Scientometrics (2021) 126:2885–2902
https://doi.org/10.1007/s11192-020-03822-w

An exploration of metadiscourse usage in book review articles across three academic disciplines: a contrastive analysis of corpus-based research approach

Amare Tesfie Birhan[1]

Received: 12 May 2020 / Published online: 5 February 2021

Abstract
Metadiscourse refers to the linguistic element that is used to communicate meanings with imagined readers and to express a viewpoint as members of a particular academic community. Accordingly, this study reported the distributions of interactive and interactional metadiscourse markers in a corpus of 99 research articles representing the English language, Computer Sciences, and Education disciplines. To observe the writers' metadiscourse devices usage in their discourse community, Hyland's (Metadiscourse: exploring interaction in writing. Continuum, New York, 2005) metadiscourse taxonomy was employed. The data were computed through descriptive statistics, Chi square, Kruskal–Wallis test, and content analysis. Hence, the data revealed that though articles in all disciplines employed both interactive and interactional metadiscourse markers, English Language discipline articles contained highest metadiscourse devices compared with Education and Computer sciences discipline articles. It was also observed that the book review writers used much more interactive markers such as transition and evidential devices than interactional markers. However, among interactional markers, self-mention markers were extensively used. The data also indicated that there was statistically a significant difference across disciplines in using interactive and interactional metadiscourse devices. Hence, these findings implied that academic writing teachers should focus on discipline-oriented metadiscourse devices while teaching academic writing skills.

Keywords Metadiscourse markers · Academic writing · Book reviews · Corpus linguistic

Introduction

Discourse refers to language use within a particular communicative situation (Bhatia 2004). It indicates how users employ a particular linguistic element in a specific social communicative context. Academic writing is a social interaction in which writers in a discipline use specific linguistic items frequently to express their thoughts and feelings

✉ Amare Tesfie Birhan
amaretesfie@gmail.com

[1] Bahir Dar Institute of Technology, Bahir Dar University, Bahir Dar, Ethiopia

(Jiang 2017). Writing is also a way of social engagement that writers interact with their readers. Metadiscourse is one of the rhetorical features of academic writing that facilitates social engagement (Hu and Cao 2015).

Metadiscourse device helps students to enhance their lexical competence. It indicates writer's voices, positions, and arguments (Abdi 2011). According to Hyland (2005), "metadiscourse is the cover term for the self-reflective expressions used to negotiate interactional meanings in a text, assisting the writer to express a viewpoint and engage with readers as members of a particular community" (p. 37). It also assists readers read, organize, understand, and interpret the text (Hyland and Tse 2004; Hyland 2005; Lu 2011; Ozdemir and Longo 2014). Therefore, using metadiscourse device enhances communication among a writer and readers by clarifying the writer's attitude, arguments, and certainty towards the propositions. Metadiscourse includes devices that act as connectives, signals the structure of discourse, and highlights the importance of ideas, and this helps them to create coherent ideas, indicate the writer's attitude and position (Hyland and Tse 2004; Lin 2005).

Hyland (2005) mentions that the term 'metadiscourse' was first used by Zellig Harris in 1959 to offer a way of understanding language in use and developed by other writers such as Williams (1981) and Vande Kopple (1985). Currently, the importance of metadiscourse to academic communication has been recognized by various researchers (e.g. see Cao and Hu 2014; Hyland 2005; Gillaerts and Velde 2010). Accordingly, researchers investigated (see, e.g. Adel 2006; Bal-Gezegin 2016; Cao and Hu 2014; Gholami et al. 2014) various aspects of metadiscourse devices to enhance academic writing skill. Writers explicate their attitudes towards the context and the content (Hyland and Tse 2004) through selected metadiscourse features. Ozdemir and Longo (2014) indicated that metadiscourse is crucial to interpret written discourse and to facilitate comprehension of a text and communication between the writer and the reader.

Corpus informed studies (e.g. by Hyland 2004; Moreno and Suarez 2009; Ozdemir and Longo 2014; Yeganeh et al. 2015) indicated that there are metadiscourse usage variations among academic genres and disciplines. For instance, Khedri et al. (2013) investigated the interactional metadiscourse markers occurrence across research article genres between soft and hard sciences. Hyland (2005) also reported that soft discipline dissertations employed more metadiscourse devices than hard science dissertations. Akoto (2018) also confirmed that there was a marked cross-disciplinary difference across metadiscoursal devices such as attitude markers.

In academic writing, authors construct their identity in their composition (Hyland 2004; Rahimivand and Kuhi 2014). Accordingly, it is proved that writers used different lexis not only in different disciplines but also within the same discipline. Bowker and Pearson (2002, p. 178) state that "you would find that each genre in single research article has its idiom, its own set of syntactic patterns".

Metadiscourse has interactive and interactional functions (Hyland 2005). These have cohesive and interactional features (Hyland and Tse (2004). Particularly, interactive metadiscourse (such as logical connectives, frame markers, endophoric markers, evidentials, and code glosses) is used to organize ideas coherently that suit a particular social and cultural context (Hyland 2005).

Interactional metadiscourse marker on the other hand serves as organizing texts and directing a reader. Cao and Hu (2014, p. 16) mention that "it is used to organize a text in anticipation of readers' needs and to facilitate their comprehension by guiding them through the text." Interactional metadiscourses such as hedges, boosters, attitude markers, and relation markers use to express the writer's position, arguments, evaluation, and

attitudes towards the proposition (Hyland 2005; Vande Kopple 2002). Interactional marker is also used to indicate the writer's commitment.

Metadiscourse in book review academic writing

In academic writing, book review is considered as one kind of academic genre (Babaii and Ansary 2005; Hyland 2004) that writers judge a text/a book/on its academic quality, clarity, integrity, and value to the field (Hyland 2004). According to Diani (2009, p. 88), a review is "a site where reviewers offer a critical analysis of the ideas that an author discusses in his/her book as a springboard for a wider evaluation, comprising a discussion of the issues they raise and appraisal of what this means for the community." It plays a crucial role by maximizing academic literacy and raising genre structure and feature awareness. It also becomes a reason for opening professional communication and intellectual dialogue (Riley and Spreitzer 1970; Lindholm-Romantschuk 1998; Groom 2009). Hence, a review is a scholarly evaluation of academic work in a specific academic community (Jalilifar et al. 2018).

