and how they construct a comprehensible and persuasive text. One line of research is the synchronic research comparing metadiscourse use in English and Chinese research articles (RAs). These studies show that, on the whole, fewer metadiscourse markers, in both interactive and interactional dimensions, are used in Chinese RAs (e.g., Wu, 2010; Hu & Cao, 2011; Ju, 2013; Ruan & Xu, 2016), suggesting that Chinese scholars are less aware of their participating audience and refrain from interacting with them, or that they choose to maintain a more impersonal style and adopt a more authoritative stance. The differences are explained by the paratactic features of the Chinese language (Ju, 2013), the Chinese cultural practice where authoritative knowledge is respected (Hu & Cao, 2011), and rhetorical face-saving strategies to avoid the rebuttal and criticism from their readers (Wu, 2010).

More recently published studies focus on the diachronic changes in metadiscourse use in English academic writing over the past 50 years, with findings that report a substantial increase of metadiscourse items in 2015, as compared to 1965. This increase is, however, completely due to the increase in interactive forms: as there is a significant increase in interactive types and a significant decrease in interactional features (Hyland & Jiang, 2016a; Hyland & Jiang, 2016b; Hyland & Jiang, 2017; Hyland & Jiang, 2018), showing that the scholars pay more attention to ensuring that their readers would interpret their RAs the way they want them to, but at the same time, they are less willing to interact with their readers. Factors such as the globalization of research, the growing demands of publishing metrics on scholars, the

explosion of academic publications, the growth in collaboration and multiple authorship, the influence of external funders and commercial sponsors are proposed to account for these changes (Hyland & Jiang, 2018; Hyland & Jiang, 2020).

With academic cooperation and research publication becoming increasingly international, these cultural, institutional, and economic forces that affect the international academic world have also influenced the Chinese academic communities. However, whether these forces affect the interactional patterns in Chinese academic writing, to our best knowledge, has not been explored. This research, therefore, aims to explore whether and how interaction in Chinese RAs has changed during the past 40 years (1980-2020)¹, through the lens of metadiscourse, to extend previous synchronic studies on interaction in Chinese academic writing, and complement existing diachronic studies on interaction in English RAs.

II. METADISOURSE AND INTERACTION IN CHINESE ACADEMIC WRITING

Academic writing is essential to the creation and dissemination of academic knowledge. It is in academic writing that scholars share their research work with their colleagues and persuade their colleagues that their research matters by establishing the context of their research, demonstrating the relevance of their work, reporting and interpreting their research findings. This process of academic writing is compared to “the sound of one hand clapping” (Thompson & Thetela, 1995, p. 103), during which academic writers try to interact with their readers through two complementary approaches: the interaction from reader to writer and that from writer to reader. These two complementary approaches were later adopted by Hyland into his interpersonal model of metadiscourse (2005) as the two major categories of metadiscourse resources: the interactive dimension and the interactional dimension.

Hyland’s interpersonal model of metadiscourse (2005) has been by far a most widely used model of metadiscourse in studies exploring and investigating interaction in academic writing in English as well as other languages. Chinese scholars made a few attempts at establishing original theoretical frameworks (e.g., Li, 2011; Mu, 2010), before they chose to adopt Hyland’s (2005) model while adding metadiscourse resource examples in Chinese, in their studies of Chinese metadiscourse or comparative studies of Chinese and English metadiscourse (e.g., Liu, 2013; Hu & Cao, 2011; Huang & Yang, 2014; Mu et al., 2015; Liu & Song, 2018).

Studies of metadiscourse use in Chinese RAs show that Chinese scholars conform to the rules of Chinese traditional academic discourse in their academic dialogues with fellow scholars. They maintain an authoritative voice, by using more boosters (Ying, 2017) and accuracy-oriented hedges (Wu & Pan, 2010) to show a higher degree of certainty and confidence, a limited number of attitude markers (Wu & Pan, 2010; Ying, 2017) and avoid self-mention or using first-person plurals rather than first-person singulars when referring to themselves (Wu & Pan, 2010; Ying, 2017) to appear objective and impersonal.

