A Comparative Study of Metadiscourse Markers in the Abstract Sections of Research Articles Written by Turkish and English Researchers

Dilay Işık Kirişçi[1]
Başkent University, Turkey
https://orcid.org/0000-0003-0886-8288

Eda Duruk
Pamukkale University, Turkey
https://orcid.org/0000-0001-8564-2456

Abstract
The present research aims to investigate interactive and interactional metadiscourse markers in the abstract sections of academic research articles written in Turkish and English. Two disciplines, namely, Special Education and Preschool Education, are selected for the research. Three different types of language use are examined: English articles written by native speakers of English, English articles written by Turkish speakers, and Turkish articles written by Turkish speakers. Following Hyland and Tse's (2004) metadiscourse taxonomy, a corpus of 300 research articles abstract published by international journals, is used to investigate the metadiscourse markers. After the detailed analysis, the chi-square test is aimed to be used to clarify the probable differences. The results of the study indicate that, in terms of interactive and interactional metadiscourse markers, there are differences across the languages. To be more precise, statistically significant differences were found in the use of frame markers, code glosses, hedges, boosters, and self-mentions. Turkish writers used boosters and frame markers more frequently, while native speakers of English used hedges, code glosses, and self-mentions more. Some suggestions were provided for academic writers to comply with the writing conventions of academic writing, especially research article abstracts.
Keywords: Metadiscourse Markers, Academic Writing, Research Articles, Abstract Section

Introduction

In today's world English is the universal language in a broad range of fields, from academic to business. Along with speaking, most of the communication in English is conducted in written discourse. By doing so, English reaches a diverse range of audiences with materials such as course books, emails, and research articles. To increase the quality of these texts, it is crucial to contain some elements like metadiscourse markers.

Since English is a lingua-franca, it is quite vital to be able to state arguments, opinions to the people in other cultures. As well as spoken discourse, written discourse is also the common language in a cross-cultural context. Writing in English is an especially important aspect for the writers that aim to produce texts that have empirical data; in other words, academic discourse. According to Hyland (2009, p. 1), academic discourse can be stated as "ways of thinking and using language which exists in the academy". Establishing communication in written

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1 This article is derived from the first author's thesis titled "Metadiscourse Markers in the Abstract Sections of Research Articles Written by Turkish and English Researchers"

discourse in English is a prerequisite (Yağız & Yiğiter, 2012). In other words, English is the requisite language for research articles, and academic publications and metadiscourse makers play a crucial role in writing.

In academic writing, the aim is to deliver the message to readers appropriately. However, as the engagement takes place in a specific social context, it is also crucial to use pragmatic features that comply with that particular academic community. Metadiscourse markers provide the necessary clues for academic writers to have an insight into the academic communities that they belong to.

Academic writing is a communication tool for researchers to organize their written work, negotiate their findings, persuade the readers, and state their stance. However, this difficulty is intensified for nonnative academic writers as expressing ideas and arguments in a second language is even more challenging. Nonnative academic writers are required to produce texts, including reports, dissertations, research articles, even emails to communicate with colleagues. There has been much research investigating the writing skills of nonnative speakers of English from different angles, including lexical features (Laufer & Nation, 1995), grammaticality (e.g., Biber, Gray & Poonpon, 2011), and argumentation (Zare-Ee & Farvardin, 2009). However, it is not enough for an academic writer to produce texts that only contain worldly knowledge. Writers are required to put this knowledge in an organized manner while building a persuasive argument, presenting the writer's position, or building a reader-writer relationship (Hyland, 2010). There are many particular features for writing effectively for nonnative speakers of English, yet accurate and proper usage of metadiscourse markers is one of the most crucial ones (Taghizadeh & Tajabadi, 2013). Thus, studying metadiscourse markers in the context of the academic community is vital.

With the improvement of technology, the dissemination of information is also increased which leads to the rise of academic publication. In today's academic world, one of the main communication tools between the researchers is research articles. However, this increase in the number of publications gives rise to the need of selectiveness among researchers. The research abstract is regarded as the first step of this selectivity as it is quite challenging for researchers to reach for their intended readers while for readers to have access to their targeted articles. Thus, the necessity of the investigation of consistency of research abstracts with discourse community arises. One of the strategies to meet the persuasion role of the abstract sections is metadiscourse markers.

In order to clarify the issue of metadiscourse, the current study aims to investigate and provide a deeper understanding of the use of metadiscourse markers in English articles written by Turkish Speakers and English Speakers, and Turkish research articles written by Turkish Speakers. To be more specific, the current study examines the abstraction sections of research articles through three different language use by using corpora from two different disciplines: Special Education and Preschool Education.

