

Exploring Gender Differences in the Use of Hedges in Pakistani Engineering Research

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Abstract

Previous studies suggest significant differences in academic writing between gender-based studies and various disciplines. As, English for Academic Purpose (EAP) is used as the source of communication as “an international language” which not only reflects on readers

and writers but its professional, social, cultural, linguistic and educational settlements also (Canagarajah, 2002). Hedges play important role in academic writing. For this, the aim of present study was to investigate the use of hedges in Pakistani engineering research articles on gender-based level. The present study examined Pakistani research articles from two disciplines of Civil engineering and Electrical engineering to find out the frequencies and functions of hedges on gender-based level. For this reason, Hyland and Tse's (2004) Interpersonal model of metadiscourse was employed to identify the list of hedges and to see the similarities and differences in the use of hedges on gender-based level. The corpus was built of 100 research articles. The total number of articles was 100 from Civil engineering and Electrical engineering discipline consisting on male and female writers. For this study, mixed method (qualitative and quantitative) strategy was employed. Sampling of the study was probability and stratified sampling. For analysis, Anconc.3.4.4 (a concordance tool) was applied to find out the frequencies and differences in the use of hedges.

Keywords: Academic writing, Corpus, Hedges

1. Introduction:

English for Academic Purpose (EAP) is used as the source of communication as “an international language” which not only reflects on readers and writers but its professional, social, cultural, linguistic and educational settlements also (Canagarajah, 2002). Further, Carrio-Pastor (2014) defines that the use of English language in academic context has important role in academic writing, in which non-native speakers have found a challenging situation. For which, training and practice of English for academic purpose (EAP) is important to learn the language. EAP is connected to academic tasks and academic use of language which is concerned with specific communication. It is often considered as a particular element of ESP at tertiary level of education. Writing is an essential element of students' learning and understanding in any academic context, because of day by day changes and technological development (Hyland, 2013). At tertiary level of education, students face lot of difficulties in written text at various professional workplaces because of their previous phase of writing practices (Lillis, 2001).

Since 1990s, there has been a remarkable increase in treating academic writing, which represents interaction between reader and writer. With this growing interest in academic writing, the notion of metadiscourse has come to be seen as the representation of the relationship between readers and writers which shows their relation that how they convey their message and the ways writers express themselves (Akinci, 2016). Discourse of any form needs clarity, because it allows reader and listener to understand the functions of discourse. Therefore, metadiscourse is an important feature of discourse, which is used for understanding the text. Metadiscourse have got much attention by various scholars, particularly in academic writing. Because the use of language differs from cultures, disciplines and contexts, in which metadiscourse play an important role (Wei, Li& Gong, 2016).

1.1 Hedges in Academic Discourse

Hedging is one of the essential features of interactive metadiscourse, which contribute the construal persuasions in academic discourse that allow academic writers to differentiate from

facts and opinions (Dontcheva-Navratilova, 2016). This device is used by research writers to interact with the reader to convey their message, to change the actual meaning, and explain various amounts of dedication and judgments when they interact with the reader (Saleger-Meyer, 1994, Hyland, 2005). Hedges are communicative strategies which are used by speaker to agree the reader with their knowledge and opinions (Hyland 1998, 2000). According to the Lackoff (1972) hedges work is to make phrases fuzzier or less fuzzy. As Hyland (1998) defines that hedges are the features which are used by writers as communicative tactics to minimize the force of their statement. They express the writer attitude and show the level of confidence in the fact of proposition (Hyland, 2004). The use of hedges enables the writers to show a perception on their statement to express unverified claims (Hyland, 2005). Hedges are words which explain uncertainty like possible, might, perhaps etc. (Hyland, 1998). Hedges have got much attention in discourse because they don't just communicate the ideas but also show the writer's attitude and interact with readers (Halliday, 1978). This is the important type of metadiscourse which is linguistically employed in academic writing. In previous studies, it has been explored widely in different disciplines like in journal articles, essays, computer engineering, second language teaching and learning and in dissertation.