The studies comparing metadiscourse use in English RAs and Chinese RAs investigated the influence of linguistic factors, culturally preferred rhetorical strategies, and epistemological beliefs on metadiscourse use. These studies found more metadiscourse markers in English RAs than in Chinese RAs (Wu, 2010; Hu & Cao, 2011; Ju, 2013; Ruan & Xu, 2016), which indicates that English academic writers are more aware of interacting with their fellow scholars than their Chinese counterparts. The Chinese scholars use fewer metadiscourse markers in both interactive and interactional dimensions. The use of less interactive metadiscourse markers is explained by the paratactic feature of the Chinese language: the construction of meaning is achieved by semantic or logical comprehension rather than connectives in the juxtaposition of syntactic units (Ju, 2013). The use of less interactional metadiscourse is explained by the Chinese cultural practice where authoritative knowledge is respected (Hu & Cao, 2011). It is also pointed out by Wu (2010) that Chinese scholars avoid rebuttal and criticism from their readers by the use of more hedges and the avoidance of self-mentions.

The findings from previous studies show that the metadiscourse use in Chinese RAs reflects a traditionally authoritative voice in Chinese academic writing, demonstrating that Chinese scholars tend to appear authoritative, objective, impersonal, and at the same time avoid face-threatening situations. However, has metadiscourse use in Chinese academic writing changed over the past few decades? If yes, how has metadiscourse use changed? Are the changes similar to or different from those in English academic writing? What do these changes tell us about the changes in interaction in Chinese academic writing? The answers to these questions would help us understand better rhetorical practices, academic interaction, and knowledge construction.

III. METHODOLOGY

To track the changes in metadiscourse in Chinese academic writing, we built three corpora and compiled a list of Chinese metadiscourse items for the analysis of the corpora. This list comes from three sources: Hyland’s interpersonal model of metadiscourse (2005, 2018), previous studies on Chinese metadiscourse, and metadiscourse items that we documented during the process of the corpora-building. We then used the concordance software Antconc 3.5.8 (Anthony, 2019) to search each of the three corpora for the items in our list of Chinese metadiscourse items.

A. The Corpora

We built three corpora by taking RAs from the top five academic journals in Applied Linguistics at three periods: 1980, 2000, and 2020. These five academic journals have achieved the top rankings according to their impact factor in 2020 (CSSCI). Table 1 provides the details for the academic journals from which the RAs of this study were taken.

TABLE 1
DETAILS OF THE ACADEMIC JOURNALS

Journal title	Year of first issue	Impact factor (2020)
Foreign Language World	1980	3.943
Modern Foreign Languages	1978	3.548
Technology Enhanced Foreign Language Education	1979	2.213
Foreign Language Teaching and Research	1957	2.157
Foreign Language Education	1979	1.783

Six research articles from each period were taken from these academic journals, therefore, the corpus comprises a total of 90 RAs of 581,561 Chinese characters, with 30 RAs from each year. The details of the corpora are shown in Table 2.

TABLE 2
THE DIACHRONIC CORPUS

Year	Number of Chinese characters
1980	14,2108
2000	18,0618
2020	25,8835
Total	581,561

B. The Compilation of Chinese Metadiscourse Items List

Building on previous studies (e.g., Williams, 1981; Crismore, 1983; Copple, 1985; Thompson & Thetela, 1995; Hyland, 2001), Hyland's interpersonal model of metadiscourse views metadiscourse as linguistic resources that one uses to organize information as an interactive event involving the writer, the reader and the text, distinguishing metadiscourse into the interactive dimension which helps organize the text in a way that it would be understood or interpreted as the writer prefers, and the interactional dimension which helps the writer interact with the readers by intruding and commenting on their text.

This model is adopted and used as the basis of the compilation of Chinese metadiscourse items to engage better with existing studies of metadiscourse, as it is widely used as the analytical framework in studies investigating metadiscourse use in not only English discourse (e.g., Cao & Hu, 2014; Fu & Hyland, 2014; Hyland, 2004; Hyland & Jiang, 2018; Gillaerts & Velde, 2010; Lee & Subtirelu, 2015), but also Chinese discourse (e.g., Li, 2007; Wu, 2010; Hu & Cao, 2011; Ju, 2013; Liu, 2013; Gao, 2014; Liu & Song, 2018; Ruan & Xu, 2016), as well as studies comparing metadiscourse use in English discourse and discourse in other languages such as Spanish (Aertselaer & Dafouz-Milne, 2008), Iranian (Pooresfahani et al, 2012), Turkish (Ozdemir & Longo, 2014), or Persian (Kuhi & Mojood, 2014).

