Formulaic Sequences and Meta-Discourse Markers in Applied Linguistics Research Papers

A cross-linguistic corpus-based analysis of native and non-native authors' published articles

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Abstract

Metadiscourse markers and their importance to academic writing are essential research subjects nowadays. The current corpus-based study aims at identifying interactional and interactive metadiscourse markers in terms of frequency and function in the abstract section of published research articles in applied linguistics developed by Algerian, Saudi, and Native researchers. 20 research articles for each group, with a total of 60 articles have been randomly selected and compiled as the research corpus for this study, then analyzed qualitatively and quantitatively using AntConc.3.2.4 relying on Hyland's classification of metadiscourse markers. As a comparative study, the research considered the abstracts written by natives as a benchmark and attempted to find an answer to the main inquiry related to the frequency of use of metadiscourse devices by Algerian and Saudi researchers in comparison to their Native counterparts. The main research results showed how close were Algerian abstracts to native ones in terms of using endophorics, frame markers, code glosses, hedges, attitude markers, and self-mentions. While Saudi abstracts were close to the benchmark only in two markers that are transitions and engagement markers. The rest of the devices were shown to be far from the native norm in both cases. The findings also revealed that the use of metadiscourse markers is not the only indicator of papers' publication rate in indexed journals by comparing the corpus analysis results to the source of the articles (journals), to find that even if Algerian researchers publish less in high indexed journals in comparison to Saudis, they are still closer in using markers to the natives as a benchmark.

Keywords: metadiscourse markers; formulaic language; academic writing; cross-linguistic; Hyland's classification

Introduction

Similar to different tertiary education institutions worldwide, Algerian and Saudi universities hire instructors and professors based on their qualifications to both teach tutorial sessions and lectures and conduct research in their respective fields.

These two academic activities are the main professional tasks at university. Research takes most of the academics' professional lives. Accordingly, Santos (1995) asserts that "researching and research reporting are usually thought of as distinct activities. They cannot be split apart, i.e., the research cycle is not complete until the results have been communicated" (p. 481). As a result, communicating research is as important as conducting it. In this sense, communicating research outcomes in a written form requires the use of the academic writing style with respecting its characteristics from form and organization to the function of every statement. This will result in a piece of an effective academically written text ready to be published.

To produce effective academic writing, it is important to use an efficient number of metadiscourse devices. For more emphasis, "Metadiscourse embodies the idea that communication is more than just the exchange of information, goods or services, but also involves the personalities, attitudes, and assumptions of those who are communicating" (Hyland, 2005, p. 3). Different types of metadiscourse markers help authors to create organized texts and develop a relationship with their readers in academia. Some of the markers used in generating effective academic writing are Frame Markers (FMs), Transitions (Ts), Endophorics (Es), Evidential Devices (EDs), Boosters (Bs), and Hedges (Hs). Frame markers are among the basic constituents of written discourse. They provide a basic element of written discourse and offer scope information about "text boundaries or elements of schematic text structure" (Hyland & Tse, 2004, p. 168). They are used to serve four major functions encompassing (1) labeling text stages (e.g. to summarize), (2) showing topic shift (e.g. in connection with), (3) sequencing (e.g. to begin with; lastly), and (4) declaring the writer's goal (e.g. the main aim; the prime focus) (Hyland, 2005). Similarly, Transitions such as (and, but, thus, so, for, nor) are used to create a logical semantic relation between clauses in full sentences. Endophorics are used as references to other parts of the text. Academic writers use Es (e.g. as stated below, see photo four, see fig two, diagram one, see section three) to cross-reference different pieces of information within their writings; thus, ensuring that the reader does not get lost in between lines and create a strong bond or relationship between the author and his readers. Evidential Devices contrast Endophorics because they are used to refer to other sources or pieces of information from other texts. For example, Authors use (e.g. According to X, (Z, 2022), Y claims) as Evidential Devices to provide evidence and support their claims with different statements of other authors; thus, maintaining the said relationship with their readers. Boosters (Bs) and Hedges (Hs) are devices used by authors in academic writing for two different functions; the first (Bs) such as (it is clear that, in fact, actually, definitely) are used by authors to show certainty on a proposition and reflect his certainty in the information he delivers. Unlike Booster, Hedges are used to withholding the author's full certainty about the claims or data he makes. Academics use (maybe, perhaps, possibly, might) more than boosters to ensure unbiased and objective statements.