Previous studies have examined hedges in various manners to show the writer uncertainties in theses (Haufiku, 2016). As Musa (2014), conducted a mixed approach study to investigate hedges and boosters in Master's theses at the University of Cape Coast, Ghana. The study used Hyland's (1998) model of grammatical and strategic hedges as its analytical framework. Musa concluded that the English discipline use more hedges than Chemistry disciplines. The result is in accordance with the findings of Sedghat, Biria and Amiraabadi (2015) study, who conducted a cross-cultural study on hedges and boosters between Persian and English editorial columns. Sedghat, Biria and Amiraabadi (2015) argued that the use of more hedges in English editorial shows that native speakers are more polite to their readers.

Meanwhile, there were also claims that women hedge more than men for various purposes. Some have worked on gender variation relating to the use of politeness in written and spoken discourse (Coates, 1987; Holmes, 1990). A further has focused on the effect of powerful versus powerless language styles have on a listener (Holtgraves & Lasky, 1999; Hosman, Huebner & Siltanen, 2002; Hosman & Silteanen, 2006). According to the Pellby (2013) women use more hedges than men for various purposes. Coates (2004) also added that a number of linguists agree that, in comparison of women's speech men's speech is more powerful while women's speech is uncertain and doubtful. However, today's women are more active compared to the previous years, not only in academe but in several fields, they have grown, and this could include their ways of conveying thoughts through writing.

According to the Brown and Levinson (1987) typically women use hedges as plans of "positive politeness". Generally, women use hedges to make softer statements, in which they illustrate their concerns for other's feelings (Holmes, 1988).

Various scholars have turned their attention on academic research articles to investigate the interaction between reader and writer. As Hyland (1996) pointed out, "A research paper not only extends understanding of phenomena and theories that current paradigm deems worthy of study, but also helps or establish the personal reputation of the writer" (p. 435). Writers get

their name by making relationship with the audience (Akinici, 2016). A very little research is done on hedges in Pakistani context but not a single study has been conducted on gender basis. Therefore, it is important to conduct study on hedges in different academic disciplines of Pakistan.

1.2 Justification

Number of the studies has been conducted on different metadiscourse markers, but limited research has been conducted on hedges. This marker is important feature in academic writing which show the writer's attitude and engage the readers in text. This study may help researchers to write articles in different disciplines and in publishing their research articles.

1.3 Aim of the Study

Aim of this study is to explore the use of hedges in Pakistani research papers, written by male and female engineer writers.

1.4 Research objectives

- 1) To find the frequency of the use of Hedges in Pakistani research papers written by male researchers
- 2) To find the frequency of the use of Hedges in Pakistani research papers written by female researchers

1.5 Research Questions:

- 1) How frequently male writers use hedges in their research papers?
- 2) How frequently female writers use hedges in their research papers?

1.6 Key Terms

1.6.1 Metadiscourse

Metadiscourse is a cover term that is actually a collection of words and phrases used by the writers and speakers to create interaction between reader and listener. In short, it covers range of expressions for organizing the discourse and presenting the stance/viewpoint for the proposition discussed by the author.

1.6.2 Hedges

Hedges or downtoners are words and phrases used to indicate the writers' or speakers' tentativeness or uncertainties in their claims. Words and phrases such as may, might, could and seems to suggest are examples of hedging devices used in academic writing.

1.6.3 Corpus

The word corpus refers to the huge collection of words. It is mainly used to analyze the language and present the range of different objectives of the study.

1.7 Limitations

The researcher chose this topic because it is still in their infancy so the availability of related literature is one of the limitations. This phenomenon has got much attention in the foreign countries but in Pakistan still the need for more research is present. Very limited work has been done in Pakistan. One of the limitations of this study is that it will explore hedges on gender basis.

1.8 Significance of the Study

Hedges play significant role in academic writing. This Cross-disciplinary study aims to enrich our understanding of the issues of academic writing and to explore hedges different disciplines of Pakistani research articles that how male and female are using this marker. This is the significant feature of academic writing which convey the message of writer and interact with the audience.