Therefore, the first step in the compilation of Chinese metadiscourse items was to organize a list of Chinese equivalents for the most common metadiscourse items listed in Hyland (2005, 2018). The second step was document the metadiscourse items listed in previous studies on Chinese metadiscourse including Li (2011), Mu (2010), Wu (2010), Hu and Cao (2011), Ju (2013), Liu (2013), Gao (2014), Liu (2013), Ruan and Xu (2016), Huang and Yang (2014), Liu and Song (2018). The third step was to record for the metadiscourse items that the researchers came across during the process of building the corpora of Chinese research articles.

A total of 771 Chinese metadiscourse items were included in the list. Table 3 presents Hyland's interpersonal model of metadiscourse with English and Chinese exemplars.

TABLE 3
AN INTERPERSONAL MODEL OF METADISOURSE WITH ENGLISH AND CHINESE EXEMPLARS

Category	Function	English exemplars	Chinese exemplars
Interactive	Help the writer manage the information flow		
Transitions	Refer to relations between clauses such as addition, contrast, consequence, etc.	in addition; but; thus; and	除此之外 (in addition); 但是 (but); 所以 (thus)
Frame markers	Refers to text structure such as sequencing, announcing goals, shifting topics, etc.	finally; to conclude; my purpose is	最后 (finally); 总而言之 (to conclude); 试图 (the purpose is)
Endophoric markers	Refer to information in other parts of the text	noted above; see Fig	上文 (noted above); 参见图 (see Fig)
Evidentials	Refer to the source of information from outside the current text	according to A; B states	A 认为 (according to A); B 指出 (B states)
Code glosses	Elaborate, explain or provide examples to propositional meaning	namely; such as; in other words	即 (namely); 例如 (for example); 换言之 (in other words)
Interactional	Help the writer interact with their readers		
Hedges	Open up space for alternative opinions	might; perhaps; about	可能 (might); 也许 (perhaps); 大约 (about)
Boosters	Convey full commitment to what is being written	in fact; definitely; it is clear that	事实上 (in fact); 不言而喻 (definitely); 很明显 (it is clear that)
Attitude markers	Express surprise, agreement, frustration, etc.	Surprisingly; I agree; unfortunately	令人惊讶的是 (surprisingly); 我同意 (I agree); 不幸地 (unfortunately)
Self-mentions	Refer directly to the writers themselves	I (exclusive); we (exclusive); me (exclusive)	我 (exclusive I/me); 我们 (exclusive we/us); 我的 (my, mine); 我们的 (our, ours)
Engagement markers	Explicitly address the readers	you; we (inclusive); note	你/你们 (you); 我们 (inclusive we/us); 请注意 (Please note)

(Adapted from Hyland, 2005: 49)

C. Analysis of the Corpora

The 90 RAs that were chosen were first saved in TEXT files, and then NLPiR Chinese Word Segmentation System (Zhang, 2013) was employed to divide the Chinese characters in the corpora into Chinese words. After that, AntConc 3.5.8 (Anthony, 2019) was used to search the metadiscourse items used in the three sub-corpora, following the list of Chinese metadiscourse markers compiled by us, as explained above.

We then manually examined each concordance line containing the occurrence of these items, to make sure that they functioned as metadiscourse. Both authors coded 20% of the data (i.e., 18 RAs; six RAs from each of the three subcorpora) independently, and achieved an inter-coder agreement of 92% after resolving disagreements, then the first author analyzed the rest of the data. After checking all the instances to make sure they functioned as metadiscourse, we normalized the results to 10,000 characters so that comparisons across corpora of different sizes can be made. Log likelihood tests were then performed to determine statistical significance, following Hyland and Jiang (2018).

IV. THE CHANGING PATTERNS IN INTERACTION

On the whole, we find 233.9 cases of metadiscourse per 10,000 Chinese characters in the 2020 Chinese RAs corpus, a significant decrease by 20.3% as compared to the 1980 corpus (log-likelihood = 153.95, $p < .001$). This is a feature different from the changing patterns of metadiscourse use in English RAs, which has grown substantially over the past 50 years (Hyland & Jiang, 2018, p. 22). Another feature in metadiscourse use in Chinese RAs is that while metadiscourse use in English RAs on the whole increased steadily over the past five decades, i.e., increased in 1985, then again in 2015, metadiscourse use in Chinese RAs experienced a slight increase of 7.7% in 2000, then a significant decrease of 27.1% in 2020 (log-likelihood = 300.78, $p < .001$), showing that interaction in Chinese academic writing appears to have first grown between 1980 and 2000, and then declined between 2000 and 2020, as illustrated in Figure 1.

