

Comparison of the use of first person pronoun “we” in research article abstracts in two academic disciplines: life sciences and applied linguistics

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1. Introduction

English used in academic settings is distinctively different from the language spoken in everyday communications in terms of the range of vocabulary, rhetorical organization, and style. It seems Japanese English education up to high school regards English as the language to be used when learners travel overseas or talk with people from other countries to socialize. Therefore, college freshmen in Japan are not aware of the importance of learning English for academic communication even though faculty members and university curricula emphasize the importance of acquiring the skills of academic English.

For undergraduate science majors, many of whom are not proficient in English, it is more important to learn the skills of academic English than to spend a lot of time learning the use of general everyday English because language learning requires a lot of time and effort, and their time in college is limited. The English used in academic communication is called academic English, and language education for academic purposes is often referred to as EGAP (English for General Academic Purposes) (Charles and Pecorari, 2016), which is a subfield of ESP (English for Specific Purposes). There are specific rules and guidelines that are supposedly common to all academic fields. However, EGAP training is not sufficient for science majors because every discipline of academia has its own conventions, including the use of specific vocabulary, formulaic expressions, and discourse organization, and they need to learn discipline-specific conventions in addition to acquiring general academic English. Language teaching focusing on these subdomains of academic English is called ESAP (English for Specific Academic Purposes) (Charles and Pecorari, 2016). Although there is a great need for teaching ESAP to science majors, teaching English for scientific research purposes has not yet been well established, and science majors often struggle to learn the language on their own. In order to design a suitable teaching method for science majors, it is necessary to analyze the language actually used by scientists.

Researchers communicate in various ways, and one of the more often used communication methods in academia is through academic journals. Academic journals have specific writing styles depending on the field of research, and the use of particular linguistic forms may be different across disciplines, reflecting the style of each field. Over the past few decades, corpus-based studies focusing on scientific research writing have been conducted using digitally published data. One of the most influential studies is a study conducted by Hyland (2005), in which he studied the use of metadiscourse in academic writing. Hyland defines metadiscourse as follows:

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Metadiscourse is the interpersonal resources used to organize a discourse or the writer's stance toward either its content or the reader. It is a way of looking at language use based on the fact that, as we speak or write, we monitor the possible responses of others, making decisions about the kind of effects we are having on our listeners or readers, and adjusting our language to best achieve our purposes. (Hyland, 2015, p. 997)

He identified expressions that signal metadiscoursal functions (metadiscourse markers) in academic writing and classified them into two groups: interactive metadiscourse and interactional metadiscourse. According to his taxonomy, the function of interactive metadiscourse is to “guide the reader through the text” (p. 997) and the function of interactional metadiscourse is to “involve the reader in the argument” (p. 997). While the former indicates the organization of discourse, the latter indicates how the author (or the speaker) communicates meaning to the reader (or the listener).

By comparing the frequency of metadiscourse markers used in various corpora, field-specific characteristics of language use may emerge, and those characteristics should be the target of teaching in an ESAP program for science majors. Furthermore, by compiling the corpora diachronically, we may be able to capture the changes in language use over a period of time. The present study attempts to illustrate the diachronic changes in academic writing styles by looking at specific metadiscourse markers, namely the use of first-person pronouns (FPPs), in research paper abstracts in two distinct academic fields: applied linguistics and life sciences. In this paper, we will first describe the background of the study, and then the corpora and the analytical method will be discussed. Finally, we will report the findings of our study.

For those who engage in academic research, one of the most frequently accessed genres of reading materials is research article abstracts (hereafter, RA abstracts). As it is quite easy to obtain abstracts via the Internet, researchers can receive the most current information on a particular subject by first reading the abstract of a paper before actually obtaining the paper itself. Abstracts have the function of describing research concisely, but they also have the function of advertising research articles (RA) online so that more people will read the entire article. Readers read abstracts and judge the novelty and significance of the study (Swales, 1990). Because of the widespread use of the Internet, abstracts have become more important than before, and the skill of writing good abstracts has become more important than ever before.

