

# Metadiscourse markers and gender variation in journal articles

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*This study aims at analyzing interactive and interactional metadiscourse markers in humanity and science journal articles. Since metadiscourse markers are believed to represent writers' engagement with readers, this study also analyzes the possible link between the gender of the authors and the markers used in the journals. A corpus-based qualitative method was employed in analyzing 40 science and humanity journal articles written by 20 male and 20 female authors. The most common interactive markers in both science and humanity journals are transition markers (28.22%), whereas the least frequently used interactive markers are endophoric markers (1.83%). Moreover, the most common interactional markers are hedges (12.3%), while the least frequently used are boosters (4.06%). We argue that humanity journals employed more interactional metadiscourse markers because these markers are believed to alert readers about the author's perspectives on social phenomena. We elaborated that male and female authors tended to use metadiscourse markers in the same way, so there is no straightforward relation between gender and the use of metadiscourse markers in journal articles.*

**Keywords:** *metadiscourse markers, humanities, science, gender, journal article*

## 1. Introduction

Metadiscourse markers are used not only to connect ideas in the texts, but also to establish a relationship between the writers and the readers. Hyland (2005) defines metadiscourse as “the linguistic expressions which refer to the evolving text and to the writer and imagined readers of that text.” Metadiscourse features in texts reflect how the writers organize the texts and engage with the readers. The use of metadiscourse markers to organize the flow of ideas and make persuasive arguments allows an effective engagement with the readers. Hyland (2005) elaborates that metadiscourse is actually based on the social engagement which “represents the writer's awareness of the text as discourse.”

Texts serve distinct social functions reflected in the use of different language features. First, the fields or the disciplines of the texts influence the choice of metadiscourse markers. Hyland (2005: 143) explains that “metadiscourse facilitates the social interaction to the knowledge within disciplines”. His study reveals that medical texts which are included in the branch of science evidenced less interactive metadiscourse markers. On the other hand, economics and linguistics, which belongs to the social and humanity fields, have less formalized text structure. Another study conducted by Minal & Biria (2017) showed that in “interactive metadiscourse category, the use of transitions, frame markers, and evidentials in social science articles were more frequent than those in medical science texts.” Considering these findings, there is a need for an investigation of the use of metadiscourse markers in different disciplines.

Another extra linguistic factor that may influence the choice of metadiscourse markers is gender. Studies suggest that gender plays a great role in language, including writing. Lakoff (1975:19) argues that “hedges, qualifiers, intensifiers and other devices... reduce the force of assertions or prevent the expression of strong statement.” Tse and Hyland (2008) suggest that

female authors use boosters to intensify praise. The concordance further reveals that boosting was associated with positive comments. On the other hand, male authors use boosters to underpin their confidence. The effect of gender on writing was also investigated by Ghafoori and Oghbatalab (2012) highlighting that code glosses, markers elaborating propositional meanings, are significantly used more by male writers, while evidentials, markers referring to information from other texts, are used mainly by female writers. Those characteristics make the texts written by women different from those written by men.

Considering these social factors, the present research examines the following: (a) how interactive and interactional metadiscourse markers are used in humanity and science journal articles; and (b) the relation between the use of metadiscourse markers and different social factors—disciplines and gender. The research was conducted by examining articles from different fields of studies (science and humanities) from 2009 up to 2017 which were collected from *Science Direct* and analyzing the data in the journals using Antconc (Anthony, 2016).

## 2. Metadiscourse Markers

Metadiscourse refers to the words used by a writer or speaker to mark the direction and purpose of a text. It can be broadly defined as “discourse about discourse” or parts of texts which affect the relations between authors and readers. Metadiscourse shows an important link between the text and its context since it refers to the reader’s expectation to form interaction and engagement (Hyland 2005). By using interactive and interactional metadiscourse markers, the writers acknowledge the presence of the readers (Duruk 2017). The writers engage the readers by using the interactive and the interactional dimensions (Hyland 2005). The subcategories of interactive dimensions (Hyland 2005) are transitions, frame markers, endophoric markers, evidentials, and code glosses. The other category of metadiscourse markers (Hyland 2005) is the interactional dimensions concerning the writer’s way to facilitate the interaction by concerning the message. Hyland (2005) classifies interactional dimension into several categories, namely hedges, boosters, attitude markers, self-mentions, and engagement markers. Table 1 displays the functions and examples of each category of metadiscourse markers.