To put things into perspective, it is important to note that, as stated above, metadiscourse markers play a major role in organizing academic text. Furthermore, having a basic knowledge of these markers and using them effectively are two

different stories. Non-natives researchers tend to use a limited number of these devices, most notably longer and formulaic sequences because of their lack of focus on these markers' organizational and processing usefulness in academic writing in applied linguistics. Accordingly, a very limited number of studies have been conducted on the functional nature of metadiscourse devices such as code glosses, attitude markers, engagement markers, and endophorics, most notably in Saudi and Algerian researchers' written contributions specialized in applied linguistics. Our focus on the abstract section comes from the immense importance given to this section by editors, reviewers, publishers, and authors as it acts as the face of the research paper and the summary of the whole article. Research papers' abstracts are an important site for the visibility of scientific endeavors. However, little research has also been carried out on how abstracts can be characterized in terms of their textual organization and other key features. In addition, advice available in technical writing literature seems to be of little avail to the production of quality abstracts concerning the use of metadiscourse devices. Over the years, this field has reached a mature stage; however, the absence of valid and reliable statistical data dealing with this subject has chiefly led us to conduct this study.

Gaining detailed and well-grounded insights on the use of metadiscourse markers in research papers' abstracts and how these devices are manifested in comparison to the ones written by natives is essential for filling this gap in knowledge, specifically in applied linguistics research articles. The frequency of use and the functional use of these markers namely interactive and interactional devices, in Algerian and Saudi researchers' abstracts in comparison to natives will help understand the writing processes of these different discourse societies and their effect on the publication procedure in highly indexed journals, particularly for Algerian authors.

Theoretical Background

The socio-cultural aspect of language has been gaining more attention in recent years due to its focal role in language learning and use, most notably with EFL learners and practitioners. Language in action, more precisely, studying a text with a specific social context has become crucial for pinpointing the language idiosyncrasies in different genres (Hyland, 2009 a & b). Consequently, the researcher has noticed a booming interest in studying discourse analysis and analyzing corpora in general, and metadiscourse analysis in particular.

Metadiscourse from a broader perspective refers to the system by which language producers (speakers and writers) interact via language use with the audience (listeners and readers). Hyland (2017) asserts that in essence metadiscourse refers to the manner language is used out of consideration for our readers or hearers based on our estimation as speakers or writers of how best we can help them process and comprehend what we are saying. In texts, metadiscourse markers are words or phrases that help build a relationship between the writer and the reader through connecting and organizing

texts, delivering evidence, and expressing attitude; thus, ensuring coherence via a smooth flow of ideas.

Abdulaal (2020, p. 195) believes that "linguists who study metadiscourse are always motivated by a desire to comprehend the relation between language and its context. That is, how speakers and writers use language to explicate communicative situations, and how they count on their perception of communicative situations to make their intended meanings crystal clear to their interlocutors"

Given its broadness and vagueness as a concept used in language teaching, critical discourse analysis, contemporary discourse analysis, and pragmatics; metadiscourse has many requirements and seeks more research and data analysis. Hyland (2017) explains "while many researchers and teachers find the thought of using metadiscourse in the service of language and literacy to be conceptually substantial and analytically strong, it is not without difficulties of clear-cut definitions, well-defined categorization, and detailed analysis.