Literature Review
Genre Approach and Metadiscourse in Academic Writing

Swales (1990, p. 58) identifies the genre approach with "communicative purposes" along with the "structure, style, content and intended audience". Genre analysis generates the basics of writing as it creates a common ground for the target audience, a guideline to discover writing that complies with the target audience and genre.

Academic discourse is one of the genre types. According to Hyland (2005), academic discourse can be expressed as the patterns of thinking and using the language as an instrument to show presence in the academic world. Discourse can be defined as not only as a way of using the language but also as representing the writer's personality and existence. Hereby the academic community cannot exist without academic discourse. Burke (2010, p. 40) identifies academic writing as "what academics do most, through publishing, communicating, and contributing to their knowledge".

Metadiscourse is one of these ''central pragmatic features'' to provide the opportunity for an author to organize and present their findings in a way that is acknowledged by their academic community (Hyland 1998, p. 453). However, the old view does

not comply with this new trend in academic writing. Traditionally, it was argued that a researcher should be faceless and objective while reporting the findings of the study. Lafuente-Millian (2010) expresses the reason behind this traditional view by stating that research is compromised by empirical results, not by personal opinions or subjective feelings. By eliminating personal feelings or opinions, writers try to avoid reader oppositions. The same belief was also valid in academic discourse (Khedri & Kritsis, 2018; Kahkesh & Alipour, 2017; Heidari Tabrizi, 2017). However, many researchers criticized this traditional belief by arguing that academic discourse is a way of social engagement, evolving communication between writers and readers. (Widdowson, 1984; Crismore & Farnsworth, Swales, 1990; 1990; Hyland, 2000, 2004, 2005).

Similarly, Hyland (2005) states the importance of metadiscourse in academic discourse by arguing that "written texts not only concern people, places and activities in the world, but also acknowledge, construct and negotiate social relations." In other words, academic writers inscribe texts by generating a stylistic map with propositional knowledge with an attitudinal position (Hyland, 2004). For this reason, writers should be aware that academic writing is not solely about "referring to the subject matter data" but also "about the evolving text" (Swales 1990, p. 188).

Research Article Abstracts

There are subcategories to the academic discourse like dissertations, articles, research reports etc. Research article abstracts are among the subcategories of academic discourse which should be investigated carefully. Busch-Lauer (2012) draws attention to the lack of concrete descriptions of the textual features of the abstracts, which is a type of text in which information is concentrated and whose general function is to persuade readers to read the main text although many studies have been referred to scientific writing. Similarly, Hyland (2000) states that very few journals have abstract writing instructions on how to prepare article abstracts, and the directives found are uncertain. The abstract instructions in the journals are generally intended to limit how many words the abstract can consist of, rather than specifying what the abstract should contain.

Research abstracts are a type of text that needs to be studied. The reason for this is that abstracts are the conveyers of the informational and social assumptions of a field, and consequently, they are the source of reader-oriented interactive features in terms of determining how personal studies can be positioned in the society (Hyland, 2000). Like Hyland, researchers such as Berkenkotter and Huckin (2003), Lindeberg (2004) also state that research abstracts have the prioritization as a subject of research, which is a special type of text within the scientific context.

With the improvements in technology, communication in the academic world is increased. With online publications, many researchers are able to reach their communities with ease. However, this abundance in publications increases the significance of the research article abstract as the readers aim to get the knowledge they require as soon and fast as possible. This highlights the importance of the abstract sections. Huckin (2001) states that in the time of technology and knowledge, research title and the abstract hold a crucial role, especially in online journals. Similarly, Swales and Feak (1994) argue that research article readers tend to skim and scan the research abstracts, and if the readers are convinced that the article is a useful one, they prefer the read the rest. Also, Huemer et al. (2012) state that research abstract is not only the most important part of the article but also it is the most read one. The research abstract aims to provide prior knowledge to lead the readers to decide if the article worth reading or not. These claims indicate research article abstracts are one of the most crucial tools to convince the audience to read.

Rhetorical structures employed by researchers in written academic discourse can be influenced by their L1 backgrounds. Consequently, it is of great importance to examine whether there remain differences among researchers, which, in turn, affect their writing conventions. Concerning this fact, the present study intends to examine the use of interactional and interactive metadiscourse markers in abstract sections of research articles written in Turkish and English. The research questions sought to be answered are formulated as follows:

Is the frequency of interactional and interactive

metadiscourse markers in research article abstracts affected by native speakers of English writing in English, Turkish speakers writing in English, and Turkish speakers writing in Turkish.

Methodology
Research Design

The study employed quantitative and descriptive research method during the analysis of research article abstracts (RAAs) by focusing on metadiscourse markers in abstract sections of Preschool Education and Special Education research articles written in Turkish and English. The first group of articles were in Turkish written by Turkish speakers (NST). The second group were in English written by Turkish speakers (TSE), and the last group were in English written by native speakers of English (NSE).