2. Literature Review

2.1 Metadiscourse

Initially, metadiscourse was used by Zellig Harris in 1959 (as cited by Hyland, 2005) whose purpose was to know the use of language and how writers and speakers are trying to clear their readers and listeners. After Harris (1959), many researchers gave the concept of metadiscourse and defined it in different ways and taxonomies (Ahmed, Memon, and Soomro, 2016). In 1960s and 1970s, the term metadiscourse was not in the attention of researchers (Sultan, 2011). But in 1980's, metadiscourse was discussed by different researchers and was introduced in the field of Applied Linguistics through these researchers: Williams (1981) Vande Kopple, (1985), Crismore (1989) and Ahmed et al. (2016).

The idea of metadiscourse defines that the writer does not describe his research findings objectively but shows his personality and attitude through written text (Akinci, 2016). Hyland and Tse (2004) have proposed this distinction between two dimensions, interactive and interactional metadiscourse. Interactive metadiscourse features are used to organize the propositional meaning that will be coherent for a particular audience and given purpose. An interactional metadiscourse features are used to indicate the attitude towards the information in the text or the reader (Zahra, Roya, & Shahla, 2015).

2.2 Interactive Metadiscourse Markers

Interactive metadiscourse markers are used to organize information which belongs to the writer's knowledge and gives the information according to the needs of readers. It helps the reader to understand the textual information (Ahmed et al., 2016). The features of interactive metadiscourse are: transition markers, frame markers, endophoric markers, code glosses and evidentials.

2.3 Interactional Metadiscourse Markers

Interactional metadiscourse markers refer to the way which allows the writer to introduce and comment on their message (Ramoroka, 2017). According to the Hyland, this marker is the 'writer's expression of the textual voice'. The features of interaction metadiscourse are hedges, boosters, self-mentions, attitude markers and engagement markers. According to the (Hyland, 2004), these resources indicate the writer's perspective towards the propositional content and involve the reader in the argument.

2.4 Hedges

Hedges play important and different role in academic discourse. Various studies have been conducted on hedges to know that how writers use them in different disciplines and how writers apply their various intensions.

Holmes (as cited in Vazquez & Giner, 2009) uses the term 'downtoner' to refer to a hedge.

Hedges or downtoners are words and phrases used to indicate the writers' or speakers' tentativeness or uncertainties in their claims. Words and phrases such as *may*, *might*, *could* and *seems* to suggest are examples of hedging devices used in academic writing.

Yuksel and Kavanoz (2015) argue that the application of hedges is central to academic writing where writers are presented with a platform to differentiate facts from opinions. Hence, hedges are communicative tactics employed by writers in order to register their stances in an academic manner without the risk of receiving Face Threatening Acts from the discourse community. Hedges also grant readers the freedom to dispute claims made by writers or speakers.

2.5 Previous Studies on Gender-Based Differences

Various studies have been conducted with various approaches on hedges to investigate the way of researchers which show the level of their uncertainties in their work. The continuation of the dissimilarity between men and women is a visible fact that an amount of factors having communication with each other such as biological, social, and psychological ones are considered to be at the heart of the observed dissimilarities (Halpern, 2000). The notification of such dissimilarities has launched new areas of research. Within the field of sociolinguistics, dissimilarity in genders' language use was broadly attended. To offer a good reason for gender-specific language use, Tannen (1990) has declared that the way males and females approach the world are totally different; while males believe themselves as individuals who live in a hierarchical social society, females treat themselves as individuals performing in a network of connections.

Some literature has investigated gender-based dissimilarities and the use of metadiscourse markers. Tse and Hyland (2008) highlighted that the linguistic features that male and female researchers used are not merely decided by gender. In contrast, Yeganeh and Ghoreyshi (2015) revealed that gender differences play a vital part on the use of two metadiscourse features, booster and hedges. They argued that Iranian females preferred to apply hedges in their writing, while the males leaned to use boosters more often. The tendency took place possibly because women "were more cautious in writing and reporting their opinions" (Yeganeh & Ghoreyshi, 2015, p. 688). A new study by Seyyed rezaie and Vahedi (2017) examined the projection of gender identity through metadiscourse marking. They came to know that both although males and females' authors shared the same styles of using stance makers, it turned out that the male writers exercised more frequent epistemic markers than their counterparts. It was deduced that the male writers stated more certainty in their writings. The dissimilar findings from these studies illustrated that further research in the field of gender and metadiscourse markers should be carried. Above discussions show that there is more need to work on the role of gender differences in academic writing and on metadiscourse markers