Given the complexity of defining and delimiting metadiscourse as a concept (Duruk, 2017) and its wide-ranging feature as far as research is concerned, this has led several researchers to design models to classify and elaborate its linguistic dimension in relation to different research subfields. Vande Kopple, 1985; Crismore, 1993; Hyland, 2005 created models to classify metadiscourse markers from different perspectives; yet these models seemed to serve a similar purpose, which is understanding methods and patterns of organized discourse in different types of text. Vande Kopple (1985) proposed the first metadiscourse model in which he presents two main categories of metadiscourse: textual and interpersonal. The first, textual and often called meta-text (Bunton, 1999) consists of four devices: text connectives, code glosses, validity markers, and narrators, while the second category (interpersonal) includes three types of devices: illocution markers, attitude markers, and commentaries (See Appendix A, Table one). Crismore, Markkanen, and Steffensen (1993) revised and modified Vande Kopple's model as it has been criticized for being vague and posing some sort of overlap as far as the function of different devices is concerned. Like a sum-up of the revision mentioned above, Crismore et al. (1993) introduced the revised model that consists of three metadiscourse devices: textual, interpretive, and interpersonal. The first includes devices that help organize the discourse, the second (interpretive) are markers that assist the reader's interpretation and understanding of the author's text, while the third (interpersonal) are features that help the writer in creating a relationship with the reader for a better understanding of the text; furthermore, Cheng and Steffensen (1996) add that interpersonal metadiscourse is employed to add the writer's personal belief and degree of commitment in the direction of an ongoing research proposal.

The table below (see table one) is a model suggested by Hyland (2005; 2017), in which he categorizes metadiscourse devices into interactive and interactional markers. As research guarantees, this model presents the fruit of research continuity. Hyland's model is based on the two models discussed earlier (Van Kopple, 1985; Crismore et al., 1993). It has taken advantage of the criticism and drawbacks of the previous models such as

ambiguity and vagueness to present a clearer and rational categorization of discourse devices. According to Hyland (2017), interactive resources are employed for the sake of helping the writer satisfy his readers' needs via presenting valid and satisfactory arguments; this ensures the writer's awareness of his readers. As for the second category, he claims that interactional resources, also referred to as formulaic markers, are employed to help the writer try to present a valid stand, and guide the readers to be more engaged by expecting their response to the developed text.

Category	Function	Examples
Interactive resources	Help to guide the reader through the text	
Transitions	Express semantic relation between mainclauses in	Addition / hence / but / thus /and
Frame markers	Refer to discourse acts, sequences, ortext stages	finally / to conclude / mypurpose is
Endophorics	Refer to the information in other parts ofthe text	noted above / see Fig / in section2
Evidential devices	Refer to source of information from other texts	according to X / (Y, 1990) / Zstates
Code glosses	Help readers grasp the meanings of ideational material	namely / e.g. / such as / in other words
Interactional resources	Involve the reader in the argument (formulaic language)	
Hedges	Withhold the writer's full commitment toproposition	might / perhaps / possible /about
Boosters	Emphasize force or writer's certainty inproposition	in fact / definitely / it is clearthat
Attitude markers	Express writer's attitude to proposition	unfortunately / I agree / surprising
Engagement markers	Explicitly refer to or build a relationshipwith the reader	consider/note that / you can see that
Self-mentions	Explicit reference to the author(s)	I / we / my / our

Table 1. Hyland's Taxonomy of Metadiscoursal Devices (2005)

Literature Review

In this section, we present an overview of the literature that relates to research on metadiscourse resources and their use in academic work. After an initial overview of related work, we examine specific prior work on several pieces of writing and not only academic papers. The occurrence of metadiscourse markers in newspapers research articles (Dahl, 2004; Kim & Lim, 2013; Bal-Gezegin & Baş, 2020; Abdulaal, M., 2020), academic essays (Hyland, 2007; Adel, 2012; Bruce, 2010), theses/dissertations (Hyland, 2010; Aimah et al., 2019), argumentative essays (Anwardeen, Luyee, Gabriel, & Kalajahi, 2013) and newspapers (Abdulaal, M., 2020; Yeganeh, Heravi, & Sawari, 2015; Dafouz-Milne, 2008), textbooks (Hyland, 1999; 2004) generated by native and non-native writers of English.