Book review writers utilize different linguistic structures and moves in different communicative events characterized by a set of communicative purpose(s). Thus, the book review article is regarded as a crucial academic writing discourse that writers employ various metadiscourse devices to transfer their ideas, positions, and arguments. Reviewers provide positive and negative evaluations of the reviewed book critically (Bal-Gezegin 2016). Accordingly, book review is regarded as the complex academic writing genre than research article writing that requires critical evaluation of the materials and cognitive judgments (Hyland 2004). This could be addressed through proper utilization of linguistic features such as metadiscourses.

Book review article considers metadiscourse that shows a writer's appraising, position, arguments, and alternative points of view. Writers show their engagement and express their identity through interactive and interactional metadiscourse. Metadiscourse links between a text and disciplinary cultures (Hyland and Tse 2004). Hence, researchers suggested that learners should be aware of metadiscourse markers that frequently occur in their profession and use them while they produce different academic texts. Metadiscourse markers should also be included in writing curriculum and taught explicitly (Lin 2005; Li and Wharton 2012).

Early studies on book review (Bal-Gezegin 2016; Diani 2009; Groom 2009; Tse and Hyland 2009) mentioned that there are disciplinary differences in utilizing linguistic elements such as metadiscourse markers. For instance, Hyland (2004) asserted that there were considerable disciplinary differences in overall evaluation and the balance of praise and criticism of book review. Additionally, researchers (e.g. Alcaraz-Ariza 2011; Bal-Gezegin 2016; Diani 2009) investigated the disciplinary variation of linguistic features in book review articles and reported that there were metadiscourse differences among writers and disciplines.

Therefore, the main purpose of this research was to explore how book review writers use metadiscourse devices across different disciplines. Though previously mentioned studies discussed the metadiscourse usage in different academic writing genres, they did not address the interactive and interactional metadiscourse coverage of book review articles; their focuses were different from this research.

Besides, little attention has been given to show how book review articles in different disciplines may vary in their use of both interactional and interactive metadiscourse devices.

Hence, this research is conducted in the light of studies that investigated both interactive and interactional metadiscourse markers in book review articles across disciplines. Despite the contribution of the above reviewed studies, more studies are required to gain more understanding of how book review writers use metadiscourse markers across different disciplines. Thus, this research was conducted to add insight to the existing literature on the usage of interactive and interactional metadiscourse markers in book review articles.

Accordingly, the researcher believed that it is important to explicate the interactive and interactional discourse features that are frequently employed in book review articles and explore the linguistic variation among disciplines./ This research attempted to answer the following research questions.

1. Is there a significant statistical difference among book review articles across the three academic disciplines in metadiscourse usage?
2. Are there interactive metadiscourse distribution variations across the three discipline academic journals?
3. Are there interactional metadiscourse distribution variations across the three discipline academic journals?

Data and methodology

This study was aimed at investigating the interactive and interactional metadiscourse features in the book review academic writing genre and compared their usage among three disciplines. Accordingly, the research followed a quantitative and qualitative research approaches with a focus on frequency count, statistical analysis, and manual text analysis of 99 book review articles.

Corpus design

The subcorpora were designed based on three academic discipline (English Language, Education, and Computer Science) journals that were selected randomly. To select journals, the researcher followed the following criteria adapted from previous corpus -informed studies (e.g. Gilmore and Millar 2018; Cao and Hu 2014; Hyland 2017). First, the journals were thought to be representative of the disciplines based on the scope and coverage; the focuse was also given for journals that have a long history of publishing book reviews.

Second, the selected journals are indexed in well-known databases such as Scopus and/ Thomson Reuters and had cite score or impact factor. Researchers such as (Al-Shujairi et al. 2016; Hyland 2017) mentioned that journals that are included in these databases have a good quality. Third, the journals were published in English language. It is known that various journals publish articles other than the English language. Thus, journals that publish articles in languages other than English were excluded.

Besides, the journals representativeness and importance to the respective academic disciplines were also taken into consideration through consulting experts in the disciplines. Finally, random sampling, particularly, lottery method was employed to choose the following journals in each discipline. From English discipline, English for Specific Purposes (ESPJ), Applied Linguistics (APLJ) and System (SJ) were selected, and Computer and Geoscience (CGSJ), Computer Communication (CCJ), and Science of Computer Programming (SCPJ) journals were chosen from computer science discipline. From Education

discipline Asian Pacific Education journal (ASEJ), Journal of Education for Teaching (JEdT), and Technology, Pedagogy and Education journal (TPEJ) were selected. From these journals there were selected, 99 book review articles (11 articles from each journal) that were published from 1994 to 2019.

The articles were downloaded in the PDF format and changed into plain text with *Ant file converter* (Windows. 64-bit 1.2.1) version software. The converted plain text files were cleaned of headers, footers, abbreviations, references, diagrams, and capitalizations. Additionally, the plain texts were coded manually to identify the specific metadiscourse signals. These processes help to ensure smooth and accurate data processing (Salazar 2014).

Methods of data analysis

In analyzing the subcorpora, the researcher employed Hyland's (2005) metadiscourse taxonomy. Hyland's taxonomy is preferred for this study for the following reasons. First, this model has been used widely by various researchers; thus, it allows the findings of this study to compare with the other studies. Second, Hyland and Tse (2004, p. 161) rejected alternative division of metadiscourse devices into textual and interpersonal; they mentioned that "all metadiscourse is interpersonal in that it takes account of the reader's knowledge, textual experiences, and processing needs." Hyland's (2005) taxonomy helped the researcher to identify the specific function that each metadiscourse has in the designed subcorpora (Table 1).

The researcher used *AntConc 3.5.7 (Windows, 2018)* software and concordance tool to identify the total number of words in the selected articles and to search each metadiscourse device that was used by book review writers. The items were also checked manually if they serve a specific function as a metadiscourse marker. After identifying all metadiscourse categories, the researcher followed the normalizing word count principle, and each metadiscourse distribution was calculated per 100,000 words (Table 2).