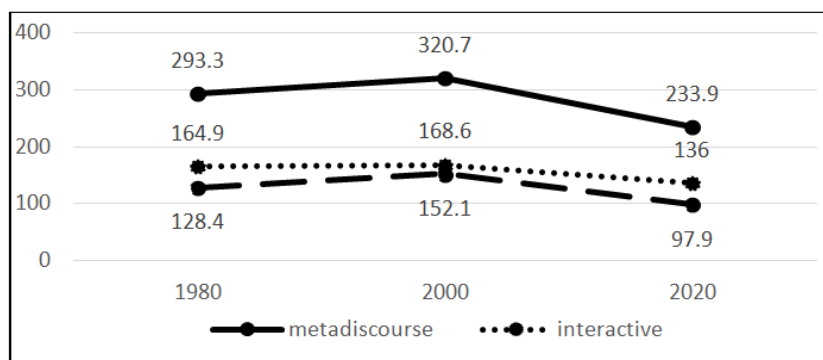


Figure 1 Changes in Metadiscourse Use Between 1980 and 2020 (per 10,000 Chinese characters)

A third feature in the changing patterns in interaction in Chinese academic writing is that both interactive and interactional resources contributed to the decrease of interaction in Chinese academic writing, while the substantial growth of interaction in English RAs was entirely due to the increase in interactive forms (Hyland & Jiang, 2018, p. 22). During the past four decades, the decrease of 20.3% in metadiscourse use was due to the decline in both interactive items, by 17.5% (log-likelihood = 77.47, $p < .001$), and interactional items, by 23.8% (log-likelihood = 77.41, $p < .001$).

In the next section, we zoom in on the details in how interaction in Chinese academic writing has changed in occurrences and linguistic choices with examples from the three sub-corpora over the span of the past 40 years.

A. Changes in Interactive Metadiscourse

Interactive metadiscourse is a repertoire of resources that help organize and construct the discourse in such a way that the readers would understand and interpret the text as the writers intend them to, revealing writers' awareness of their readers' needs and the extent to which they are willing to meet these needs. Table 4 shows that during the 1980-2020 period, the use of three sub-categories fell: transitions by 28.1%, frame markers by 39.2% (log-likelihood = 106.37, $p < .001$), and code glosses by 29.8%, while endophorics and evidentials increased, by 54.5% (log-likelihood = 23.81, $p < .001$) and 109.9% (log-likelihood = 57.73, $p < .001$) respectively.

Transitions express logical relations between main clauses, and frame markers refer to text boundaries or text structure, both of which help the readers understand the logical reasoning in the discourse. Endophorics and evidential direct readers' attention to materials that help them recover the writers' intention by referring to information within or outside the text. The decreased use of transitions and frame markers, together with the increased use of endophorics and evidentials point to a change in persuasion: Chinese scholars are now relying more on supporting data both within the text with endophorics (e.g., see Fig.) and from external sources with evidentials (e.g., according to X), than on logical reasoning using transitions or frame markers, despite the substantial growth in the average length of the RAs where more explicit structuring is needed (Hyland & Jiang, 2018, p. 24). Code glosses help clarify the writers' communicative purposes by elaborating on the meaning of a clause or item (e.g., for instance, in other words), the decrease of which may suggest that the writers expect their readers to be specialists in applied linguistics, with good on-line processing abilities for academic information.

TABLE 4
DISTRIBUTION OF INTERACTIVE ITEMS 1980-2020 (PER 10,000 CHINESE CHARACTERS)

Interactive	1980	2000	2020
Transitions	64.0	59.0	46.0
Frame markers	16.6	12.2	10.1
Endophorics	11.2	15.8	17.3
Evidentials	8.1	7.9	17.0
Code glosses	65.0	73.7	45.6
Total	164.9	168.6	136

Transitions express logical relations such as addition, contrast, consequence between main clauses, helping readers grasp the relations between main clauses. The use of transitions declined in 2000 by 7.8%, then again in 2020 by 22.0%. The most commonly used expressions for transitions, however, are the same in all three corpora: 但 (but), 因此 (therefore), and 因为 (because):

(1) 它在结构形式上比明喻简捷，但在意义上却是藏而不露，因此往往较为深刻，产生的语言效果也较强。(1980)

(It is simpler than simile in terms of structure and form, but it is hidden and not exposed in meaning, therefore it is often more profound and produces stronger linguistic effects.)