It is important to have some awareness of current issues highlighted in the literature concerning the use of metadiscourse markers and the research focus of scholars around the world apropos this specific indicator of writing quality in academic research. Researchers investigated the use of metadiscourse markers in different academic texts. Burneikaite (2008) and Bal-Gezegin and Baş (2020) elaborated that in comparison to British native students, text connectives were among the most often used markers in postgraduate essays created by Lithuanian non-native English writers. According to a deep function analysis, these discourse markers were mostly utilized to signal text stages rather than to express writers' goals. Alyousef (2015), studied the occurrence of metadiscourse markers in three multimodal management reports written by 10 international masters of accounting students to find that there was a high frequency of interactive and interactional devices in the orthographic texts in comparison to the minimal number of interactive device and high frequency of implicit interactional markers in tables and graphs. The researcher presents pedagogical implications for teaching English for Business Purposes, which is a scarce research interest linking metadiscourse to ESP courses. Zakaria and Malik (2018) textually analyzed metadiscourse devices among 50 Arab international students in Malaysia. Research findings for these students' academic written materials pointed greater inclination for the distribution of the interactive devices (Total counts = 919 "60.8%") than interactional ones (Total counts = 592 "39.2%"). In another close study, Burneikaite (2009) focused on the metadiscoursal functions of sequencers in several English research articles. The outcomes revealed the over-dependence of Lithuanian learners of English on these resources.

As far as academic research articles are concerned, Marandi's (2003) work, one of the limited contrastive studies on metadiscoursal devices in research articles, resulted in no statistically significant differences as far as frame markers and connectors are concerned specifically in the articles produced by native Persian and native English writers. According to Marandi (2003), reminders, also labeled as endophorics by Hyland (2005), occurred more frequently in the discussion section in comparison with the introduction, which comprised more intention or frame markers. Topicalizers (Vande Kopple, 1985) as a type of transition in this research's taxonomy were hardly employed by all groups in this study. On the same train of thought, Mirshamsi and Allami (2013) tested research papers of both Persian and English authors, and they reported no statistically significant differences between the use of different types of devices in both groups.

Many researchers focused on specific sections of research papers. Lee and Casal (2014), paid more attention to the results and discussion sections of English and Spanish writers. They discovered that the Spanish used a significantly larger number of markers than the English writers. Duruk (2017) examined the frequency of interpersonal metadiscourse markers in the academic written discourse of Turkish MA students specializing in English Language Teaching. The research outcomes, based on the analysis of the methodology, results, and discussion sections revealed the use of hedges, boosters, and attitude markers, while attitude markers are used more frequently by Turkish

writers. Aimah et al. (2019) focused on the introduction section written by Unimus EFL students' final projects. They discovered that students tend to use more interactive markers such as transitions and evidentials rather than using interactional ones like hedges and boosters. This, according to the researchers indicate the attention given by students to guiding readers through the text by establishing their interpretations rather than involving the readers in the arguments.

The first aspect that motivated this investigation is the scarce research conducted on metadiscourse devices in the abstract section of published research papers. Martin-Martin (2003), Ren and Li (2011), Saeeaw and Tangkiengsirisin (2014), and Santos (2019) focused on the rhetorical variation in abstracts and discussions (moves). As stated by Abdulaal (2020, p. 197) through his synthesis of (Lee and Casal, 2014), compared to doctoral dissertations, less attention was paid to master's theses even if the latter need more assistance to develop coherent pieces of writing due to the students' unfamiliarity with this writing endeavor. Close enough to our research objective, Akbaş (2012) investigated metadiscourse devices in doctoral dissertation abstracts. The researcher compiled a corpus of abstracts composed by native and non-native English speakers and native authors of Turkish. The results pointed out that native English abstracts contained the highest frequency of metadiscourse devices when equated with their native Turkish counterparts' abstracts. Lastly, it is worth noting that this paper takes into account the work of Abdulaal (2020) to solidify the research outcomes focusing on the importance of metadiscourse markers in academic research, most importantly in the abstract as the most important section in terms of visibility and as the face of the research paper. Farjami (2013) confirms "Surveying journal abstracts seems to provide a practical and valid reservoir of condensed information. They are practical for reasons of ready availability and terseness and valid because, this genre, as Swales and Feak (2009) suggest, shows best the features of specialized communication between experts in the related field". (p. 1)