To analyze the data, descriptive statistics, Chi square, and Kruskal–Wallis tests were employed. Chi square test and Kruskal–Wallis test are types of non-parametric statistics commonly used with the following assumptions. First, the data are two or more categorical

Table 1 Interactive and interactional model metadiscourse (Hyland 2005, p. 49)

Interactive	Function	Signals
Transitions	express relations between main clauses	in addition, but, thus, and
Frame markers	explicitly refer to discourse acts, sequences	finally, to conclude my purpose is
Endophoric markers	refer to information in other parts of the text	noted above/see Fig. 1, in "Data and methodology" section
Evidentials	refer to source of information from other texts	according to X, Z states
Code glosses	elaborate propositional meanings	namely/e.g./in other words
Interactional	**Functions**	**Signals**
Hedges	withhold commitment and open dialogue	might/perhaps/possible
Boosters	emphasize certainty or close dialogue	in fact/definitely/it is clear that
Attitude markers	express writer's attitude to proposition	surprisingly/I agree/unfortunately
Engagement markers	explicitly refer to or build relationship with reader	consider/imagine/recall/you see
Self-mentions	explicit reference to author	I, we, my, me, our

Table 2 Number of words in each sub-corpus before the normalizing count

List of journals	Total number of words
English Language Journals	
APJ	14,365
ESPJ	13,933
SJ	23,346
Computer Science Journal	
CGSJ	13,409
SCPJ	35,021
CCJ	6618
Education Journal	
ASEJ	25,179
JEDT	83,491
TPEJ	16,389

data, and they are independent groups. Second, they do not assume normality. Particularly, the Chi square test is also commonly used in corpus research (Lafuente-Millan 2014).

Accordingly, the Chi square test was employed to determine if there was a significant statistical difference in journals in utilizing individual interactive and interactional metadiscourse markers. Similarly, the Kruskal–Wallis test was run to compute if there were significant statistical differences across and within each discipline/s and journal/s in using interactive and interactional metadiscourse markers. The significant was established for both Chi square and Kruskal tests at $p < 0.05$. Besides, content analysis was performed to examine the metadiscourse markers used in the selected articles.

Results

Metadiscourse usage across journals

In this section, the individual journal metadiscourse coverage is presented. To address each metadiscourse model, first, the interactive metadiscourse usage variations among journals and the Chi square results are presented. Second, the interactional metadiscourse usage variations and the Chi square results are addressed.

Interactive metadiscourse usage

Interactive metadiscourse is one of the metadiscourse subcategories that occurs in academic writing. Table 3 presents the frequencies (per 100,000 words) of interactive metadiscourse markers in each journal and the mean value. The table shows that transitions were the most common metadiscourse device that was used by the book review writers. This marker is used to express the semantic relation between the main clauses. This also helps to create coherent ideas in the text. Accordingly, comparing the mean value of each interactive metadiscourse, the transitions device had the highest occurrence (mean = 199.56) than the other interactive metadiscourse devices.

Table 3 Metadiscourse distribution in selected Journals

	APLJ	ESPJ	SJ	CGSJ	SCPJ	CCJ	ASEJ	JEDT	TPEJ	Mean	Sig. (X^2)
Interactive											
Transitions	281.7	320.9	277.4	129	138	192.5	149.7	199.9	107	199.56	.001
Frame markers	171.82	99.8	203.9	139.9	93	192.5	164	121.96	25.9	134.75	.084
Endophoric	151	114	76	68	100.3	92	135	138.9	80	106.13	.768
Evidential	79	249.6	141.4	6.8	17	185	31.9	71	3.6	87.25	.048
Code glosses	151	160	95	40.9	20	29.6	120	198	28	93.61	.791
Total	834.52	944.3	793.7	384.6	368.3	691.6	600.6	729.76	244.5		

A closer examination of the data indicated that English language journals: English for Specific Purpose (320.9), Applied Linguistics (281.7), and System (277.4) had the highest transitions occurrence than the other discipline journals. Likewise, education journals: the Journal of Education for Teaching (199.9) and Asia Pacific Education (149.7) had fairly the highest transitions.

The following excerpts are from the selected journals.

> In addition, (transition) the prototypical information structure for each category of ad is briefly described (ESP4 txt).

> In addition, (transition) the volume is worthwhile for its new contributions, for example, in the areas of L2 learning with learning difficulties, learning English for the workplace, and L2 learning through social media (APL 10txt).

Among Computer science journals, Computer Communication had 192.5 transitions which were greater than Asia Pacific Education (149.7), Science of Computer Programming (138), and Computer Program (129) journals. However, among the selected journals, the Technology, Pedagogy and Education journal contained the lowest (107) number of transitional devices.

Frame markers were the second interactive metadiscourse catagory employed by the book review writers. This device is very crucial to sequence, label stages, and informs the readers of the shift of topics and ideas. The data indicate that the frame marker was the second highest marker (mean = 134.75) that was employed by the book review writers in the selected articles. The following contents were taken from the selected journals.

> First, (frame markers) he introduces the problem area, the learner is then asked to translate seven or eight sentences containing examples of the problem and to compare their versions with those in the key at the back of the book(SJ1txt).

> Finally (frame marker) test administration including piloting and collecting evidence and responses from test takers and test analysis including item difficulty and item discrimination are described (APL1 txt)

> To conclude (frame markers) capitalizing on learners' testing experiences is suggested as an effective means to inform teaching and assessment practices (APL1 txt)

Comparing the journals coverages of frame markers, System had the highest (203.9) number of frame markers. Computer Communication also had the highest (192.5) frame markers next to the system journal. The other journal that had the highest frame marker

device was Applied Linguistics (171.8). Likewise, the Computer and Geoscience Journal from the computer discipline and the Journal of Education for Teaching from Education discipline included 139.9 and 121.96 frame markers respectively. In contrast, Science of Computer Programming and Technology, Pedagogy and Education contained the lowest number of frame marker (25.9) devices.