Data Collection Instruments

The data for this study comprises 300 published RAAs. 100 by NST 100 by NSE and 100 by 100 TSE from each of the two disciplines; Preschool Education and Special Education. The justification in selecting these disciplines is that they are regarded as newly emerged fields compared to the extensive interdisciplinary field of Educational Sciences in Turkey. Preschool Education and Special Education disciplines are in accordance with the researcher's discipline, Foreign Languages Education. Therefore, understanding the message the writer aims to give in abstract sections is easier for the researcher to comprehend as the nature of metadiscourse analysis is text-bound. Another reason for choosing those two disciplines was the fact that any cross-cultural and cross-disciplinary metadiscourse analyses were conducted in Preschool Education and Special Education which creates a gap in the literature. Table 1 below shows the data distribution of the research article abstracts:

Table 1 Data Distribution as the Number of Research Article Abstracts

	NST	NSE	TSE	Total
Preschool Education	50	50	50	150
Special Education	50	50	50	150
Total	100	100	100	300

RAAs published between 2010 and 2019 in Turkish and English were selected from refereed, internationally accepted journals from each discipline. These journals were chosen as they have been published for at least five years regularly. Empirical research articles were used due to the nature of the study which excludes non-empirical research articles. The data consist of 25.431 words. Table 2 shows the distribution of the data, presenting the number of words in the research article abstracts:

Table 2 Total Number of Words in Research Article Abstracts

	NST	NSE	TSE	Total
Preschool Education	8.791	9.340	9.653	27.784
Special Education	7.938	7.909	9.584	25.431
Total	16.729	17.249	19.237	53.215

As Table 2 presents, when the total number of words across the writers are considered, the largest amount of data comes from TSE, NSE, and NST, respectively.

Data Collection Procedures

Hyland & Tse's (2004) taxonomy was used for the coding of metadiscourse markers in RAAs. The reason for choosing this taxonomy was that the current one adopts a recent, simple, clear, and comprehensive model, and it has an inclusive categorization taking a base on the previous taxonomies like Vande Kopple's (1989) or Bunton's (1999).

In their study, they distinguish two subcategories; interactive metadiscourse markers and interactional metadiscourse markers. Interactive metadiscourse markers have five subcategories; transitions, frame markers, endophoric markers, evidential, and code glosses. Similarly, interactional metadiscourse markers also have five subcategories; boosters, hedges, attitude markers, engagement markers, and self mentions. Table 3 presents Hyland and Tse's (2004) taxonomy that is to be used in the study.

Table 3 Hyland and Tse (2004) Taxonomy of Metadiscourse

Category Interactive resources	Function Help to guide reader through the text	Examples
Transitions	Express semantic relation between main clauses	In addition/ but/ thus/ and
Frame markers	Refer to discourse acts, sequences, or text stages	Finally/ to conclude/ my purpose is to
Endophoric markers	Refer to information in other parts of the text	Noted above/ see Fig./ in Section 2
Evidentials	Refer to source of information from other texts	According to X/ (Y, 1990)/Z states
Code glosses	Help readers grasp meanings of ideational material	Namely/ e.g./ such as/ in other words
Interactional resources	Involve the reader in the argument	
Hedges	Withhold writer's full commitment to proposition	Might/ perhaps/ possible/ about
Boosters	Emphasise force or writer's certainty in proposition	In fact definitely/ it is clear that
Attitude markers	Express writer's attitude Proposition	Unfortunately/ I to agree/ surprisingly
Engagement markers	Explicitly refer to or build relationship with reader with devices such as directives, reader pronouns, personal asides, questions	Consider/note that/ you can see that
Self-mentions	Explicit reference to author(s)	I/ we/ my/ our

Following Hyland & Tse's (2004) list of potential metadiscourse resources to identify the markers in research articles, the researcher identified some items that might be related to the general aim of the study as by nature metadiscourse is an open-ended category. In addition to the set of metadiscourse items, additional items were added to the list in the corpus and searched for the same items in the data. Therefore, the research data was also collected in a text-driven in nature.

Data Analysis Procedures

IBM SPSS Statistics 24 package program was used to analyze the data. Mean, percentage, and frequency values were given as descriptive statistics. Chi-square analysis was used to compare discontinuous (categorical) variables. If the expected values in the chi-square analysis were above 5%, Pearson Chi-Square values were applied to the p-value, and Fisher's Exact Test values were used if it was below 5%. The confidence interval was chosen as 95%, and values below $p < .05$ were considered significant.