The second aspect that motivated this research is the limited number of studies conducted on Algerian scholars and researchers' use of metadiscourse markers in academic research papers. As we took a closer look at the research papers produced by Algerian researchers in the field of applied linguistics and discourse analysis, we have found that there is a massive necessity for studying metadiscourse markers and their occurrence and effect on Algerian researchers' quality of manuscripts given the relatively small number of papers published in high indexed journals. Among the few papers found dealing with metadiscourse markers in academic manuscripts is the work of Bouchemet (2019) investigating interactional metadiscourse in applied linguistics master's theses. He focuses on both the introductory and concluding sections of these theses, in which he found a difference in the distribution and features of the markers used in these two sections. Similarly, Boudersa (2014) examined undergraduate students' expository essay writing quality concerning the use of connective expressions as metadiscourse markers. She has found that the high quality of students' writings is not bound to the use of metadiscourse markers. In other words, the fewer connective markers students used the better their writing quality was. What the researchers

have noticed, in addition to the scarce number of metadiscourse markers research in Algeria and Algerian academic papers, is the absence of quantitative and statistically proven research outcomes even with the papers mentioned above.

Research Objectives

The current study seeks to attain the following research objectives:

- To explore Algerian and Saudi research article abstracts apropos their use of metadiscourse devices and the difference between the two scientific communities.
- To examine the effect of the linguistic background of the two groups on their use of metadiscourse devices in their research abstracts.
- To investigate the effect of the cultural background and the occupational culture of Algerian and Saudi researchers on their use of metadiscourse markers in the abstract section
- To demonstrate, statistically, if the two non-native scientific groups' use of metadiscourse markers in the abstract section is close or far from their native colleagues.
- Finally, to see if the frequency of use of metadiscourse markers in abstracts as a sample of research papers is an indicator of scholarly publication accomplishment in indexed journals.

Research Questions

- How close are metadiscourse markers produced by Algerian and Saudi researchers to their native counterparts specifically in the abstract section?
- In comparison to the native researchers' abstracts as a benchmark, which formulaic metadiscourse devices do Algerian and Saudi researchers use at a closer rate to the natives?
- Is the use of metadiscourse markers in the abstract section as an important section of the research article an indicator of publication rates in indexed journals?

Research Hypotheses and Tentative Answers

- Statistically, there are no significant differences in the usage of metadiscourse devices between Algerian, Saudi, and Native abstracts.
- There are a few types of formulaic devices used in a typical frequency by Saudi and Algerian Researchers.
- The use of metadiscourse markers is not the only indicator of research quality and publication accomplishment rates.

The Research Methodology

Research Approach/Design

To draw a link between the research problem and its main objective, a mixed-methods approach was opted for to have reliable answers to the previously mentioned research questions. To identify metadiscourse markers and their functions in the abstract section of each research paper for the three groups, a qualitative method is employed. On the other hand, the quantitative method is used to quantify the metadiscourse devices by calculating the frequency and the function in the abstract section, then comparing and contrasting the three research groups' abstracts.

Main Researched Corpus

The researcher relied on a two steps plan for the compilation of the study corpus. The compiled corpus consists of sixty research papers in total, of which twenty each belong to a different group, Native, Saudi, and Algerian researchers. It is important to note that this comparative study takes advantage of the data compiled by Abdulaal (2020) as far as Saudi and native papers are concerned. The researchers, for comparison and contrast aims, make sure of the compatibility of the Algerian research articles group with the other groups, i.e. Native and Saudi research articles. To sum up the corpus compilation process, all the articles are close in word count and belong to the field of applied linguistics. The articles were downloaded from well-recognized and peer-reviewed international journals specializing in linguistics, language, and education. The researchers focus only on specialized articles that were published in recent issues (2000-2020). While the majority of the Native and Saudi articles were downloaded from indexed journals such as International Journal of English Linguistics, Applied Linguistics, Annual Review of Applied Linguistics, Arab World English Journal "AWEJ", Modern Language Journal, and Applied Linguistics; the majority of Algerian articles, i.e. 18 out of 20 were downloaded from two main sources the first is Algerian Scientific Journals Platform (ASJP), Journal of Translation and Languages and Journal of Human Sciences as an example, in addition to Arab World English Journal. The two remaining articles were downloaded from Language Policy.