(2) 就本次研究而言，二者的区分并不重要，因为只要有新的语言输入，它就会和已习得的语言发生作用。(2000)

(As far as this research is concerned, the distinction between the two is not important, because as long as there is new language input, it will interact with the acquired language.)

(3) 科学研究以信度和效度为本，但作者可能更看重推介研究发现和应用价值。(2020) (Scientific research is based on reliability and validity, but the author may pay more attention to recommending research findings and application value.)

Frame markers are expressions that sequence arguments, label stages, announce discourse goals, or shift topics. The use of frame markers dropped significantly by 39.2% (log-likelihood = 106.37, $p < .001$) in the past 40 years, first in 2000, then again in 2020. Apart from the decrease in its use, the linguistic choices of frame markers also experienced changes: in the 1980 corpus, Chinese scholars mainly used frame markers to shift topic with 下面 (next) and 至于 (as to), or to label stage with 总之 (in short), while in the 2000 and 2020 corpora, they used frame markers mainly to order arguments with 首先 (firstly, first of all) and 其次 (secondly):

(4) 下面通过对乔姆斯基所提三种语法模式的分析逐步来认识它。(1980)

(Next, let's understand it step by step through the analysis of the three grammatical patterns mentioned by Chomsky.)

(5) 学习环境方面的这些特点都不利于词汇产出性能力的发展。首先，目前的词汇量的扩大只是单纯表现在数量上的增加.....其次，输入的局限和产出机会的缺乏.....造成了运用词汇的两种能力发展不均衡。(2000)

(These characteristics of the learning environment are not conducive to vocabulary productivity of the semantic network. Firstly, the current expansion of vocabulary is simply an increase in quantity...Secondly, the limitation of input and the lack of output opportunities ... result in unbalanced development of two skills in the use of vocabulary.)

(6) 这五个类别的描述语难度值都出现了不同程度的异常：首先，词汇能力 B1 和 C1 级描述语的难度值较为接近.....；其次，关于语法能力的 B1. 1、B2. 1、 B2. 2 级描述语的难度值也非常接近.....(2020)

(The difficulty values of the descriptors of the categories have different degrees of abnormality: First, the difficulty values of the descriptions of the vocabulary ability B1 and C1 are relatively close ...; secondly, the difficulty values of the descriptors at levels B1.1, B2.1, and B2.2 regarding grammatical competence are also very close...)

Code glosses, which help clarify the writers' communicative purposes by elaborating on the meaning of a clause or item, also decreased over the past 40 years, by 29.8%. However, unlike transitions or frame markers, the use of code glosses first increased in 2000 by 13.4% and then decreased in 2020 by 38.1% (log-likelihood = 143.8, $p < .001$). The purposes that Chinese scholars use code glosses in their writing remain relatively unchanged, mainly to provide examples, as illustrated in (7), often realized by the use of 例如 (for example) and 如 (for instance), and to offer further explanations or elaborations, often realized by the use of a colon or the parentheses, as illustrated in (8) and (9):

(7) 第六句用升调时也是指示，例如上级对下级也许会这样说。(1980)

(Sentence Six is also an instruction with a rising tone, for example, a superior might say this to a subordinate.)

(8) 一个词项的内部结构由 4 种信息组成：语义、句法、词法和形式（包括发音和拼写）。(2000)

(The internal structure of a lexical item consists of 4 kinds of information: semantics, syntax, morphology and form (including pronunciation and spelling)).

(9) 句末位置包括两种情况：1) 位于分句中所有必要成分之后；2) 当有一个以上状语并列于该位置时，位于句末。(2020)

(The position at the end of a sentence includes two situations: 1) It is located after all the necessary components in the clause; 2) When there is more than one adverbial in this position, it is at the end of the sentence.)

Endophorics and evidentials are the two types of interactive metadiscourse that increased during the past four decades. Endophorics facilitate the readers' comprehension by referring to other parts of the text, and over the past 40 years, the use of endophorics grew significantly by 54.8% (log-likelihood = 23.81, $p < .001$). The linguistic choices in endophorics show an evident move from expressions referring to information in other parts of the text in general such as the 上述 (aforementioned), 上面 (as said above), and 以下 (the following) in the 1980 corpus, to expressions referring to information provided in tables, examples, and figures using 表 X (Table X), 例 X (Example X), and 图 X (Figure X) in the 2000 and 2020 corpora, suggesting a shift from supporting the claims with hard evidence rather than logical argumentation:

(10) 由于上面我们讲的意义差别，所以在翻译时我们通常把第一句译成“她坐在那里，纹丝不动”。(1980)

(Because of the differences in meaning we discussed above, when translating, we usually translate the first sentence into “She sits there and doesn't move”.)