2.6 Research Gap

All empirical studies provide useful literature in the field of Metadiscourse and give a path for further research as Masahiro (2015) recommended that further research should be conducted in different disciplines to grasp differences and similarities by nonnative speakers and to provide them guide regarding use of hedges. Pakistani researchers also suggest that there is more need to work on the field of metadiscourse for better writing and understanding

like (Mahmood & Yasmin, 2016; Abbas, 2016; Asghar, 2015; Ahmed et al. 2016).

As a researcher, I found limited studies conducted on hedges in Pakistani context. That motivated me, to conduct a cross-disciplinary study on use of hedges in Pakistani context.

3. Methodology

3.1 Method

According to Biber (1998) the nature of corpus-based studies are essentially based on mixed method research. Therefore, in this study, the researcher employed mixed method research technique. Mixed method approach was used for two purposes mainly, the first purpose was to find out metadiscourse occurrences from corpus, and here quantitative approach was employed. Next, qualitative approach was used for the purpose of close reading of metadiscourse features, in order to find out whether occurrence of metadiscourse is qualified as metadiscourse feature or not. In this research, the researcher created two sub-corpora of Civil Engineering and Electrical Engineering research papers written by Pakistani male and female authors.

3.2 Model of the Study

The model of the study is selected Hyland and Tse's interpersonal model of metadiscourse. The reason for selecting the model of Hyland and Tse (2004) is that, it is used mostly in the present researches; second, the researcher gets full information about metadiscourse features and research studies through Hyland (2005) book. The third reason is that, it is classified in two categories, namely Interactive and Interactional markers (Hyland & Tse, 2004). Interactive markers are mainly collection of the phrases and words that actually help the writer to organize the discourse according to the readers' needs and requirements. However, interactional markers are mainly used to express the writer's viewpoint towards the information, which is presented by the writer.

Table 1. The Interactional resources (Hyland & Tse, 2004)

| Markers Name | Function | Examples |
|--------------------|--|--|
| Hedges | Show writer's full commitment to proposition | might/perhaps/about/ maybe |
| Boosters | Indicate writer's certainty in proposition | in fact / definitely/ it is clear that |
| Attitude markers | Express writer's attitude to Proposition | I agree/ surprisingly |
| Self-mentions | Explicit reference to author | I/ we/ my/ me/ our |
| Engagement markers | Build relationship with reader | you can see that/ consider |

An Interpersonal Model of Metadiscourse (Hyland, 2005, p. 49).

3.3 Data Collection and Sampling

In this research, I have set out some criteria for sampling of the research papers. The corpus of the study is based on 100 research papers written by Pakistani researchers. I have selected two disciplines for the collection of research papers. The first discipline is Civil Engineering, and the second one is Electrical Engineering. All the research papers are collected from HEC recognized research journals. All research journals are accessible online without any subscription and charge. Although in Pakistan there are some research journals which are not accessible, for example NED research journal. Therefore, the data was accessed from those research journals websites, which allowed us to download the research papers without any charges. Research papers are selected only those which were published by Pakistani researchers between 2015 to 2019. 50 research papers were taken from male researchers and 50 were taken from female researchers from these two disciplines.

3.4 Sampling

The sampling strategy for this study is probability strategy and stratified sampling. I opted to go for this sampling technique to get a more accurate understanding of data. This probability sampling technique is based on the fact that every member of population has equal chance of being selected. Probability sampling has less risk of bias than a non-probability sample (Cohen, Manion, & Mrrison, 2007). In stratified sampling, population is divided in homogenous groups, means each group have subjects with similar characteristics. Suppose, one groups contain males than another would be females. As my study is gender based therefore, I opted to go for this sampling.