Table 1: Interactive and interactional metadiscourse markers categories (Hyland, 2005:49)

<b>Category</b>	<b>Function</b>	<b>Examples</b>
<b>Interactive</b>	<b>Help to guide the reader through the text</b>	<b>Resources</b>
<b>Transitions</b>	Express relations between main clauses	In addition; but; thus; and
<b>Frame Markers</b>	Refer to discourse acts, sequences or stages	Finally; to conclude; my purpose is
<b>Endophoric Markers</b>	Refer to information in other parts of the texts	Noted above; see Fig; in section 2
<b>Evidentials</b>	Refer to information from other texts	According to X; Z states
<b>Code Glosses</b>	Elaborate propositional meanings	Namely; e.g.; such as; in other words
<b>Interactional</b>	<b>Involve the reader in the text</b>	<b>Resources</b>
<b>Hedges</b>	Withhold commitment and open dialogue	Might; perhaps; possible; about
<b>Boosters</b>	Emphasize certainty or close dialogue	In fact; definitely; it is clear that
<b>Attitude Markers</b>	Express writer’s attitude to proposition	Unfortunately; I agree; surprisingly

<b>Self-mentions</b>	Explicit reference to author(s)	I; we; me; our
<b>Engagement</b>	Explicitly build relationship with reader	Consider; note; you can see
<b>Markers</b>		that”

So far, metadiscourse studies have been mostly focusing on academic texts (Quin 2019), especially research articles (Hyland 2017). Adel (2010) adds the written/spoken mode to the literature and proposed metadiscourse taxonomy for both written and spoken discourse. Hyland (2017) notes the importance of exploring “a less well-trodden area” using metadiscourse framework. Therefore, the present study investigates the link between metadiscourse markers and extra-linguistic variables -gender and disciplines- to figure out how the markers socio-linguistically reflect the writer’s stance towards the contents or the readers.

### 3. Gender and Language

Literature suggests there is “a gendered discourse representing a male-dominated academic culture” (Tse & Hyland 2008: 234; cf. Cendra, Triutami & Bram 2019; Ratri & Ardi 2019; Pasaribu 2016). It means that language “encodes male values and works to exclude female academics and their preferred forms of interaction” (Kirsch, 1993). This condition makes academics apply masculine styles of writing, which impose gender identities. In the academic success, the writers need to perform a gender identity characterized as masculine and participate in academic genres (Bergvall 1999). In academic writing, the male style of writing is mostly used because male language is considered to be the right choice of language used in formal writing (Bergvall 1999). However, several studies reveal how male and female authors adopt different language use. The study conducted by Yeganeh and Ghoreyshi (2015) reveal that male writers employ more boosters to express their statements than their counterparts. On the other hand, female writers tend to use more hedges to state their findings than male writers. Furthermore, Tse and Hyland (2008) also elaborate some language differences in relation to gender. Their study shows that males use more hedges, boosters, transition markers, and code glosses, whereas females use more self-mentions and attitudinal lexis.

### 4. Different Fields in Academic Paper

A research article or academic paper is “a genre where an orientation to readers is crucial in securing rhetorical objectives” (Hyland 2005: 143). The readers should view the language as the ‘social justification of belief’. So, the writers should consider the readers, anticipate the background knowledge, process the problems, interests, and the interpersonal expectations (Rorty 1979: 170 as cited from Hyland 2005: 143). Furthermore, in the academic context, writing is how practitioners construct the disciplines (Bazerman 1993; Hyland 2000; Indrian & Ard 2019). Essentially, academic papers are used by researchers to brainstorm for ideas, find solutions, and strengthen arguments. They are direct sources of research references. We collected the academic papers as the data from Science Direct, a large database of scientific and medical research. As described in the website [<https://www.sciencedirect.com/>], Science Direct has four main classifications, namely “Physical Sciences and Engineering, Life Sciences, Health Sciences, and Social Sciences and Humanities.” We collected the journals by

searching some keywords, such as biology, medicine, chemistry, philosophy, law, and archaeology and selected those featuring our criteria explained in the methodology.