(11) 从表 3.5.1 可以看出，大部分学生的性格倾向处于中间状态，其偏离程度一般。(2000) (It can be seen from Table 3.5.1 that most of the students' disposition tendencies are in an intermediate state, and the degree of deviation is average.)

(12) 测试句对前半句内容进行提问，旨在掩蔽实验目的，如例 3a。(2020)

(The test sentence is a question about the content of the first half sentence, which aims to conceal the purpose of the experiment, as in Example 3a.)

Evidentials, which refer to community-based literature, and provide important support for arguments, increased significantly by 111.1% (log-likelihood = 57.73, $p < .001$) during the past 40 years, and this increase is mainly reflected by the increase in the use of in-text citations, the raw frequency of which was 258 in the 2020 corpus, as compared to 10 in the 1980 corpus and 32 in 2000 corpus, in both of which 认为 (think) was the most frequently-used expression. The changes in linguistic choices signify a move from direct quotes to in-text citations which work better for generalizing

from several sources (Hyland & Jiang, 2018).

(13) 乔姆斯基认为, 任何句子都具有深层结构和表层结构。(1980)

(Chomsky thinks that any sentence has a deep structure and a surface structure.)

(14) 从社会语言学的角度来看, 词是“社会交际系统中最主要的成分”(Labov, 1973: 340)。(2000)

(From the perspective of sociolinguistics, words are “the most important component in the social communication system”(Labov, 1973: 340)

(15) 随着功能语言学的兴起, 人们逐渐认识到它不仅传递概念信息, 产出可信文本, 而且表达丰富的人际意义, 实现作者与读者的社会互动 (Halliday & Martin, 1993; Hyland, 2004; 李战子, 2001)。(2020)

(With the rise of functional linguistics, people have gradually realized that it not only conveys conceptual information and produces credible texts, but also expresses rich interpersonal meanings and realizes the social interaction between authors and readers (Halliday & Martin, 1993; Hyland, 2004; Li, 2001)).

B. *Changes in the Interactional Dimension*

Interactional metadiscourse helps writers establish a community-based personality by making their views explicit and aligning themselves with their readers, revealing the extent to which writers work to involve and engage their readers. From Table 5, we can see that during the 1980-2020 period, the use of hedges (-21.6%), attitude markers (-26.8%), and engagement markers (-80.5%, log-likelihood = 346.55, $p < .001$) decreased, while the use of boosters (+5.6%) and self-mentions (+46.5) increased. It is also worth noticing that four out of the five interactional subcategories, i.e., hedges, boosters, attitude markers, and self-mentions, increased in the 2000 corpus before dropping in the 2020 corpus. These changes reveal that Chinese scholars adopted a more explicitly involved and personal position before they turned to a stronger and less personal authorial stance.

TABLE 5
DISTRIBUTION OF INTERACTIONAL FEATURES 1980-2020 (PER 10,000 CHINESE CHARACTERS)

Interactional	1980	2000	2020
Hedges	43.1	54.1	33.8
Boosters	37.7	45.1	39.8
Attitude markers	11.2	15.6	8.2
Self-mentions	7.1	18.7	10.4
Engagement markers	29.3	18.6	5.7
Total	128.4	152.1	97.9

Hedges play down the certainty of the writer's claims by recognizing alternative voices and viewpoints, while boosters work in the opposite direction by closing down alternatives and heading off conflicting views. The decreased use of hedges and increased use of boosters indicate a stronger authorial stance. On the other hand, the decline in the use of attitude markers, which convey the writer's affective attitude to propositions, signaling surprise, agreement or frustration, indicate that the Chinese scholars are now taking a more objective, less personal stance. Engagement markers explicitly address readers, to focus their attention or include them as discourse participants, and self-mentions reveal the degree of explicit author presence in the text. The decline in engagement markers and greater use of self-mentions show a tendency to downplay their readers and highlight author presence.