There are mainly two types of abstracts, structured abstracts and unstructured abstracts, but the basic pattern is somewhat similar across disciplines as long as the abstracts belong to the same genre. In the field of life sciences, the genre of literature most frequently accessed is probably the empirical research report, in which a description of the research is given in the IMRaD (Introduction, Method, Results, and Discussion) order,

and its abstract is a concise version of that. Many other disciplines, such as social sciences, that deal with empirical data also employ IMRaD to describe research, so the use of interactive metadiscourse markers may be used in a similar way. For interactional metadiscourse, there may be more variations in use because, unlike basic discourse organization, the way in which the author communicates with the readers may reflect the style of communication shared by the discourse community.

Hyland (2005) categorized interactional metadiscourse into five types (Table 1). Among them, self-mentions may be more difficult for Japanese students to acquire as Japanese is a PRO-drop language, in which the subject of a sentence is not obligatory, so pronouns are not used in Japanese as much as in English. Also, in English education in Japan, students are often told to avoid using FPPs when they are taught academic writing (MacIntyre, 2010). As a result, passive voice is often overused, but some educators emphasize that the use of passives should be limited (Strunk and White, 1959). Thus, the use of pronouns is a challenge for Japanese college students, so analyzing the use of FPPs would be useful for pedagogical purposes.

Table 1. Interactional metadiscourse (adapted from Hyland, 2005)

Interactional metadiscourse	Involve the reader in the text	Resources
Hedges	withhold commitment and open dialogue	might, perhaps, possible, about
Boosters	emphasize certainty or close dialogue	in fact, definitely, it is clear that
Attitude markers	express writer’s attitude to proposition	unfortunately, I agree, surprisingly
Self-mentions	explicit reference to author(s)	I, we, my, me, our
Engagement markers	explicitly build relationship with reader	consider, note, you can see that

There have been several studies on the use of metadiscourse (e.g., Samraj, 2005; Garcia-Calvo, 2002; Gillaerts, 2010; Hagiwara et al., 2018), but none explicitly studied the use of self-mentions in RA abstracts. Gillaerts (2010) studied metadiscourse using a corpus comprised of abstracts in applied linguistics, and he found that the use of interactional metadiscourse has decreased over the past 30 years. However, self-mentions were not included in his study because they were excluded from his taxonomy of interactional metadiscourse markers. Hagiwara et al. (2018) compared the use of interactional metadiscourse markers in RA abstracts written by Japanese researchers and those written by researchers in English-speaking environments, and found that Japanese researchers use FPPs less frequently than researchers in English-speaking countries. This result may be caused by the elusive nature of self-mentions in academic writing.

Hyland (2001) argues self-mention in writing promotes authorial presence, which is not just a manifestation

of discipline-specific conventions but rather shows how the author wants to communicate with the readers, i.e. whether he wants to “limit claims, enhance plausibility, and promote personal credibility” (p. 211). Thus, the use of FPPs in academic writing has pragmatic meanings which should be taught more explicitly.

As described above, the use of personal pronouns is a challenging task as much for English language educators as for Japanese students, but there have been few empirical studies that document the use of personal pronouns in scientific literature. In order to analyze and clarify the usage of personal pronouns in RA, the following research questions have been raised.

1. Do researchers use FPPs in RA abstracts? If so, how much?
2. Are there differences in the use of FPPs between different disciplines in academia?
3. Is the use of FPPs increasing or decreasing in RA abstracts?

2. Research design and method

In the present study, we compiled two sets of corpora and counted the number of FPPs. We compared the frequency between two disciplines: biosciences and applied linguistics. We chose these two because they are completely different fields of study, and thus it was unlikely that there were abstracts written by the same authors in both corpora. To find if the frequency of use of FPPs is changing over time, the abstracts were chosen from different periods of time from the 1980s until the present. After collecting data, using Wordsmith Tools v.7.0, lexical analyses were conducted based on the occurrences of self-mentions. We used chi-squared tests for all analyses of comparison.

With the data, we first analyzed which self-mention markers were used in the two corpora. Then, we compared the frequency counts of self-mentions, and finally, diachronic changes were analyzed.

3. Results

We compiled two sets of corpora: ALAC (Applied Linguistics Abstract Corpus) and BAC (Bioscience Abstract Corpus), each is comprised of 1,600 abstracts taken from 20 journals over the period from 1980 to 2017. From each of the 20 journals, we collected 20 abstracts from each decade. Tables 2 and 3 summarize the corpora used in our study. Because most articles in biosciences are written by multiple authors, all the abstracts included in the ALAC were written by multiple authors.