The other category of the interactive marker is an endophoric marker. It is an important device to create coherence among ideas in composition. It helps the writer and the reader to link the ideas that have already been mentioned before and the ideas that are being mentioned. The following excerpt was taken from the selected journals

> I want to finish by returning to the two claims noted above (endophoric). First, while the authors claim that "The changing roles of schools in Asian societies is concerned with the debate (EDT 10).

As Table 3 shows, that the endophoric device was another interactive devices used by book review writers. It had 106.13 mean occurrences which indicated that the third highest interactive marker. A closer examination indicated that Applied Linguistics (151) and Asian Pacific Education (138.9) had the highest number of metadiscourses respectively. In contrast, Computer and Geoscience and System had 68 and 76 endophoric marker devices respectively.

Evidential marker is another type of metadiscourse marker that is used by academic writers to provide evidence in their writing. The following excerpts were taken from the selected articles

> First, there was an exploration of those attitudes which, according to Dewey… (evidential) (EDT 10)

> Zhou states that (evidential) "in this age of burgeoning economic globalization, China and the rest of the world need to know each other better"(ASE 1)

Table 3 indicates the evidential marker had the lowest occurrence (mean = 87.25). To mention the individual journal's coverage, English for Specific Purposes (249.6), Computer Communication (185), and System (141.4) journals had the highest evidential devices respectively. However, journals such as Applied Linguistics (79), Education for Teaching (71), Asian Pacific Education (31.9), Science of Computer Programing (17), Computer and Geoscience (6.8), and Technology, Pedagogy and Education (3.6) had relatively the lowest number of evidential metadiscourse respectively.

Code glosses are the last subcategory of interactive marker that writers used to elaborate on what has been said. The following excerpts are taken from the selected articles.

> Thomas and Loxley conclude that inclusion owes more to political theory than to psychology and sociology: In other words, (code glosses) inclusion is… (EDT 3.)

> research on how different learner groups acquire language (or learn through formal teaching) in specific contexts such as (code glosses) academic, medical or aviation would be a welcome addition to the current processability theory research (SJ7).

This marker was the fourth highest (mean = 185) interactive metadiscourse marker. Regarding individual journal coverage, the Journal of Education for Teaching (198), English for Specific Purpose (160), and Applied Linguistic Journals (151) had the highest mean occurrence of code glosses markers respectively. In contrast, the Science of Computer Programing (20), and Technology, Pedagogy and Education (28) journals had the lowest mean values for this parameter.

In addition to the above descriptive statistical analysis, Chi square was run to observe if there were significant statistical differences among journals in using interactive metadiscourse models. As indicated in Table 3, the *p* value of transition (.001) and evidential (.048) were less than 0.05. These indicated that there were significant statistical differences among journals in utilizing transition and evidential devices. In contrast, the data shows the *p* value of the frame markers (.084), endophoric marker (.768), and code glosses (.768) were greater than 0.05. Accordingly, the data indicated that there were no significant statistical differences among journals in the use of frame markers, endophoric markers, and code glosses.

Interactional metadiscourse usage

The other catagory of metadiscourse is interactional metadiscourse which includes hedges, boosters, attitude markers, and personal markers. Table 4, shows the interactional metadiscourse usage variations across journals of the three disciplines.

The first interactional metadiscourse category is hedges which are used by book review writers. A hedge device is used to indicate writers an unwillingness towards a proposition. It is one of the common linguistic features in the book review genre. According to Table 4, the hedge marker was the second highest (mean = 67.38) device that was considered in the selected book review articles.

> The book will be attractive to students in initial training, teacher educators, and teachers committed to developing their own practice, it might (hedge) also usefully inform policy makers (EDT 7.

> Their conclusion, which will perhaps (hedge) be somewhat obvious to many readers, is that automatic analysis is still very limited in its scope, so that there remains a great deal of lexicographic work which only the human linguist can do. (SJ2).

According to the selected journal's hedges coverage, System (149.5) and Education for Teaching (147) journals had the highest hedge device. Additionally, English for Specific had 117 hedges devices. In contrast, Computer Programing (10) and Computer and Geoscience (13.6) journals had the lowest mean values for hedge.

Emphatics (boosters) is the other subcategory of interactional metadiscourse. It is used to prove the writer's claim and to show certainty.

Look at the following excerpts taken from the review articles

Table 4 Interactional metadiscourse markers distributions in the selected journals

	APLJ	ESPJ	SJ	CGSJ	SCPJ	CCJ	ASEJ	JEDT	TPEJ	Mean	Sig.(X^2)
Interactional											
Hedges	58.4	117	149.5	13.6	10	37	39	147	35	67.38	.256
Boosters	24	35.5	27	13.6	24	21	44	36	0	25.01	.839
Attitude markers	72	64	144	6.8	17	29	36.8	38	3.3	45.65	.059
Engagement	48	7	54	20	34.6	22	34	100.5	14	37.12	.569
Self-mention	305	177.9	345	47.7	51.9	59	149	243	120.8	166.588	.246
Total	507.4	401.4	719.5	101.7	137.5	168	302.8	564.5	173.1		

> Although it is clear (emphatic) that Hyland favors a genre approach, he fair-mindedly explores the value of each of the other orientations and concludes that any approach to teaching L2 writing…. (ESP 2 txt).

> this collection of chapters is in fact (emphatic) in a league of its own, focusing not on multilingual corpora but rather on supposedly monolingual corpora and how multilingualism nevertheless figures therein (APL2).

According to the descriptive statistics in Table 4, booster had the lowest mean occurenceamong interactional metadiscourse subcategories (mean = 25.01). Particularly, the Asian Pacific Education journal had the highest (44) number of the emphatic device. Similarly, Education for Teaching and English for Specific Purposes had 36 and 35.5 emphatics respectively; they had almost a similar number of metadiscourses. Likewise, Applied Linguistics and Science of Computer Programing had similar (24) numbers of emphatics. However, the Technology, Pedagogy and Education journal did not contain any emphatic markers. According to the data, emphatic devices rarely occurred in the selected book review articles.

Attitude Markers is another subcategory of interactional metadiscourse device that is used to express the writer's feelings and attitudes regarding a proposition. Look at the following examples found in the selected articles.