The distribution of the writers was not equal in the data, so non-parametric tests were run to identify whether there is a statistically significant difference between the groups. Non-parametric tests were applied as the data set is discontinuous, and the analysis was conducted with existing- non-existing variables. The Chi-Square test was applied to the data to reveal the statistically significant differences across the languages and disciplines in terms of the use of metadiscourse markers in RAAs.

Every item in the data was first compared according to the ready datasets. Possible items were chosen, and the researcher checked the text as a whole again to find other possible metadiscourse markers. Every possible marker was written down with times of occurrences in the data so that the frequencies were examined. In chi-square analysis, all the items were counted under subcategories like transitions, frame markers or code glosses, etc.

Results

Distribution of Interactive Metadiscourse Markers Across Languages

Table 4 shows the means and frequencies of interactive metadiscourse markers per 1000 words across languages. According to the results in Table 4, the total frequencies of metadiscourse markers used by all writers are similar, 1008 by NST, 1004 by TSE, and 1106 NSE groups. Moreover, it can be clearly seen that all NST, TSE, and NSE groups reflected the use of transitions markers most frequently in their RAAs, 51.08, 56.19, and 62.21 times per 1000 words, respectively. Additionally, all the groups used frame markers in RAAs as the second most frequent marker. On the other hand, it is observed that only one group, NSE writers, used one endophoric marker in their RAAs. The means concerning the use of evidentials in RAAs are; .38 by NST writers, .87 by TSE writers, and .70 by NSE writers per 1000 words.

Table 4 Means and Frequencies of Interactive Metadiscourse Markers per 1000 Words across Languages

Interactive Metadiscourse Markers	NST* (n:100)		TSE* (n:100)		NSE* (n:100)	
	Per 1.000 words	Total	Per 1.000 words	Total	Per 1.000 words	Total
	$\bar{x}$	f	$\bar{x}$	f	$\bar{x}$	f
Transitions	51.08	836	47.64	838	52.73	933
Frame Markers	8.15	125	6.17	109	5.25	94
Endophoric Markers	.00	0	.00	0	.10	1
Evidentials	.38	9	.87	8	.70	21
Code Glosses	3.16	38	1.51	49	3.43	57
Total	62.77	1008	56.19	1004	62.21	1106

* NST: Native speakers of Turkish; TSE: Turkish speakers of English; NSE: Native speakers of English

Table 5 presents the results of the chi-square test concerning the effect of the use of language on the frequency of interactive metadiscourse markers.

Table 5 Number and Percentages of Interactive Metadiscourse Markers across Languages

Interactive Metadiscourse Markers	Situation	NST		TSE		NSE		Total		χ^2	p
		N	%	N	%	N	%	N	%		
Transitions	Existing	100	100	100	100	100	100	300	100	-	-
	Not Existing	-	-	-	-	-	-	-	-		
Frame Markers	Existing	100	100	96	96	79	79	275	91.7	32.553	.001**
	Not Existing	0	0	4	4	21	21	25	8.3		
Endophoric Markers	Existing	0	0	0	0	1	1	1	0.3	2.007	.367
	Not Existing	100	100	100	100	99	99	299	99.7		
Evidentials	Existing	5	5	10	10	8	8	23	7.7	1.789	.409
	Not Existing	95	95	90	90	92	92	277	92.3		
Code Glosses	Existing	28	28	18	18	37	37	83	27.7	9.028	.011*
	Not Existing	72	72	82	82	63	63	217	72.3		

*p <.05; **p<.001; NST: Native speakers of Turkish; TSE: Turkish speakers of English; NSE: Native speakers of English

According to the results of the chi-square test, in terms of interactive metadiscourse markers use, it is indicated that all of the academic writers used transitions, 91.7% of them used frame markers, 99.7% of them used endophoric markers, 92.3% of them used evidentials and 82.3% of them did not

use code glosses. In addition, the use of language has a statistically significant effect on the use of frame markers ($\chi 2$ = 32.553; p <.001) and code glosses ($\chi 2$ = 9.028; p <.05); however, it does not have a significant effect on the use of transitions, endophoric markers, and evidentials (p> .05).

According to these results, the percentages of frame markers use of TSE; NST, and NSE writer's abstracts was 100%, 96, and 79, respectively. In addition, the percentages of Turkish writers not using code glosses in Turkish and English and English writers not using code glosses in English were 72, 82, and 63%, respectively.

Distribution of Interactional Metadiscourse Markers Across Languages

Table 6 shows the means and frequencies of interactional metadiscourse markers per 1000 words across languages. Table 6 presents that the total frequencies of interactional markers used by NST writers and TSE writers are higher, with frequencies of 208 and 197, respectively. On the other hand, NSE writers used 160 interactional metadiscourse markers in their abstract sections. Moreover, it is observed that NST writers mostly used boosters (10.96) with the highest frequency of interactional markers, while both TSE writers and NSE writers mostly used hedges, with the means of 4.01 and 4.95, respectively.