## 5. Methodology

This research analyzed metadiscourse markers in relation to gender and different fields of the articles. In this case, a descriptive qualitative method using Hyland's taxonomy (2005) was employed. First, we collected the journals from Science Direct website. We limited the journals to within the last eight years, from 2009 up to 2017. The journal articles are from humanities (philosophy, law, archaeology) and science (biology, chemistry, medicine). We also selected a single author, whether male or female, for each field (humanities and science). Each article ranges around 10-15 pages. First, we collected 10 science journal articles written by male, 10 science articles written by female, 10 humanity journal articles written by males, and 10 humanity journal articles written by females. In total, there were 40 journal articles collected. Table 2 presents the three first letters of the author's names and the numbers inside the brackets show the year of publication of the journal articles.

Table 2: List of humanity and science journal articles used as data source

#	Authors	Field	Specific Field	Author's gender
1	Dew(15)	Humanities	Philosophy	Male
2	Cur(16)	Humanities	Archaeology	Male
3	Rei (17)	Humanities	Archaeology	Male
4	Whi (17)	Humanities	Archaeology	Male
5	Rho (17)	Humanities	Law	Male
6	Rob (17)	Humanities	Law	Male
7	Rug (17)	Humanities	Law	Male
8	Sva (17)	Humanities	Law	Male
9	Wag (16)	Humanities	Law	Male
10	Wyg (17)	Humanities	Archaeology	Male
11	Fla (17)	Humanities	Archaeology	Female
12	Mir(15)	Humanities	Archaeology	Female
13	Aus(16)	Humanities	Law	Female
14	Lil(17)	Humanities	Law	Female
15	Roa(17)	Humanities	Law	Female
16	Son(17)	Humanities	Law	Female
17	Sto(14)	Humanities	Law	Female
18	Hob(14)	Humanities	Philosophy	Female
19	Mar(14)	Humanities	Philosophy	Female

20	Qui(16)	Humanities	Philosophy	Female
21	Cra(17)	Science	Biology	Male
22	Rey(16)	Science	Biology	Male
23	Sch(11)	Science	Biology	Male
24	Sch(12)	Science	Biology	Male
25	Kra(17)	Science	Chemistry	Male
26	Rei(17)	Science	Chemistry	Male
27	Win(15)	Science	Chemistry	Male
28	Gre(10)	Science	Medical	Male
29	Lin(17)	Science	Medical	Male
30	Tuc(16)	Science	Medical	Male
31	Ber(17)	Science	Biology	Female
32	Mai(16)	Science	Biology	Female
33	Vec(13)	Science	Biology	Female
34	Fas(17)	Science	Chemistry	Female
35	Deg(17)	Science	Medical	Female
36	Dun(17)	Science	Medical	Female
37	Har(17)	Science	Medical	Female
38	Joh(15)	Science	Medical	Female
39	Vak(17)	Science	Medical	Female
40	War(09)	Science	Medical	Female

Second, the metadiscourse markers were highlighted in each journal. Next, the researchers found the metadiscourse markers using Antconc. We took some steps to analyze the data. After reading the journals, we identified the authors, topics, and the numbers of words. The third step was to classify the data in the journals based on the types of metadiscourse markers in relation to different author's gender and fields, as seen in the examples below:

“**In summary**, this framework can be employed to predict the behavior of a transcription network once it is connected into a larger system.”

(FM, Sci-Female)

“I hope it is **obvious** that the applicability of these two inference patterns are sensitive to context.”

(CG, Hum-Male)

As seen in the examples, the metadiscourse markers were classified into FM (Frame Markers) and CG (Code Glosses). We also displayed the data based on extra-linguistic factors, namely fields (Hum for Humanities and Sci for Science) and gender. Other metadiscourse markers were also coded: Transition Markers (TM), Endophoric Markers (EndM), Evidentials (Ev), Attitude Markers (AM), Hedges (H), Boosters (B), Engagement Markers (EngM), and Self-mention (SM). Last, the researchers discussed the relations of metadiscourse markers and other extra-linguistic variables, gender and disciplines.

## 6. Findings and discussion

The findings indicated that the authors of humanities journal articles employed more interactive and interactional markers than those of the science journal articles. The authors of the articles in both fields are heavy users of transition markers and hedges. In addition, both genders applied those markers in the same way. The following sections discuss how authors from different disciplines and genders employ interactive and interactional markers.