> I must also say that I agree (attitude marker) with much of what (JITP12 txt)

> I agree (attitude marker) with the authors that more research on the role of environment (which is usually addressed as context in language test development) in influencing (SJ7)

Table 4 indicate that the attitude device was the third highest (mean = 45.65) device next to self-mention and hedge markers. As for particular journals, System Journal (144), Applied Linguistics (72), and English for Specific Purpose (64) had the highest number of attitude markers respectively. Among Education journals, Journal of Education for Teaching (38) and the Asian Pacific Education Journal (36.8) had relatively the highest number of attitude markers respectively. Computer and Geoscience (6.8) and Technology, Pedagogy and Education (3.3) had the lowest number of attitude markers.

Engagement is the other subcatagory of interactional metadiscourse in academic writing. It is used to create a relationship with the reader. Book review writers used engagement devices to negotiate ideas with their assumed readers. According to Table 4, the engagement device was the fourth highest (mean = 37.12) occurrence in the selected book review articles. The following excerpts were taken from the selected journals.

> It is important to note that (engagement) while the book draws from research work, news… (APL5 txt).

> It is important to note that (engagement Bassey's book is not concerned with mainstream ethnography, nor with action research (EDT6).

> The authors note that (engagement) most of the processability theory studies looked for accurate use as evidence of processing and as a result concluded that advanced learners were more accurate, i.e. producing more target-like language use. (CG7).

Regarding particular journals, the Journal of Education for Teaching had the highest (100.5) engagement device. System and Applied Linguistics journals had (54) and (48) the next highest engagement markers respectively. Similarly, the Science of Computer Programing Journal (34.6) and Asian Pacific Education Journal (34) had almost

equal number of engagement devices. In contrast, journals such as Computer Communication (22), Computer and Geoscience (20), Technology, Education and Pedagogy (14), and English for Specific Purposes (7) contained the lowest number of engagement markers respectively.

Self-Mention is the other interactive markers which writers mostly use. For instance, the following expressions are used in the selected journals.

> Most readers, I (self-mention) believe, would agree that professionalism is an issue for TESOL, and that it is necessary to work towards a shared professional knowledge base for English teachers (SJ8 txt).
> As vocabulary researchers….we (self-mention) aimed to bridge this gap by collaborating on the reviews for three books that offer timely contributions to the field of L2 vocabulary acquisition (APL3txt)

This device helps to facilitate academic writing communication between the writer and the reader. According to Table 4, self-mention was the highest (mean = 166.588) interactional device that occurred in book review articles. Among the selected journals, System (345) and Applied Linguistics had the highest (305) number of self-mention devices Whereas, the Journal of Education for Teaching (243) and English for Specific Purpose (177.9) had the third and fourth highest number of self-mention markers respectively. Asian Pacific Education Journal (149) and Technology, Education and Pedagogy (120.8) from the Education group had a fair number of self-mention markers occurrence. However, Computer Communication (59), Science of Computer Programing (51.9) and Computer and Geoscience (47.7) contained the lowest number of self-mention markers.

The Chi square test was also run to observe the statistical difference among journals in utilizing in each interactional device. As the data in Table 4 indicate the *p* value of hedges (.256), boosters (.839), attitude markers (.059), engagement (.569), and self-mention devices (.246) were all greater than 0.05. Accordingly, the data indicated that there were no significant statistical differences in using interactional metadiscourse devices among journals.

Metadiscourse distribution across and within disciplines

In this section, the interactive and interactional metadiscourse coverage across disciplines and journals are presented based on the total normalized count of the metadiscourse devices and the Kruskal- Wallis test result.

Interactive devices distribution across and within disciplines

As it is shown in Fig. 1, English for Specific Purpose (944.3), Applied Linguistics (834.5), and System (793.7) journals had the highest occurrence of interactive metadiscourse devices respectively. Education for Teaching (729.7) and Asian Pacific Education (600.6) had the next highest interactive metadiscourse devices. Among Computer science journals, Computer Communication (691.6), Computer and Geoscience (384.6), and Science of Computer Programming (368.3) had the lowest interactive metadiscourse coverage compared to English and education disciplines journals. Finally, Technology, Education and Pedagogy (244.5) had the lowest interactive metadiscourse distribution of all selected journals.

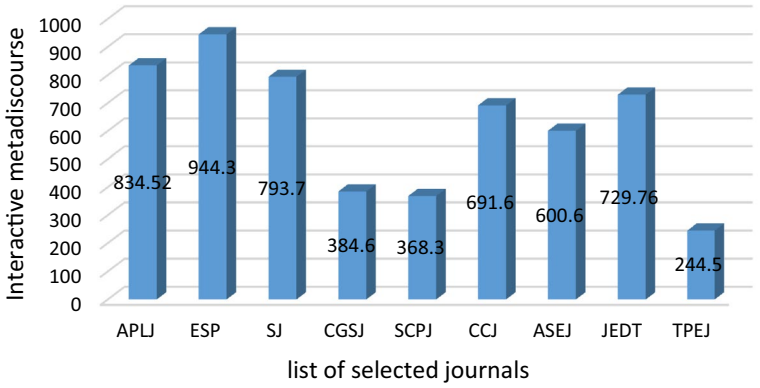

Fig. 1 Total interactive metadiscourse distributions among journals

Table 5 interactive distribution within each discipline

Between groups	Mean	df	*f*	Sig.
English language journals				
Applied Linguistics	166.9040	2	.173	.843
English for Specific Journal	188.8600			
System Journal	158.7400			
Education journals				
Asian Pacific Education journal	120.1200	2	5.048	.026
Journal of Education for Teaching	145.9520			
Technology, Pedagogy and Education journal	48.9000			
Computer Science journals				
Computer and Geoscience	76.9200	2	1.719	.220
Science of Computer Programming	73.6600			
Computer Communication	138.3200			

The Kruskal–Wallis test was run to observe the statistical difference between journals within each discipline. Table 5 showed the mean of each journal and the Kruskal–Wallis test result. Accordingly, the table revealed that English for specific purposes (mean = 188.86), Education for teaching (mean = 145.95) and Computer Communication (mean = 138.32) journals had the highest number of interactive metadiscourse devices in each discipline. However, the Kruskal–Wallis test indicated that there were no significant statistical differences between English language journals (F, .173, df = 2, $p > 0.05$) and between computer science journals (F, 1.719, df, 2, $p > 0.05$). In relation to the Education journals, the Kruskal–Wallis test indicated that there was a significant statistical difference (F, 5.048, df, 2, $p < 0.05$) between journals.