Table 2. Description of ALAC corpus

	1980s	1990s	2000s	2010s	Total
Tokens	59,520	64,974	68,032	68,586	261,112
Types	6,472	6,671	7,307	6,969	14,017
Texts	400	400	400	400	1,600

Table 3. Description of BAC corpus

	1980s	1990s	2000s	2010s	Total
Tokens	73,221	82,949	81,073	82,976	320,219
Types	8,157	8,834	8,887	9,147	18,459
Texts	400	400	400	400	1,600

Although the number of texts included in each corpus is the same, the total number of tokens in the BAC is larger than that of the ALAC. Because of this difference, we compared the results based on the ratio by converting the results into the number of occurrences per 100,000 words. Table 4 shows the distribution of three personal pronouns identified in both corpora, which yielded no statistically significant differences.

Table 4. Types of self-mentions in both corpora (per 100,000 words)

	<i>we</i>	<i>our</i>	<i>us</i>	Total
ALAC	428	85	14	542
BAC	503	88	7	598

$\chi^2=3.962$ ns

Table 5 describes the distribution of FPPs in each decade from 1980 to the present. While the use of FPPs in the ALAC is significantly greater than that of the BAC in the 1980s and 90s, the pattern has reversed in recent years.

Table 5. Diachronic changes of the use of FPPs in ALAC and BAC (per 100,000 words)

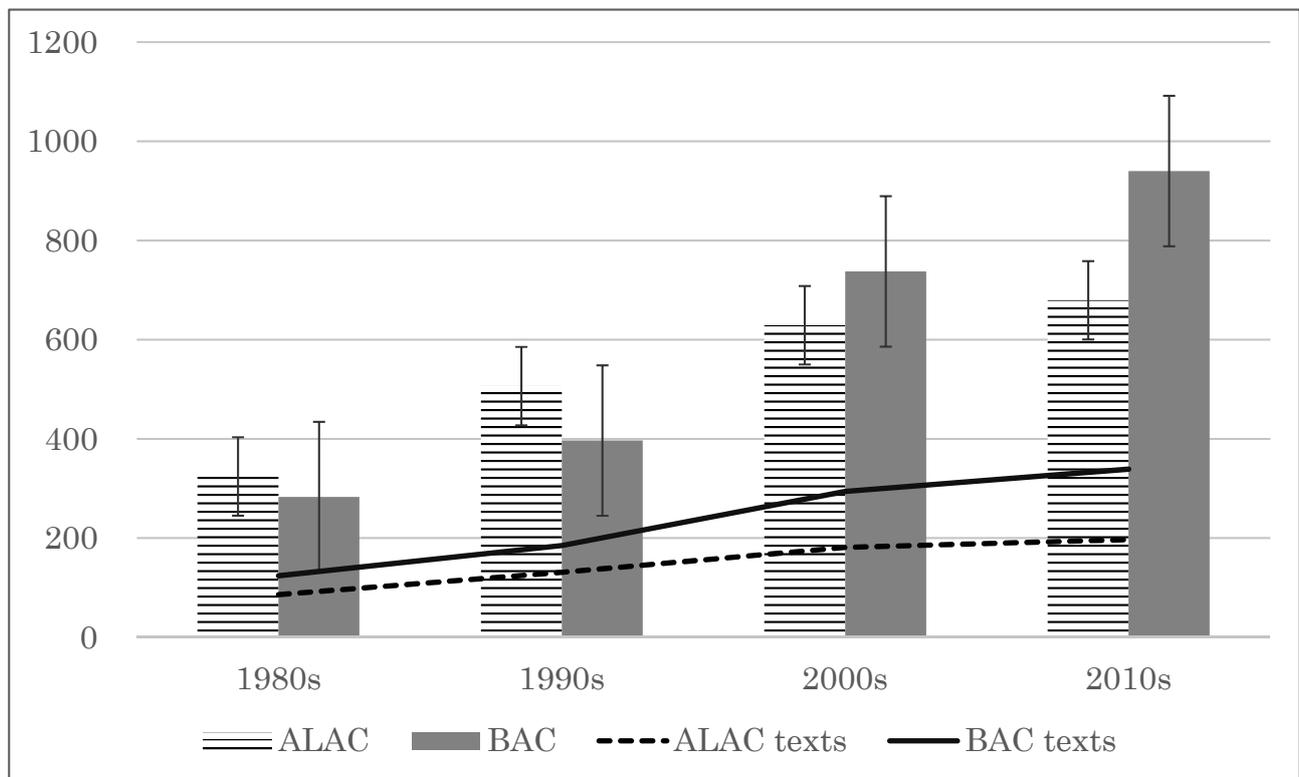
	1980s	1990s	2000s	2010s	Average
ALAC	324	506	629	679	535
BAC	283	397	738	940	590
χ^2	3.164**	5.693**	-1.387ns	-5.677**	56.528**