Table 6 Means and Frequencies of Interactional Metadiscourse Markers per 1000 Words across Languages

Interactional Metadiscourse Markers	NST* (n:100)		TSE* (n:100)		NSE*(n:100)	
	Per 1000 words	Total	Per 1000 words	Total	Per 1000 words	Total
	$\bar{x}$	f	$\bar{x}$	f	$\bar{x}$	f
Hedges	1.42	62	4.01	46	4.95	65
Boosters	10.96	116	3.05	116	1.87	43
Attitude Markers	.99	18	1.41	17	1.08	27
Engagement Markers	.27	4	.11	3	.18	3
Self-mentions	.44	8	1.00	15	1.35	22
Total	14.08	208	9.58	197	9.42	160

* NST: Native speakers of Turkish; TSE: Turkish speakers of English; NSE: Native speakers of English

Table 7 presents the chi-square test results concerning the effect of the use of language on the frequency of interactional metadiscourse markers. When the writers' interactional metadiscourse markers usage percentages were analyzed, it can be seen that 55% of academic writers used boosters, whereas 57.7% of them used hedges, 80.7% of them used attitude markers, 96.7% of them did not use engagement markers and 88.7% of them did not use self-mentions.

Table 7 Numbers and Percentages of Interactional Metadiscourse Markers across Languages

Interactional Metadiscourse Markers	Situation	NST		TSE		NSE		Total			
		N	%	N	%	N	%	N	%	$\chi 2$	p
Hedges	Existing	19	19	44	44	64	64	127	42.3	41.646	.001**
	Not Existing	81	81	56	56	36	36	173	57.7		
Boosters	Existing	89	89	43	43	33	33	165	55	72.081	.001**
	Not Existing	11	11	57	57	67	67	135	45		
Attitude Markers	Existing	17	17	25	25	16	16	58	19.3	5.048	.282
	Not Existing	83	83	75	75	84	84	241	80.7		
Engagement Markers	Existing	6	6	1	1	3	3	10	3.3	3.931	.140
	Not Existing	94	94	99	99	97	97	290	96.7		

Self-mentions	Existing	5	5	12	12	17	17	34	11.3	7.231	.027*
	Not Existing	95	95	88	88	83	83	266	88.7		

*p<.05; **p< .001; NST: Native speakers of Turkish; TSE: Turkish speakers of English; NSE: Native speakers of English

In addition, the results of the chi-square test show that there is a statistically significant effect of language on the use of = hedges *(χ2 41.646; p <.001)*, boosters *(χ2 = 72.081; p <.001)* and self-mentions *(χ2 = 7.231; p <.05)*. However, it is clear that language does not have a significant effect on the use of attitude markers and engagement markers *(p > .05)*. According to these results, NST, TSE, and NSE writers' percentages of hedges were 81, 56, and 36%, respectively. NST, TSE, and NSE writers' percentages of boosters were 67, 57, and 11, respectively. Moreover, self-mentions use of NST, TSE, and NSE writers were 95, 88, and 83%, respectively.

Results and Discussion
Interactive Metadiscourse Markers Across Languages
Transitions

Descriptive analysis of the study indicates that transitions are the most frequently used interactive metadiscourse marker. This is in line with the claim of Hyland (2005, p. 56) as he explained the transitions' being the most frequent subcategory as a "demonstration of writer's concerns that readers are able to recover their reasoning unambiguously". The reason for all groups to use these markers can be the fact that academic writers tend to use transitions a lot in their writings as these markers enable them to make connections between the sentences and signal the topic shift so the audience can comprehend the text with ease. With the absence of transitions, the text would become ambiguous, and hard to catch the follow of the arguments. In terms of the results of the chi-square analysis, it is clear that language does not have a significant effect on the use of transitions as all three groups used transitions markers with a percentage of 100. These results comply with Akbas's (2012) results. In his study, he also investigated the differences in metadiscourse frequencies of NSE, TSE, and NST. Similarly, in his study, no statistically significant differences were found in terms of transitions markers among the three groups (p<0.05). Furthermore, in Farahani's (2018) study, the results also showed excessive use of transitions markers in all groups. This striking preference of transitions may signal the idea that academic writers have tried to express the relationship that exists between diverse parts of the text through the use of transitions.