The use of hedges increased in the 2000 corpus, and decreased in the 2020 corpus, to a lower level than the 1980 corpus, showing that Chinese scholars around the year 2000 were more willing to recognize alternative voices, while in the year 2020, they are more likely to present information as recognized facts. In all three corpora, the most commonly used expressions for hedges are those for possibilities such as 可能 (possible) and 可以 (may, can), or for the extent of certainty that they give to a claim such as 主要 (mainly) and 一定 (certain):

(16) 与同声传译相比, 这种传译形式可能较为准确、完整, 但是占时间过多。(1980)

(Compared with simultaneous interpretation, this form of interpretation may be more accurate and complete, but it takes up too much time.)

(17) 本研究还存在不足, 主要反映在以下两个方面..... (2000)

(There are still shortcomings in this research, which are mainly reflected in the following two aspects.)

(18) 同时, 发现语料库概率模型与本族语者的构式变体选择高度一致, 验证了本文构建的语料库概率模型具有一定的心理现实性, 一定程度上可以反映和预测本族语者的构式使用行为。(2020)

(At the same time, it is found that the probability model of the corpus is highly consistent with the choice of constructional variants of the native speaker, which verifies that the corpus probability model constructed in this article has a certain psychological reality and can reflect and predict the use of the native speaker's construction to a certain extent.)

There was only a marginal increase of 5.6% in boosters during the past 40 years despite the increase in 2000. However, the linguistic choices have seen evident changes, from commitments expressed as personal beliefs in the 1980 corpus such as 必须(must for possibility), 当然 (certainly), and 甚至(even), to those which seek to convey more objective, data-supported assurances such as 发现(find), 表明(show) and 显著 (obviously, significant) in the 2000 and 2020 corpora (examples 20 and 21).

(19) 但是, 这种直观断定应通过形式描写加以证明才行, 这当然是形式语法份内的事了。(1980)

(However, this kind of intuitive conclusion should be proved by formal description, which is certainly a matter of formal grammar.)

(20) 在调查中我们发现, 对于研究意义, 特别是研究与教学实践的关系, 调查对象们有着一系列不同的理解。(2000).

(In the survey, we find that the survey subjects have a series of different understandings about the significance of research, especially the relationship between research and teaching practice.)

(21) 方差检验显示, 教师在课堂策略使用类型上差异显著, 策略类型效应显著: $F=40$, $P<0.001$ 。(2020)

(Variance test shows that teachers have significant differences in the types of classroom strategies used and the effect of strategy types: $F=40$, $P<0.001$.)

The use of attitude markers, like that of hedges, also increased in the 2000 corpus, and decreased in the 2020 corpus. While declining in numbers, the expression 重要 (important) remains the most common expression in all three corpora (22). Attitude markers do not appear as frequently as other interactional resources, and they carry strong negative judgements, as illustrated in (23), or positive judgements, as illustrated in (24).

(22) 外语电教作为重要工具的作用和地位, 不但不会减少, 相反还会越来越被人们所了解。(1980)

(The role and status of foreign language audio-visual education as an important tool will not be reduced, on the contrary, it will become more and more understood by people.)

(23) 社会用语都有极强的目的性, 甚至可以说是急功近利。(2000)

(Social language has a strong purpose, and it can even be said to aim at quick success.)

(24) 新手教师虽然自主性较强, 但应对管理体系的经验相对较少, 因此他们在管理体系介入下的资源利用值得研究。(2020)

(Although novice teachers have strong autonomy, they have relatively little experience in dealing with the management system, so their resource utilization under the intervention of the management system is worth studying.)

Self-mention, which is closely associated with authorial identity by explicitly signaling writer presence, increased by 46.5% (log-likelihood = 10.95, $p < .001$) over the past 40 years, after an increase of 163.4% in 2000 (log-likelihood = 83.85, $p < .001$), showing that Chinese scholars want to be more visible in their writing, stepping in to explicitly signal their presence and take responsibility for their claims. The most common self-mention in all three corpora is 我们 (exclusive we and us), which allows Chinese scholars to create more distance between themselves and their reporting, indicating a less invasive stance than first-person in singular forms, although it is more personal, compared to 本文 (this paper) and 笔者 (the author), the second and third most common self-mentions in the 1980 and 2000 corpora.

(25) 我们认为, 功能语法作为语法领域的新生事物, 反映了语言学新的发展趋势。(1980)

(We believe that functional grammar, as a new thing in the field of grammar, reflects the new development trend of linguistics.)