However, according to the cross-disciplinary statistical analysis in Table 6, observed that the Kruskal–Wallis test was F, 9.567, df, $p = < 0.05$. Hence, there was a significant statistical difference among disciplines in utilizing interactive metadiscourse markers.

Table 6 also revealed that English language journals (mean = 722.4) included more interactive metadiscourse markers than Education (573.3) and Computer Science (396.9)

Table 6 , Statistical result of interactive metadiscourse among disciplines

	Mean	df	*F*	Sig.
English Language	722.4000	2	9.567	.014
Computer	396.9333			
Education	573.3000			

journals. Based on these results, it is understood that there was a significant statistical difference among disciplines in utilizing interactive metadiscourse markers.

Interactional metadiscourse usage across and within discipline/s

Concerning interactional metadiscourse usage, Fig. 2 showed that System Journal had the highest (719.5) interactional metadiscourse, and the Journal of Education for Teaching (564.5) and Applied Linguistics (507.4) also had considerably the highest interactional metadiscourse markers occurrence respectively. Additionally, English for specific purposes (404.4), Asian Education Journal (302.6), and Technology, Pedagogy and Education (173.1) had fair number of interactional metadiscourse distributions.

In contrast, Computer and Geoscience (101.7), Science of Computer Programing (137.5), and Computer Communication Journals (168) had lowest number of interactional metadiscourse occurrences.

Additionally, the Kruskal–Wallis test was run to observe if there was a significant statistical difference between journals within the same discipline. Accordingly, Table 7 indicated that system journal (mean = 143.90), Journal of Education for teaching (mean = 112) and Computer Communication (mean = 33.60) had the highest interactional metadiscourse devices occurrence from English, Education and computer disciplines respectively. However, the data indicated that there were no significant statistical differences across journals within each discipline.

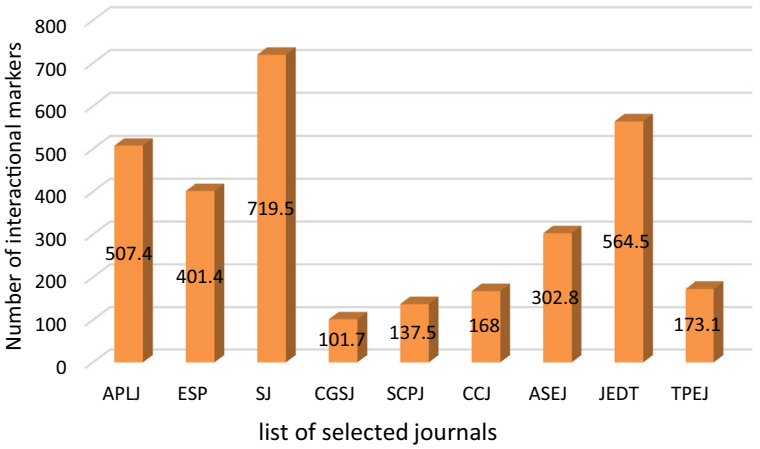

Fig. 2 Total interactional metadiscourse distributions among journals

Table 7 Interactional metadiscourse distribution within each discipline

Between groups	Mean	df	*f*	Sig.
English language journals				
Applied Linguistics	101.4800	2	.471	.636
English for Specific Journal	80.2800			
System Journal	143.9000			
Education journals				
Asian Pacific Education journal	60.5600	2	1.922	.189
Journal of Education for Teaching	112.9000			
Technology, Pedagogy and Education Journal	34.6200			
Computer Science Journals				
Computer and Geoscience	20.3400	2	.861	.447
Science of Computer Programming	27.5000			
Computer Communication	33.6000			

Table 8 Statistical result of interactional metadiscourse results among disciplines

	Mean	df	*F*	Sig.
English Language	544.0000	2	6.655	.030
Computer	163.6000			
Education	483.4333			

However, comparing the interactional metadiscourse device distributions across disciplines in Table 8 indicated (F, 6.655, df, 2, $p < 0.05$). Hence, the data showed that there was a significant statistical difference among disciplines in utilizing interactional metadiscourse markers in book review articles.

This indicated that academic writers in different disciplines used various kinds of interactional metadiscourse devices. Though writers in three academic disciplines used interactional metadiscourse, observable differences were found in utilizing interactional and interactive metadiscourse markers. It is also revealed that English language journals considered the highest number of interactional metadiscourse than computer science and education journals.

Discussion

The purpose of this research was to examine the metadiscourse usage in book review articles across three academic disciplines. Accordingly, the data proved that book review writers employed metadiscourse devices differently across disciplines. Some reviewers used some interactive and interactional devices more than the other. For instance, Computer Science book review writers used mostly evidential markers and frame markers as far as tinteractive metadiscourse markers are concerned. These variations were also seen while comparing across disciplines. The inferential statistics also confirmed that there were statistically significant differences among journals in using transition and evidential devices. In contrast, the data showed that there were no significant statistical differences among

journals in the use of frame markers, endophoric markers, code gloss, hedges, boosters, attitude markers, engagement, and self-mention devices.

These findings were supported and contradicted by previous research findings. For instance, Cao (2014) find out that there was a statistical difference in boosters, attitude markers, and self-mention, but not engagement and hedges metadiscourse devices across disciplines. Khedri et al. (2013) also reported that there is no statistically predominant difference across journals in different disciplines. However, the findings were also contradicted with previous research findings. For instance, Sahragard and Yazdanpanahi (2017) stated that there was a statistical difference among journals in utilizing engagement devices in different disciplines.