3.5 Tools for Analyzing the Data

Qualitative and quantitative analysis of corpus was carried out in order to answer research questions. I opted to go for AntConc software for several reasons. First, it is freeware concordance program developed by Prof. Laurence Anthony, Director of the Centre for English Language Education, Waseda University (Japan). Second, it enables users to search for individual words and look at linguistic background. It explains that where, how often, and in what distribution a key term appears in a corpus of data. In addition, users can view the words surrounding the search term alphabetically. Therefore, AntConc is selected for this study to analyze the stance makers and calculate their frequency in different types of writing and disciplines.

4. Data Analysis

This study has three phases, the first phase is data collection (corpus compilation), then the data analysis and interpretation of the analyzed results.

4.1 Procedure of Extracting Interactional Metadiscourse Markers from Sub-Corpora

Here, we first downloaded all the research papers of male and female engineer writers according to the requirement of the study which were available in PDF forms and then we converted all PDF files into word format and then to notepad. Through this procedure, we deleted author's information, references list and appendix pages from the research articles. After that, we searched out the hedges one by one through Antconc 3.4.4w 2014. However, this software only examines the text that is available in text Document format, not in PDF format. Therefore, it was necessary to convert all PDF files into word format before using

AntConc software for analyzing corpus linguistics features. Antconc concordance is a freeware software tool that helps researchers in finding the frequencies of Interactional metadiscourse markers from the sub-corpora.

4.2 Identification of Interactional Metadiscourse markers (Hedges)

In the process of searching frequencies of hedges, we also confirmed manually the results of occurrences of hedges functioning as metadiscourse markers. This step was carried out to check the functions of metadiscourse because there is also non-propositional material that is present with metadiscourse, and that could be only identified through understanding of its context. As indicated by Hyland (2005), in the examination of metadiscourse features, we must identify metadiscourse features manually. This helps the analysts in presenting the real recurrence of metadiscourse markers. Due to the ethical concerns, there was need to hide the identities of all researchers who were the part of present study. For that purpose, pseudonyms were applied. The researcher used alphabetical letters Csf and Csm, to represent the male and female computer writers. This shows that Csf articles are written by female engineers and Csm are written by male engineers. The purpose of separate analysis was to ensure that the all hedging features used in research articles were analyzed according to the Hyland's (2005) taxonomy of hedges.

Table 2. Description of corpus

| Gender | Research articles (data) | Total No of words |
|-----------|--------------------------|-------------------|
| Male | 50 | 190003 |
| Female | 50 | 192131 |
| Total No: | 100 | 382134 |

4.3 Research Ethics

The collection of data for this research study was through internet. Generally, we have free access of research articles; those free research articles were taken for compiling corpus of the study. There was no strict policy by journals and websites for collection of the data for compiling corpus. Therefore, no any consent was taken from the research journals, publishers and the authors of the research papers. It's because they are free to download from research journals websites.

5. Results and Findings

This section will provide you the results of Hedges use in Civil Engineering and Electrical Engineering research papers written by Pakistani male and female writers. The description of the results is divided in two sub corpora. The first section will illustrate the results of Hedges in terms of frequency of occurrences within the text, representing male writers. Second section will illustrate the results of female writers.

5.1 Use of Hedges

The first interactional sub-category is 'Hedges' which refers to the range of words that are used by writers to show the reluctance in presenting the propositional information. Use of

Hedges shows doubt, uncertainty and point out that the information given in the text is presented as opinion rather than a fact by a writer. As Hyland (1998) states that, Hedges are used for the purpose of reducing the force of statements, such as the words possible and perhaps are used by the writers when they are not sure about the information which they are presenting, and it also shows a weakening of a claim.

Use of 'Hedges' in Pakistani Engineering RAs

The table given below presents the frequencies for use of Hedges across disciplinary engineering RA's texts in Pakistani sub-corpus. It provides answers to our research questions given in section 1.5.