Frame Markers

The results of the descriptive analysis revealed that all three groups of writers used frame markers as the second most frequently used interactive metadiscourse marker. The frequent use of these markers among the groups can be the result of the fact that frame markers explicitly referred to the next stages and used "to structure the local and global organization in the text" (Hyland, 2005). Therefore, it can be said that constructing a frame in the first part that readers encounter is a convenient rhetorical tool for many writers. Turkish writers seem to follow the genre conventions more strictly in order to set a clear aim for the article through the use of frame markers. Chi-square test results indicate that all of the abstracts written by NST writers included the use of frame markers (100%), which is followed by TSE writers with the percentage of 96. On the other hand, NSE writers tend to use fewer frame markers in their academic writings (79%). According to the results of the chi-square test, it can be understood that language has a significant effect on the use of frame markers (p>0.05). These results are in line with the study of Atasever-Belli (2019). In her study, she investigated 60 dissertation abstracts in terms of frame markers' frequency and function in three groups of writers, NSE, NST, and TSE. The result of her study also indicates that Turkish writers heavily rely on the frame markers in their writing, especially upon announcing the goal of their dissertations. Similarly, the TSE group shows a tendency to use frame markers in the organization of their text. Furthermore, Akbaş (2012) reports similar results in his study. He states that Turkish writers

in both languages mostly stated their abstracts by announcing the goal of the article without providing additional prior information about the topic. Similar use of frame markers is observed in the current study. Almost all Turkish academic writers first announce the aim of the article and proceed to methodology. This might be because of the fact that Turkish writers prefer to use less interactive markers in their academic writing. Therefore, it can be stated that Turkish and English academic writers employ different rhetorical conventions in their research articles which can be regarded as a cross-linguistic difference between English and Turkish writers concerning the use of frame markers in RAAs. It is clear from the data that Turkish writers follow the genre conventions more strictly in order to set a clear aim for the article. In other words, it seems a necessity for these writers to use frame markers in their abstracts.

Endophoric Markers

Endophoric markers are the reminders of the previous content or refer to the information that is presented in the other parts of the text. However, as in this study, the tokens are gathered through the abstracts, it can be seen that the use of these markers in the data hardly exists. There is only one use found in the corpus in terms of endophoric markers. Therefore, the investigation of endophoric markers across languages will be excluded. Similarly, Akbaş (2012) also excluded endophoric markers in his study as the number of occurrences is quite low in his data as well.

Evidentials

Compared to the use of other interactive metadiscourse markers, the frequency of evidentials by academic writers in their abstract sections can be regarded as low. The main reason behind this can be the fact that academic writers mainly aim to mention methodology, results, and the goal of the article which do not necessarily require the call for outer support through the use of evidentials which refer to the writer's preference to create a source of information from other texts to support his claim. The results of the chi-square analysis indicate that language does not have a significant effect on the use of evidentials. These findings are in accordance with

Akbaş's (2012) study. In his study, he also examined metadiscourse markers in the abstract sections which is regarded as the source of low percentages of evidentials and there was no difference among NST, TSE and NSE writers. Similarly, in Özdemir and Longo's study (2014) no statistically significant difference between NST, TSE, and NSE writers was found.

Code Glosses

According to the results of the descriptive analysis, code glosses were used by NST, TSE, and NSE writers, with different frequencies. One reason for the high preference of code glosses by NSE writers can be the cultural convention factor (Adel, 2006). Adel (2006) states that cultural conventions are responsible for "how much responsibility the writer requires the reader to take in understanding the text''. It can be seen that NSE writers tend to employ more code glosses in their academic writings to increase the readability of the text, and this difference is culturally bound. Native Turkish writers showed a lower use of code glosses in their writing. One reason behind this might be the fact that Turkish enables writers to construct long sentences as the language itself is agglutinative. Additional information might not be necessary for Turkish writers. However, TSE writers followed a similar trend to NSE as the language they use is English. The results of the chi-square analysis reveal that language has a statistically significant effect on the use of code glosses (p <.05). These findings are in line with Adel (2006), as in his study, the groups showed differences in the preferences for the use of code glosses. Akbas (2012), however, did not find any meaningful difference among the groups.

Interactional Metadiscourse Markers Across Languages
Hedges

The results of the descriptive study show that NSE writers preferred to use hedges more frequently when compared to the other groups. The main reason behind this finding can be the fact that native speakers of English writers aimed to use hedges to soften their claims and make arguments tentative and cautious. One reason for this tendency can be