### 6.1 Interactive Markers

Table 3 presents the results of the total of interactive metadiscourse markers used in humanity and science journal articles. The results showed that the authors of humanities journal articles use more interactive metadiscourse markers than those of science journal articles.

Table 3: The total and percentage of interactive markers in humanity and science journal articles

Field	Female		Male		Total	
	$\Sigma$	%	$\Sigma$	%	$\Sigma$	%
Humanities	5600	26.37	7573	35.67	13173	62.04
Science	4197	19.76	3865	18.2	8062	37.96
<b>Total</b>	9797	46.13	11438	53.87	21235	100

In the journal articles or research articles, the writers need to ensure that their arguments have the plausible relationship with reality in their discipline. Interactive markers are heavily used as they help both authors and readers signal relationship of the ideas and order materials so that the readers will probably find the discourse convincing and appropriate (Hyland 2005: 90). The use of interactive markers, i.e. transitions, frame markers endophoric markers, evidentials, and code glosses, to guide the reading process becomes the reason why research articles, both from or science fields, tend to employed interactive metadiscourse markers. Pasaribu (2017) also found out that “The (EFL) writers tended to elaborate the relation between ideas”. This is in line with Hyland’s findings (2005: 92) that the predominance “of interactive devices emphasizes the importance of guiding the reading process by indicating discourse organization and clarifying prepositional connections and meanings.” Authors use a considerable number of transitions to guide the readers in reading the texts systematically.

Table 3 displays the difference of the use of interactional markers by gender. Male authors used 11,438 markers, while female authors used 9,797 markers. Male authors of humanities journal articles (7573 or 35.67%) use more interactive metadiscourse markers than the female ones (5600 or 26.37%). On the other hand, in science journal articles, female authors use more interactive metadiscourse markers than the male authors. Considering the findings shown in Table 3, both male and female have the same tendency to use interactive markers. In academic writing, the use of metadiscourse markers is not directly affected by gender because the ways authors “use a language are not determined by gender but constructed through social practices” (Tse & Hyland, 2008: 1246). Furthermore, it is essential to know the total of each type of interactive metadiscourse markers in humanity and science journal articles. The results are presented in Table 4.

Table 4: Interactive Metadiscourse Markers  
in Humanity and Science Journal Articles

Interactive	Humanities						Science					
	Female		Male		Total		Female		Male		Total	
	Σ	%	Σ	%	Σ	%	Σ	%	Σ	%	Σ	%
Transition Markers	4084	19.23	5653	26.62	9737	45.85	3154	14.85	2839	13.37	5993	28.22
Frame Markers	347	1.63	632	2.98	979	4.61	333	1.57	404	1.9	737	3.47
Endophoric Markers	261	1.23	273	1.29	534	2.52	179	0.84	210	0.99	61	1.83
Evidentials	603	2.84	563	2.65	1166	5.49	316	1.49	214	1.01	530	2.5
Code Glosses	305	1.44	452	2.13	757	3.57	215	1.01	198	0.93	413	1.94
<b>Total</b>	<b>5600</b>	<b>26.37</b>	<b>7573</b>	<b>35.67</b>	<b>13173</b>	<b>62.04</b>	<b>4197</b>	<b>19.76</b>	<b>3865</b>	<b>18.2</b>	<b>8062</b>	<b>37.96</b>

The most frequent feature of interactive markers in both fields, humanities and science, as shown in Table 4, is the transition markers. The frequent use of these markers is aimed to help the readers to interpret the pragmatic connections and contrastive relations in the text (Hyland 2005: 50). These markers consist of addition, comparison, and consequence. Table 5 shows the use of each sub-category in humanity and science journal articles.