*p<.05 **p<.01

We further analyzed the differences of the abstracts containing FPPs in both corpora. As Table 6 shows, more abstracts consistently contain FPPs in the BAC than in the ALAC, which means while more authors use FPPs in the BAC in general, a limited number of authors repeatedly use FPPs in the 1980s in the ALAC, which resulted in more frequent use of FPPs as shown on Table 5. Also, the use of FPPs consistently increases in both corpora over the years.

Table 6. Number of abstracts containing FPPs in ALAC and BAC

	1980s	1990s	2000s	2010s	Total
ALAC texts %	21.50%	32.75%	45.25%	49.25%	37.19%
BAC texts %	31.00%	46.25%	73.50%	84.75%	58.88%
ALAC texts	86	131	181	197	535
BAC texts	124	185	294	339	942

Fig. 1. Comparison of FPPs in BAC and ALAC by frequency and number of abstracts

4. Discussion

Our study identified the differences between biosciences and applied linguistics in the use of FPPs by comparing the frequency of use diachronically. Although comparison of the total counts of FPPs was not statistically significant between the two fields, the pattern of use was different. In the 1980s FPPs were used significantly less frequently, but while the occurrence of FPPs in bioscience abstracts dramatically increased over the past four decades, the increase was more gradual in applied linguistics. This result indicates that while in applied linguistics the use of FPPs in RA abstracts is not the norm yet, in biosciences, it seems to have become part of the discipline's writing style.

As Hyland (2005) states, using FPPs means not just identifying the subject of the sentence but also marking the authoritative authorship, which may be used to emphasize the methods the authors use or the claims they make. The reason "we" is increasing may come from the trend requiring increasingly more detailed and exact descriptions of the procedure (Körner, 2008) when research is published so that more people can replicate the study to confirm the results. Therefore, in the field of biosciences, in which experimentation is the main research method, researchers prefer to use grammatically simple active forms with the subject "we" to promote replicability.

Compared to the use of “we,” other FPPs, “us” and “our,” were not widely used, and their use was limited to some fixed phrases such as in “our study,” “our data,” etc., and these were used interchangeably with similar phrases like “these results” and “the present study.” In addition, because abstracts usually have a very strict word limit, the use of lengthy phrases such as these is sometimes avoided in abstracts.

The objective self-mention “us” is even more limited. In our corpora, a typical example of the use of “us” is as object of the verb “allow,” and it is used in formulaic phrases such as the following:

(BAC) Phenotypic similarity with existing mouse models of lissencephaly **led us to** screen a cohort of patients with developmental brain anomalies. (Keays et al., 2007, from *Cell*, 128(1), pp. 45-57.)

(ALAC) **This approach allows us to** account for different patterns of production and comprehension in non-fluent aphasia, and predict some of the factors that facilitate processing for people with these language impairments. (Dipper et al., 2005, from *Language and Cognitive Processes*, 20(3), pp. 417-441.)

Although FPPs in abstracts are increasing, the increase is the result of the predominant use of “we” in biosciences, while in applied sciences, the increase is gradual. Once the usage has spread throughout the same discourse community, it becomes conventionalized, which promotes further increase of the usage. The BAC documents these changes. Over 80% of authors in biosciences actually used “we” at least once in their abstracts (Table 6), and it is likely that future articles will use it. However, from our data, it is not clear whether this was caused by the tendency to assert authorial presence for pragmatic reasons, or whether the authors follow the convention of the field routinely, as authors in biosciences are often nonnative speakers of English who may not be aware of pragmatic subtleties.

When scientific English is taught in a formal setting, it is important to incorporate the trends of linguistic features in a specific discourse community, and the use of FPPs is one of these features. Although further studies are needed to supplement these findings, when we teach scientific writing, it is necessary to tell our students not only to write clearly and concisely but also to include all the necessary details and not to hesitate to use FPPs for that purpose.

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