(26) 笔者在访谈中发现, 英语专业的学生大多对自己的口语交际能力有较高要求。(2000)

(The author found in the interview that most of the English majors have higher requirements for their oral communication skills.)

(27) 本文基于中国综合社会调查 (CGSS) 2006 年和 2017 年的数据, 比较分析我国国民英语能力的基本状况及发展态势。(2020)

(Based on the data of the China Comprehensive Social Survey (CGSS) in 2006 and 2017, this article compares and analyzes the basic status and development of Chinese people's English proficiency.)

It is worth mentioning that in the 2020 corpus, 研究者 (the researcher) is the third most common expression for self-mention, which was not found in either the 1980 or 2000 corpus, signaling that Chinese scholars now identify themselves as researchers more than they did 20 years ago.

(28) 同时, 研究者还观测到了教师专业自主性的提升。(2020)

(At the same time, the researchers have also observed an increase in teachers' professional autonomy.)

Engagement markers, which explicitly address readers, either to focus their attention or include them as discourse participants, have declined the most in all interactional items, by 80.5% (log-likelihood = 346.55, $p < .001$), suggesting that Chinese scholars are less interested in explicitly stepping into the text to focus their readers' attention on particular viewpoints. In all three corpora, 我们 (inclusive we and us) is the most commonly used expression:

(29) 我们要随时随地向一切内行请教, 以解决我们在翻译过程中遇到的各种问题。(1980)

(We need to consult all experts anytime and anywhere to solve the various problems we encounter in the translation process.)

Engagement markers also help pull readers into the discourse to guide them to particular interpretations, with questions or directives such as see, note, or consider. 注意 (note) is the second most frequently used engagement marker in the 1980 and 2000 corpora, the use of which calls for readers' attention to what the writer wants to emphasize:

(30) 应当注意的是……现有的词汇能力发展理论还不能算是真正意义上的理论。(2000)

(It should be noted that ... the existing theories on the development of lexical competence ... cannot be regarded as a theory in the true sense.)

Questions are also among the top three most frequently used engagement markers in the three corpora, pulling the readers into the discourse, guiding them to particular interpretations, displaying or emphasizing the writers' opinion on a topic, as illustrated in (31):

(31) 为什么时空状语在汉语中都以前置为优势语序而产生的迁移影响却不同呢? 研究发现, 在二语习得中母语迁移发生与否及其作用程度受到诸如语言、心理、认知、环境等多种因素的制约。(2020)

(Why are spatiotemporal adverbials in Chinese with predominant word order and the transfer effect is different? Research has found that the occurrence and extent of mother tongue transfer in second language acquisition are restricted by many factors such as language, psychology, cognition, and environment.)

V. CONCLUSION

This study aimed to identify changes in patterns of interaction in Chinese RAs over the past 40 years through the lens of metadiscourse use. We find a significant decrease in metadiscourse over the past four decades, and with a closer look, we find that this is because of the decreases in both interactive and interactional items. This decrease renders Chinese academic writing interactional patterns more similar to those in English textbooks where metadiscourse resources are used to aid comprehension, than English research articles where metadiscourse devices are employed to assist persuasion. This finding suggests that knowledge in Chinese academic writing is more privileged, accepted, and presented as codified facts or reality than negotiated and constructed.

We also find differences in the changes between the 1980-2000 period and the 2000-2020 period: between 1980 and 2000, both interactive and interactional items increased, while between 2000 and 2020, both interactive and interactional features decreased. Therefore, although Chinese academic writers in 2020 made use of metadiscourse items mainly to clarify and inform, they adopted different interaction strategies in 2000, when they not only made more use of interactive devices to accommodate their audience's expectations and knowledge, but also employed a lot more interactional devices to explicitly include them in the discourse construction. These findings are also corroborated by the changes that we find in linguistic choices of the metadiscourse devices, showing a shift to guidance and persuasion with more logical arguments, hard evidence, relevant literature, and objective-data-supported assurances.

The diachronic changes in metadiscourse use in academic writing reveal how academic writers respond and react to the changes in the academic context that embrace and shape rhetorical practices in the academic community. Our research finds that Chinese scholars today present their academic findings, their readers, and themselves in patterns different not only from their international counterparts, but also from Chinese scholars 40 years ago. Similar diachronic studies in more disciplines, interviews with Chinese scholars, collaborative research work with historical linguistics may help produce more fruitful findings to unveil the political, institutional, and economic influences that frame and shape academic work.

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