Table 5: Sub-categories of transition markers

Transition Markers	Humanities						Science					
	Male		Female		Total		Male		Female		Total	
	Σ	%	Σ	%	Σ	%	Σ	%	Σ	%	Σ	%
Addition	4656	21.93	3496	16.46	8152	38.39	2356	11.09	2546	11.99	4902	23.08
Comparison	524	2.47	322	1.52	846	3.99	228	1.07	308	1.45	536	2.52
Consequence	473	2.22	266	1.25	739	3.47	255	1.21	300	1.41	555	2.62
Total	5653	26.62	4084	19.23	9737	45.85	2839	13.37	3154	14.85	5993	28.22

Table 5 shows that addition markers are the most frequent transition markers found in the data. These findings are also in line with Pasaribu's findings (2017) that both males and females used addition markers. The variants of addition markers are: *and*, *furthermore*, *in addition*, *moreover*, *likewise*, *in contrast*, *besides*, *in the same way*, *although*, *however*, *on the other hand*, *yet*, *but*, *despite*, and *on the contrary*. Even though the results showed that male authors in humanities journals and female authors in science journals used the markers more frequently, the use of addition markers between the genders are quite similar. Next, the use of comparison and consequence markers is almost the same. The reason why the authors in the journal articles used addition markers more is because the writers prefer to add more information for the readers. Here is an example of transition markers used in the journal articles.

“That is to say, homologous inferences are concerned only with the individual lineage containing the homologues: the inference follows a line of ancestry. **In contrast**, homoplastic inferences consider the case as an instance of a particular class the analogues are unified via a model coupling the lineages' features.”  
(Hum-Male)

The example above was taken from a humanity journal article written by male author. The transition marker is *in contrast* which is categorized as *comparison sub-category* of transition markers. The use of *in contrast* in that sentence means that the author wanted to compare between homologous and homoplastic inferences.

The findings showed that frame markers are also frequently used in the humanities and science journals. As the signals of text boundaries, frame markers are used more in writing a research article. Table 4 showed that the authors of humanity articles employed more frame markers than those of science articles. These findings are supported by Mina and Biria (2017) who argue that frame markers are used more in social science and humanities. The frequent use of frame markers in humanities aims to shift the topic and link the ideas in the articles logically.

In addition, the sub-categories of frame markers have each function. The Table 6 shows the use of each sub-category of frame markers.

Table 6: Sub-categories of frame markers

Frame Markers	Humanities						Science					
	Male		Female		Total		Male		Female		Total	
	$\Sigma$	%	$\Sigma$	%	$\Sigma$	%	$\Sigma$	%	$\Sigma$	%	$\Sigma$	%
Additive Relations	353	1.66	190	0.89	543	2.55	161	0.76	177	0.83	338	1.59
Label Stages	29	0.14	26	0.13	55	0.27	17	0.08	12	0.06	29	0.14
Topic Shifts	204	0.96	113	0.53	317	1.49	224	1.05	142	0.67	366	1.72
Discourse Goals	46	0.22	18	0.08	64	0.3	2	0.01	2	0.01	4	0.02
Total	632	2.98	347	1.63	979	4.61	404	1.9	333	1.57	737	3.47

Based on the findings in Table 6, additive relations are the most frequent sub-categories of frame markers used. According Hyland (2005), some variants of additive relations are: *first*, *second*, *third*, *at the same time*, *next*. Interestingly, even though male authors used frame markers more, female authors also apply additive relations. The reason why this sub-category is employed more is because in the research article, it is important to show relations of the ideas in the discourse to guide readers, as seen in the example below:

“And so, we can identify two general kinds of comparative inference. **The first**, homologous inference, either infers traits from ancestry, or ancestry from traits. **The second**, homoplastic inference, supports models that couple features (sometimes traits to other traits, sometimes traits to environments) by appealing to analogues as data points.” (Hum-Male)

The example was taken from a humanity journal article written by a male author. The frame markers used in the sentence above are *the first* and *the second*. The markers used are included in *additive relations*. In the sentence above, those markers mean that the author gives explicit explanation of two general kinds of comparative inference.

## 6.2 Interactional markers

Table 7 presents the results of percentage and total of interactional metadiscourse markers in humanities and science journals.



Table 7: The total and percentage of interactional markers in humanity and science journal articles

Field	Female		Male		Total	
	$\Sigma$	%	$\Sigma$	%	$\Sigma$	%
Humanities	2306	22.51	4587	44.75	6893	67.26
Science	1723	16.8	1634	15.94	3357	32.74
<b>Total</b>	<b>4029</b>	<b>39.31</b>	<b>6221</b>	<b>60.69</b>	<b>10250</b>	<b>100</b>

The use of interactional markers (10,250) is fewer than the use of interactive markers (21,235) in both fields. Although both fields show the same tendency, it is important to note that interactional metadiscourse markers occur more frequently in humanities journal articles. These interactional resources involve the readers and give them opportunities to contribute by alerting about the author's perspectives. These markers help in controlling the level of personality in the texts (Hyland 2005: 52).