the fact that English has a diverse choice for hedges (e.g., can, would, may, might) while, in Turkish, the most frequent and prevail marker is -Abilir (can) which limits the Turkish writers as the overuse of that suffix can create a monotone text. This finding might show that academic writers prefer to soften their claims to avoid the probable opposition of the readers (Doyuran, 2009). The results of the chi-square analysis revealed that there is a statistically significant difference between the groups (p>0.05). 64% of the articles included hedges in the abstract section of NSE writers, which makes hedges the most frequently used interactional marker for the same group of writers. 44% of the articles written by TSE writers, on the other hand, included hedges in the abstract, while the percentage is 19% for NST writers. It has been discovered that English language writers try to soften their theories, ideas, and claims with the use of hedges. To put it another way, hedges try to indicate indeterminate assessment of propositional knowledge. This finding complies with the findings of Akbas (2012). Akbas (2012) states that Anglo-American writing support the tentativeness of the writer by leaving an open door for the reader oppositions. However, Turkish writers do not follow such conventions. In line with this finding, Kafes (2009) also found that Turkish writers employ hedges less frequently compared to native speakers of English. On the other hand, in Blagojevic's (2004) cross-cultural study, unlike Turkish writers, Norwegian writers employed hedges more than English writers which indicates that Norwegian academic writers are not willing to show the full commitment of the writer. Çapar's (2014) study, on the other hand, indicates different results. In her study, Turkish writers tended to use more hedges in both Turkish and English articles compared to American writers. This result is also consistent with those of Can (2006), Doyuran (2009), and Fidan (2002) in terms of Turkish writers' use of hedges.

Boosters

The results of the descriptive analysis show that boosters are highly used by NST writers with higher frequencies while this use is quite low by NSE writers. Boosters enable writers to show certainty and prevent possible reader oppositions. The difference across the writers in terms of boosters' percentages can be the result of the fact that boosters are used to state the certainty of worldly knowledge and need to convince the reader (Vazquez & Ginger, 2009). Boosters are the most commonly used interactional metadiscourse markers by NST writers. Apparently, Turkish writers employ boosters heavily to state that they are certain about their claim and aim to convince the reader in a confident manner. NST writers employed boosters in their abstract most in terms of interactional metadiscourse markers. Hinkel (2002) states that in some cultures, it is an obligation to state propositional claims with full commitment with a high degree of confidence as a result of their academic community or language. This might be the reason for Turkish writers to have a tendency to use boosters in their abstract sections. The results of the chi-square test reveal that the difference between the groups is statistically significant (p> .001). Akbas' (2012) study is in line with this finding. Akbas (2012) also states that for Turkish writers sounding certain and confident is crucial in academic writing context. Similarly, Zarei (2011) found that native speakers of Persian prefer to use boosters to display authority. Similar to Turkish writers, Persian writers also aim to reflect themselves as authoritative.

Attitude Markers

The results of the descriptive analysis show that NST writers used attitude markers as the least employed interactional markers after engagement markers. The findings might show that for Turkish writers, stating personal opinion is not acceptable in the academic writing context. The main reason for that can be the fact that Turkish writers might be following the traditional writing conventions while this might not be the case for Anglo-Saxon culture. Academic writers use attitude markers when they aim to present their attitude toward propositional knowledge (Hyland, 2005). The results of chi-square reveal that the difference between the groups is not statistically significant in terms of attitude markers. However, these results do not comply with Capar and Turan's (2019) study. Their results indicate that Turkish writers tend to show emotions towards propositional knowledge more than native speakers

of English. Capar (2014) and Hyland (2005) also found similar results. The fact that the current study investigates metadiscourse markers in the abstract section can be the main reason for these differences between the results. Unlike the discussion section, the abstract section does not provide an appropriate environment for writers to state their perspectives, which limits the use of these markers.

Engagement Markers

The results of the descriptive analysis show that engagement markers are the least used interactional markers among the groups. The findings indicate that for all groups, the percentages of engagement markers are quite low. The main reason for this finding can be the result of the field of investigation of the current study, which is the abstract section. As a result of its nature, abstract requires a limited number of words, and this restriction may hinder writers from getting into direct communication with the reader. With engagement markers, writers can control the participation level of the readers (Hyland, 2005). The chi-square test applied in the study revealed that the difference between the groups is not statistically significant. When the literature is examined, it has been found that in their study Mansouri et al (2016) also indicated that Persian and English RAAs did not employ any engagement markers. Similarly, Garcia-Calvo (2002) also found that academic writers hardly used engagement markers. These findings are in line with the present study in which it is also revealed that engagement markers are not frequently used by the groups.

Self-Mentions

The results of the descriptive analysis show that NST writers used self-mentions more frequently compared to TSE writers and NSE writers. According to these findings, NST is the group that used self-mentions the least. One reason for this difference can be culture-based. Anglo-Saxon tradition encourages academic writers to be visible and takes responsibility for the argumentations (Dahl, 2007). However, the Turkish academic genre follows a more traditional convention in terms of academic writing and limits self-mentions. Hyland (2004) states that American academic writers have

a tendency to show their scholarly identity to gain credit for their study, and they achieve that by using self-mentions in their articles. In line with this, NSE might employ self-mentions in their writing. The difference between languages might be the result of Turkish academic writers' still following the old, traditional perspective in terms of academic writing conventions. The results of the chi-square test revealed that the difference between the groups is statistically significant (p> .05). Apparently, English writers tend to use self-mentions in their academic writings. This finding is in line with Capar and Turan's (2019) study in which English writers used more self-mentions when compared to Turkish writers.