The data also revealed that the translation markers were used highly by book review writers. Similarly, among interactional devices, self-mention and hedge markers were used with the highest proportion than the other interactional markers. However, the evidential device from interactive devices and emphatics devices from interactional devices were the lowest metadiscourse devices that occurred in the selected book review articles. Previous studies (e.g. Akoto 2018; Khedri et al. 2013, Khedri and Kritsis 2018; Sahragard and Yazdanpanahi 2017; Hyland and Tse 2004) also confirmed that transitions, evidential, and hedges metadiscourse devices were used more frequently by academic writers.

Additionally, researchers (see. e.g. Ozdemir and Longo 2014) also reported that transitions device was used more frequently than the other interactive metadiscourse devices. Regarding the lowest frequently occurred metadiscourse devices, this research finding contradicted with Hyland and Tse's (2004) findings. Hyland and Tse mentioned that the attitude marker was the lowest frequent marker than the other interactional markers.

In relation to the general interactional metadiscourse coverage across disciplines, the research proved that there were significant statistical differences among disciplines. Hence, it is possible to say that some metadiscourse markers were extensively used by writers than the other devices. For instance, English language book review writers employed more frequent interactional devices than education and computer science discipline writers.

Previous studies also confirmed that there were disciplinary differences in utilizing interactional devices. Researchers (e.g. Atai and Asghari 2017; Asari and Kuhi 2016) reported that interactional metadiscourse usage variations were observed among disciplines. Simialry, Hyland and Tse (2004) also reported there was a disciplinary difference between soft and hard science disciplines. Besides, Cao and Hu, (2014) also reported that English language articles used more interactive metadiscourse devices than Education and Psychology. Besides, Hyland (2005) also reported that there are interactive metadiscourse variations among disciplines. Khedri et al. (2013) also confirmed that there were cross-disciplinary variations in interactive metadiscourse usage. Similarly, researchers such as (Diani 2009; Alcaraz-Ariza 2011) asserted that there were linguistic feature variations among writers and disciplines.

Conclusion and implications

The purpose of the present study was to explore the usage of interactive and interactional metadiscourse markers in 99 book review articles within 9 journals in three disciplines. Accordingly, the finding indicated that book review writers employed various kinds of metadiscourses markers. It was observed that some interactive and interactional markers were used more frequently than the other interactive and interactional devices. The data

also manifested that book review writers used transitions and self-mention devices more frequently than the other metadiscourse markers. However, the booster device was used to a limited extent.

Moreover, considerable metadiscourse usage differences were observed among disciplines and journals. English language journals included the highest interactive and interactional metadiscourses in general than Educational journals and Computer science journals. Educational journals contained the highest number of metadiscourses next to English language journals. In contrast, Computer science journals contained the lowest number of metadiscourses devices.

These might be the reason that soft science writers used more metadiscourse device to criticize and engage with their readers. Besides, most soft sciences reviewed books might be descriptive than hard science books. Therefore, writers who reviewed English and Education books are required to use more metadiscourse devices than computer science writers to facilitate their communication with the readers. However, this research indicated that there were no statistically significant differences between writers within the same discipline in utilizing interactive and interactional metadiscourse devices across journals.

The findings of this research have various implications. First, the finding implied that the book review writers should identify frequent metadiscourse markers that are used in their discipline, and use them while they write academic text such as book review articles. Second, the finding also implied that book review writers use different metadiscourse markers and these vary from discipline to discipline. Therefore, the students should be aware of the frequent metadiscourse device that occurs in their discipline and use them while they write different academic writing genres. Third, the research implied that teachers who teach academic writing should give emphasis to discourses markers that frequently occurred in their discipline. Besides, this research also calls for foreign and second language teachers to consider and incorporate useful metadiscourse markers in their syllabi and assist their students to use while they compose different academic writing text.

Finally, this research has certain limitations. The first limitation of this research was that it considered a small sample of journals. The comparison was based only nine (9) different journals that were taken from disciplines as representative. Second, the research focused on the frequency of metadiscourse usage among the three disciplines. Third, this research does not distinguish the metadiscourse usage between native and non-native academic writers. Accordingly, further research seems necessary by including more journals into English language, Education, and Computer science disciplines. It also seems crucial to identify the metadiscourse usage variations among non-native and native academic writers beside the discipline differences. These could increase the generalizability of the research.

Funding None.

Compliance with ethical standards

Conflict of interest The authors declares that he has no conflict of interest.

References

Abdi, R. (2011). Metadiscourse strategies in research articles: A study of the difference across subjection. *The Journal of Teaching Language Skills, 62*(4), 1–16.