Table 8: Interactional metadiscourse markers in humanity and science journal articles

Interactional	Humanities						Science					
	Female		Male		Total		Female		Male		Total	
	$\Sigma$	%	$\Sigma$	%	$\Sigma$	%	$\Sigma$	%	$\Sigma$	%	$\Sigma$	%
Hedges	876	8.55	1389	13.55	2265	22.1	601	5.86	660	6.44	1261	12.3
Boosters	297	2.9	619	6.04	916	8.94	230	2.24	187	1.82	417	4.06
Attitude Markers	251	2.45	475	4.63	726	7.08	207	2.02	224	2.19	431	4.21
Self-Mentions	474	4.62	957	9.34	1431	13.96	319	3.11	285	2.78	604	5.89
Engagement Markers	408	3.99	1147	11.19	1555	15.18	366	3.57	278	2.71	644	6.28
<b>Total</b>	<b>2306</b>	<b>22.51</b>	<b>4587</b>	<b>44.75</b>	<b>6893</b>	<b>67.26</b>	<b>1723</b>	<b>16.8</b>	<b>1634</b>	<b>15.94</b>	<b>3357</b>	<b>32.74</b>

The most frequent interactional markers used in both fields, as displayed in Table 8, are hedges. The findings revealed that hedges are the only items outside the interactive metadiscourse markers that become the top ranked items. The findings are in line with Hyland's findings (2005) in the analysis of metadiscourse markers in research articles. Hyland (2005) highlighted that the predominance of interactive devices denotes the necessity to guide the reading process. In contrast, the findings from Mina and Biria (2017) are different from Hyland's findings and the findings in this research. Their findings showed that medical science articles used more hedges than social science articles. Although Mina and Biria (2017) do not provide any qualitative explanation for having contradictory findings from Hyland (2005), Firoozian, Khajavy & Vahidnia (2012, in Mina & Biria 2017)) and Zarei and Mansoori's studies (2011), we propose that the gap occurs because of the wide possible interpretations of interactional markers.

Interestingly, the findings showed that males are the heavy users of hedges. In both fields, male authors used hedges more than female authors. The findings are in contrast with Yeganeh and Ghoreyshi's (2015) findings which showed that hedges are the markers which are frequently used by females due to the reason that the function is to apply a doubtful and cautious approach to the statements. However, the findings of this research follow Crismore et

al. (1993) who found that hedges are parts of males' writing which are aimed to show more interest in writer-reader's interaction as seen in the example below:

“There also **appear to be** biochemical differences, with RV myocardium being more optimized for rapid contraction, although whether differences in myosin heavy chain isoform composition explain this is uncertain, since RV-LV differences in myosin isoform expression **appear to be** present in rodents but not in dogs.”  
(Sci-Male)

The example was taken from a science journal written by a male author. The hedges used in the sentence above appear in the phrase *appear to be*. The use of *appear to be* in the sentence means that the writer reduces the importance and news value due to its uncertain truth value (Hyland 2005: 98).

Based on Table 8, Engagement Markers were the second most frequently used markers in both fields. These devices address the readers to include them in the text or just to focus their attention (Hyland 2005: 53). The findings showed that these markers were used more in humanities. In line with the findings, Hyland (2005) also stated that engagement markers were found more in humanity discourse.

The differences of gender in the use of engagement markers were not really significant as both genders in humanities and science employed these markers. It is in line with the findings from Tse and Hyland (2008) that engagement markers were used by male and female in the same way. Wei, Li, Zhou & Gong (2016) also supported the findings by mentioning that both male and female used these markers in their writing. Engagement markers mainly consist of addressing readers and directives. The purpose of engagement markers is positioning readers into the discourse (Hyland 2005). Table 9 shows the total and percentage of those two sub-categories.