Conclusions

In the study, it is concluded that in academic writing, more specifically in RAAs, interactive metadiscourse markers are of great importance as they were frequently used by all three groups of writers. Transition markers can be concluded to be the cornerstones of interactive metadiscourse markers because they were the most frequently used markers in all groups of writers. Hyland (2005, p. 56) explains transitions' being the most frequent subcategory as a "demonstration of writer's concerns that readers are able to recover their reasoning unambiguously". However, in terms of frame-markers, it has been observed that while, for NST, it is crucial to state the overall aim of the article without providing any prior context, for NSE, frame-markers are not as important as they are to NST. Therefore, it can be stated that Turkish and English academic writers use different rhetorical conventions in their research articles which can be regarded as a cross-linguistic difference. It is found that Turkish writers prefer to follow the genre conventions more strictly in order to set a clear aim for the article. NSE writers prefer to provide additional information and lead the readers to comprehend the general aim of the article with the help of this additional information.

All groups of writers used evidentials in low frequencies. This can be the result of the fact that, in abstract sections, the writers' main aim is to provide information about the methodology, results, and the goal of the article which do not necessarily require the

call for outer support through the use of evidentials. Secondly, data indicates that although code glosses are one of the most important rhetorical tools both for NSE and NST, it is not the case for TSE as they did not use these markers as frequently as the former groups. Adel (2006) states that cultural conventions are responsible for "how much responsibility the writer requires the reader to take in understanding the text''. For NST, it can be said that the language itself is agglutinative; therefore, additional information is not supposedly provided with code glosses. Following the cultural conventions of English writers, TSE also used a similar rhetorical structure like NSE who performed a higher frequency use of code glosses.

In terms of interactional metadiscourse markers, depending on the high frequent use of hedges, it can be said that NSE tends to be more credible to represent themselves and set a ground for the alternative voices while creating a writer identity in the text. According to Hyland (2005), Anglo-American writers are tended towards sounding more tentative and cautious while writing in a specific community. NSE preferred to display more solidarity with the reader in abstracts while this was the opposite for Turkish writers. Apparently, Turkish writers use boosters heavily to state that they are certain about their claim and aim to convince the reader with a confident manner. However, native English writers prefer to use hedges more frequently. One reason for this tendency can be the fact that English has a diverse choice for hedges while, in Turkish, the most frequent and prevail marker is -Abilir (can) which limits Turkish writers as the overuse of that suffix can create a monotone text.

Similarly, in terms of attitude markers and self-mentions, NSE preferred to use them more in their RAAs. Moreover, NST preferred to write with a more confident voice by employing boosters in their claims and minimize their presence by employing a minimum number of self-mentions in the abstracts. Thus, it can be concluded that NST distance themselves from the text by sounding authoritative and presenting a more objective manner and they display a full commitment to propositional knowledge which can be observed with the high frequency of the boosters.

With respect to TSE, it has been observed that while writing, TSE writers follow a similar trend to NSE writers. However, the frequencies for metadiscourse marker usage are not as high as the latter. This finding might indicate that TSE follows both language conventions in their writings with a mixture of the culture and expectations of the target language. For example, in terms of self-mentions, hedges, and boosters, the percentages of their use by TSE have a tendency to be in-between the percentages of their use by NST and NSE. Therefore, it can be concluded that Turkish writers of English build this academic identity by reading relevant literature, which is in English, and in this way, these articles set an example for Turkish writers, leading them to follow the same rhetorical convention in the targeted genre.

Depending on the results of the study, in order to comply with the writing conventions of academic writing, it can be suggested that an academic writer should be aware of the metadiscourse marker usage in the abstract sections of the research articles. Transitions are the high frequently used markers in all languages; thus, the use of these markers should be prevalent in academic writing, more specifically in RAAs. Frame markers are especially crucial while writing in Turkish as stating the aim of the article is required. Secondly, for Turkish academic writers writing in Turkish, it is crucial to state the content knowledge with boosters. In the Turkish writers' genre, sounding certain and confident is prevalent. On the other hand, an academic writer writing in English should use a milder stance and use hedges more frequently.

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Author Details

Dilay Işık Kirişçi, *Başkent University, Turkey, **Email ID**: dilaykirisci@baskent.edu.tr*

Eda Duruk, *Pamukkale University, Turkey, **Email ID**: durukeda@gmail.com*