Adel, A. (2006). *Metadiscourse in L1 and L2 English: Studies in Corpus Linguistics*. Amsterdam: John Benjamins Publishing.
Akoto, O. Y. (2018). Same chapter, different disciplines: Metadiscourse use in introductions of English language and sociology master theses. *Journal of the IATEFL English for Specific Purposes Special Interest Group, 51,* 18–27.
Alcaraz-Ariza, M. (2011). Evaluation in English-medium medical book reviews. *International Journal of English Studies, 11*(1), 137–153.
Al-Shujairi, Y., Yau, M., & Buba, J. (2016). Roles of moves, tenses and metadiscourse in the abstract of an acceptable research article. *Mediterranean Journal of Social Sciences, 7*(1), 379–386.
Asari, S., & Kuhi, D. (2016). Afunctional investigation of self-mention in soft science Master theses. *The Journal of Applied Linguistics., 9*(18), 49–64.
Atai, M. R., & Asghari, M. R. (2017). Exploring disciplinary variation in the generic structure and metadiscourse features of online academic book blurbs. *Ampersand, 4,* 1–47.
Babaii, E., & Ansary, H. (2005). On the effect of disciplinary variation on transitivity: The case of academic book reviews. *Asian EFL Journal*, *7*(3).
Bal-Gezegin, B. (2016). A corpus-based investigation of metadiscourse in academic book reviews. *Procedia-Social and Behavioral Sciences, 232,* 713–718.
Bhatia, V. K. (2004). *Words of written discourse: A genre-based view*. London: Continuum.
Bowker, L., & Pearson, J. (2002). *Working with specialized language: A practical guide to using Corpora*. London: Taylor & Francis.
Cao, F. (2014). *Metadiscourse in research articles: A comparative study across disciplines and research paradigms.* (PhD dissertation). Singapore: Nanyang Technology University.
Cao, F., & Hu, G. (2014). Interactive metadiscourse in research articles: A comparative study of paradigmatic and disciplinary influences. *Journal of Pragmatics, 66,* 15–31.
Diani, G. (2009). Reporting and evaluation in English Book review articles: A Cross-Disciplinary Study. In H. Ken & D. Giuliana (Eds.), *Academic evaluation: Review genres in university settings* (pp. 87–104). London: Palgrave.
Gholami, J., Nejad, S., & Pour, J. (2014). Metadiscourse markers misuse: A study of EFL Learners' argumentative essays. *Procedia—Social and Behavioral Sciences, 98,* 580–589.
Gillaerts, P., & Velde, F. (2010). Interactional metadiscourse in research article abstracts. *Journal of English for Academic Purposes, 9,* 128–139.
Gilmore, A., & Millar, N. (2018). The language of civil engineering research articles: A corpus-based approach. *English for Specific Purposes, 51,* 1–17.
Groom, N. (2009). Phraseology and epistemology in academic book reviews: A corpus-driven analysis of two humanities disciplines. In H. Ken, & D. Giuliana (Eds.) *Academic evaluation: Review genres in university settings* (pp. 122–142).
Hu, G., & Cao, F. (2015). Disciplinary and paradigmatic influences on interactional metadiscourse in research articles. *English for Specific Purposes, 39,* 12–25.
Hyland, K. (2004). *Disciplinary discourses: Social interactions in academic writing*. Michigan: University of Michigan Press.
Hyland, K. (2005). *Metadiscourse: Exploring interaction in writing*. New York: Continuum.
Hyland, K. (2017). What is it and where is it going? *Journal of Pragmatics, 113,* 16–29.
Hyland, K., & Tse, P. (2004). Metadiscourse in academic writing: A reappraisal. *Applied Linguistics, 25*(2), 156–177.
Jalilifar, A., Hayati, S., & Don, A. (2018). Investigating Metadiscourse markers in book reviews and blurbs: A study of interested and disinterested genres. *Studies About Languages, 33*(1), 91–107.
Jiang, K. F. (2017). Stance and voice in academic writing: The noun that construction and disciplinary variations. *International Journal of Corpus Linguistics, 22*(1), 86–107.
Khedri, M., Ebrahimi, S., & Heng, C. (2013a). Interactional metadiscourse markers in academic research article and discussion sections. *3L: The Southeast Asian Journal of English Langauge Studies, 19*(1), 65–74.
Khedri, M., Heng, C., & Ebrahimi, S. (2013b). An exploration of interactive metadiscourse markers in academic research article. *Discourse Studies, 15*(3), 319–331.
Khedri, M., & Kritsis, K. (2018). Metadiscourse in Applied Linguistics and Chemistry research article introductions. *Journal of Research in Applied Linguistics, 9*(2), 47–72.
Lafuente-Millan, E. (2014). Reader engagement across cultures, languages, and contexts of publication in business research articles. *Introduction Journal of Applied Linguistics, 24,* 201–223.
Li, T., & Wharton, S. (2012). Metadiscourse repertoire of L1 Mandarin undergraduates writing in English: A, cross-disciplinary study. *Journal of English for Academic Purposes, 11,* 345–356.

Lin, C. (2005). Metadiscourse in academic writing: An investigation of graduate students' MA thesis in Taiwan. *Taiwan Journal of TESOL, 2*(1), 1–66.

Lindholm-Romantschuk, Y. (1998). *Scholarly book reviewing in the Social sciences and Humanities: The flow of ideas within and among disciplines*. London: Greenwood Press.

Lu, L. (2011). *Metadiscourse and genre learning: English argumentative writing by Chinese undergraduates* (Unpublished Thesis). University of Hong Kong, Pokfulam, Hong Kong SAR. http://dx.doi.org/10.5353/th_b4599670.

Moreno, A., & Suarez, L. (2009). Academic book reviews in English and Spanish: Critical comments and rhetorical structure. In H. Ken, & D. Giuliana (Eds.) *Academic evaluation: Review genres in university settings* (pp. 161–178).

Ozdemir, A. O., & Longo, B. (2014). Metadiscourse use in thesis abstracts: A cross-cultural study. *Procedia—Social Behavioral Sciences, 141,* 59–63.

Rahimivand, M., & Kuhi, D. (2014). An exploration of discoursal construction of identity in academic writing. *Procedia—Social and Behavioral Sciences, 98,* 1492–1501.

Riley, L., & Spreitzer, E. (1970). Book reviewing in the social sciences. *The American Sociologists, 5*(4), 358–363.

Sahragard, R., & Yazdanpanahi, S. (2017). English engagement markers: A comparison of humanities and Science Journals. *Language Art, 2*(1), 111–130.

Salazar, D. (2014). *Lexical bundles in native and non-native scientific writing: Applying a corpus-based study to language teaching*. Amsterdam: John Benjamins Publishing Company.

Tse, P., & Hyland, K. (2009). Disciplinary and gender: Constructing rhetorical identity in book reviews. In H. Ken & D. Giuliana (Eds.), *Academic evaluation: Review genres in university settings* (pp. 105–121). London: Palgrave.

Vande Kopple, W. J. (1985). Some explanatory discourse on metadiscourse. *College Composition and Communication, 36,* 82–93.

Vande Kopple, W. J. (2002). Metadiscourse, discourse, and issues in composition and rhetoric. In F. Barton & C. Stygall (Eds.), *Discourse studies in composition* (pp. 91–113). Cresskill, NJ: Hampton Press.

Williams, J. M. (1981). *Style: Ten lessons in clarity and grace*. Harper: Collins publisher.

Yeganeh, M., Heravi, I., & Sawari, A. (2015). Hedge and booster in Newspaper articles on Iran's presidential election: A comparative study of English and Persian articles. *Procedia—Social and Behavioral Sciences, 192,* 679–683.