Table 9: Sub-categories of engagement markers

Engagement Markers	Humanities						Science					
	Male		Female		Total		Male		Female		Total	
	Σ	%	Σ	%	Σ	%	Σ	%	Σ	%	Σ	%
Directives	548	5.35	209	2.04	757	7.39	149	1.45	147	1.43	296	2.88
Addressing Readers	599	5.84	199	1.95	798	7.79	129	1.26	219	2.14	348	3.4
Total	1147	11.19	408	3.99	1555	15.18	278	2.71	366	3.57	644	6.28

As can be seen from Table 9, the authors used directives such as modals (*have to, should, must*). The authors were also positioning readers by using the 'addressing reader' sub-category. The markers found in the journal articles are *you, your, we, our, and us*. Table 9 shows how humanities articles employ more directives than science articles, although both male and female authors used engagement markers in similar ways, as seen in this example:

“Researchers **should** direct emphasis toward locating and interpreting significant Denali complex occupations within three important eco zones: 1) the lowland taiga, 2) transitional montane zones, and 3) upland or alpine areas.”  
(Hum-Female)

The example shows that the writer uses directives by using the marker *should*. The aim of using this marker is to focus the attention to certain argument. The use of directives in articles is

widespread (Hyland 2002). He argues that “directives are used for very different strategic purposes and indicates considerable variations in the ways they are employed across genres” (2002: 215).

Classifying the interactive markers, especially transitions, are less problematic as the functions of each transition is, e.g. to explain contrasting relationship among clauses, widely discussed (see Quin 2019; Pasaribu 2017; and Tse & Hyland 2008). Take a look at the use of *although* in this example:

At a meeting held within the unit several months later, the committee chairperson and one additional employee publicly lashed out at the unit director in a very rude

*interactional MDM-Verb*

and disrespectful way. Although other employees in attendance considered the

*interactional MDM-Adj* *Interactive MDM-Transitions*

behavior to be inappropriate in a work setting, few tried to stop the verbal

*interactional MDM-Adj*

confrontation.

*Interactional MDM-Noun*

However, it is more challenging to classify the interactional discourse markers. Some possible reasons are the sub-categories of the interactional discourse markers have not yet been well-explored. For example, the writers can use adverbs, adjectives, verbs, and nouns in showing attitudes. In the example above, the writer describes the negative evaluation of the situations using the nouns, adjectives and verbs. We can also trace the polarity from the metaphors of the words, such as ‘lashed out’. The functions of interactional sub-categories should be further explored and investigated as each marker in the subcategory is used to establish different purposes and relationships between the writers and the readers.

## 7. Conclusion

All interactional markers are used in humanities and science journal articles. However, the most frequently used markers by both fields are transition markers, frame markers, and evidentials. Transition markers assist readers in interpreting connections in an argument. The findings also revealed that authors of humanities journal articles used more interactive markers than those of science journal articles. The researchers found many kinds of transitions in the corpus and were able to classify them based on the sub-categories of transitions provided by Hyland, such as addition, comparison, and consequence. However, more investigations should be made to classify the sub-categories found in the interactional markers. For example, attitude markers can be classified not only based on the part of speech (verbs, adverbs, adjectives) but also based on the functions and the polarity. In this case, attitude is highly related to emotional responses towards ideas, characters, products or processes. Attitude markers serve as tools the authors’ positive or negative responses. Nouns as metaphors can also denote authors’ feelings towards particular matters. These wide possibilities of interpretations of attitude markers and other markers may be the reasons for the gap between Hyland (2005) and Mina & Biria’s study (2017). Further research should be explored to provide in-depth analysis of attitude markers and other interactional markers to answer this gap. Furthermore, although gender is believed

to be one of the factors that can affect the use of metadiscourse markers, this research revealed that both genders tend to use metadiscourse markers in the similar way. The ways males and females use a language are not determined only by gender but constructed through other extra-linguistic variables. Other possible factors affecting the use of metadiscourse markers other than gender are relations of power, particular social settings, and participation in disciplinary discourses. Since this study focuses on gender and field, future researchers can collect more data to know how other social factors play a role in the use of metadiscourse markers. The current research should also be viewed by considering some limitations. First, the corpus in the present research was limited. Other studies with more samples could be conducted to ensure the validity of the findings. Investigations on specific functions of individual markers can also be thought-provoking studies on metadiscourse markers.

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