Table 3. Hedges in Pakistani Male and Female corpus of Engineering Ras

Frequency and percentage per 1000 words

| Use of Hedges | Gender | Raw Count | Frequency | Analysed Count | Frequency |
|---|--------|--------------|-----------|-------------------|------------------------------------|
| | | | | Overall <i>f</i> | Normalized <i>f</i> /1000 words |
| | Male | 1303 | 89 | | 22% |
| | Female | 1405 | 185 | | 11% |
| Total Hedges in Male & Female Engineering RA's | | 2708 | 274 | | 33% |

The descriptive analysis of the data sets revealed that both data sets have employed hedges. Table no: 3 shows the percentage of the markers use. In Pakistani corpus, hedges (22%) were used by male engineer writers. As, women have used less amount of markers.

Table no: 3 also presenting the whole descriptive analysis about both sub-corpora in terms of frequencies and percentages. From this result, it is pointed out that Pakistani writers have used less interactional markers. However, it is worth mentioning the sub-corpora size of Pakistani writers is 38213. We normalized the data per 10000 words frequency. The statistical analysis shows that, Pakistani male writers used 190003 interactional markers whereas female writers used 192131 interactional markers.

The table provides the occurrences of Hedges as raw frequencies which are 2708, analyzed frequency counts which includes actual frequency counts and their normalized values with total sum of 274 respectively. Considering the normalized values, it is clearly evident that female writers use 11% Hedges /1000 words, which is the lowest count across the texts from other disciplines in Pakistani sub-corpus. On the other hand, male writers use 22 % Hedges /1000 words with the highest frequency count. The figures indicate that all Pakistani Engineering male and female (selected for the study) used Hedges. The examples of Hedges found in Pakistani sub-corpus are given below.

Examples of Hedges: from our male and female corpora

- 1) It **seems** like a blessing; just a click away is readily available plenty of useful information about any topic. Csf 33 text
- 2) This may **appear** counterintuitive since more information is present at the time of design. Csf 6 text
- 3) However, most work in this area does not use a relational approach, **probably** because a theory of relations on graphs **may be** constructed in several different ways. Csm text 20
- 4) For example: commercial CEP products **usually** run samples sequentially, rather than in parallel, thus taking more time to analyse multiple samples. Csm text 49

6. Discussion

After the analysis of the data, we discovered the gender differences in research articles written by Pakistani male and female engineers. Frequency of Interactional marker was normalized per 1000 words. The results of the study indicate that male writers' use of Interactional markers is higher than female writers. There is significant difference as presented in result section (see Table: 3). It is important to note that the frequency of Hedges in Pakistani sub-corpora is following: Male Hedges found 22%, which is the highest frequency as compare to female writers. We found significant gender differences in this disciplinary study. The possible reason of the less use of hedges of Pakistani male and female writers is due to the quality of academic education and the use of English as a second language. However, the second reason is that Pakistani male and female writers might have influence of their first language on their writing, or not proficient at English language. Furthermore, Pakistani curriculum developers can focus more on writing features by including metadiscourse for improving academic writing skills. Text book developers and teachers should also notice the metadiscourse markers for improving the writing skills. They can arrange the activities for learning and pointing out these markers.

7. Conclusion

Interactional metadiscourse markers help the researchers to interact with the readers and engage them in the conversation. In this study, we found significant differences in the use of Interactional markers between two sub corpora. We have examined Interactional markers in research articles written by Pakistani male and female writers. The Pakistani academic writers differentiated in the use of metadiscourse markers to express doubt (hedges) in terms of their gender. Male writers intended to employ more hedges in expressing their statement than their counterparts. Furthermore, female writers used a lesser amount of hedges in stating their findings than male writers. In other words, gender plays a significant role in applying rhetorical devices in academic research articles.

7.1 Future Suggestions

Various research suggestions are based on this study. Future studies can be conducted on various fields of engineering and linguistics. As the corpus of this study was only Civil and Electrical engineering, other departments can also be investigated to see the gender differences. They may also focus on student's writing at different levels in Pakistan to help the students to recover the weaknesses and deficiencies in English language. Teachers can also be informed to consider their teaching methods. In this way, teachers will become aware

and will be able to focus on those markers which are applied more or less in students writing. Future researchers may also conduct studies on cross-cultural levels of Pakistan.

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