Academic Abstracts	Native Abstracts	Saudi Abstracts	Algerian Abstracts
Number of Abstracts	20	20	20
Number of Words	3790	3610	3815
Sources for Corpus Compilation	International Journal of English Linguistics, Applied Linguistics, Annual Review of Applied Linguistics, Arab World English Journal "AWEJ", Modern Language Journal, and Applied Linguistics	International Journal of English Linguistics, Applied Linguistics, Annual Review of Applied Linguistics, Arab World English Journal "AWEJ", Modern Language Journal, and Applied Linguistics	Algerian Scientific Journals Platform (ASJP), Journal of Translation and Languages, Journal of Human Sciences, Arab World English Journal, Language Policy

Table 2. The Characteristics of the Compiled Corpus

Data Analysis Procedure

After the collection and organization of data, and compilation of the research corpus, the researcher separates the abstract sections of the articles and gathers them all in one single document for analysis. The researcher reads the selected sections very carefully and highlights the metadiscourse markers based on Hyland's (2005) classification of metadiscourse markers. After 20 days the researchers read the compiled corpus again with a colleague to cross-check the highlighted devices and their functions in the text. The last stage marks the final analysis by the researcher in which he reads the sections one final time to validate the collected data and forward the findings for statistical analysis.

Research Findings

By the end of the data collection procedure, the researchers moved to the analysis and categorization of interactive and interactional metadiscourse devices qualitatively and quantitatively. Through analyzing Native, Saudi, and Algerian abstracts, and by relying on the categorization of Hyland (2005), the researchers seek to understand the occurrence and frequency of the used metadiscourse markers in the three groups' research abstracts.

- **Data Reporting**

Discourse Devices		Algerian Abstracts	
		Total Number	Percentage %
Interactive	Transitions	92	27.6
	Frame Markers	58	17.4
	Endophorics	20	6.0
	Evidential Devices	25	7.5
	Code Glosses	27	8.1
Interactional	Hedges	39	11.7
	Boosters	21	6.3
	Attitude Markers	29	8.7
	Engagement Markers	6	1.8
	Self-Mentions	16	4.8
The Sum ∑	**333**		

Table 3. The frequencies of interactive and interactional metadiscourse devices in the abstracts of linguistics papers written by Algerian scholars

The table above (Table.3) displays the frequency and percentage of both interactive and interactional metadiscourse markers in the abstract section of Algerian researchers' articles in the field of general and applied linguistics. The distribution of the aforementioned devices in the table below shows the relatively larger number of interactive markers used by Algerian scholars in comparison to interactional markers. Statistically, it is doubled in number, with 222 interactive and 111 interactional markers in the abstract sections. Transitions are the most used markers for both interactive markers and metadiscourse markers in general (27.6%), while hedges are the most used interactional markers (11.7%). Engagement markers on the other hand are the least used markers among all metadiscourse devices in this groups' research abstracts.

Discourse Devices		Saudi Abstracts	
		Total Number	Percentage %
Interactive	Transitions	71	24.3
	Frame Markers	41	14.0
	Endophorics	4	1.4
	Evidential Devices	43	14.7
	Code Glosses	52	17.8
Interactional	Hedges	16	5.5
	Boosters	42	14.4
	Attitude Markers	14	4.8
	Engagement Markers	3	1.0
	Self-Mentions	6	2.1
The Sum ∑	**292**		

Table 4. The frequencies of interactive and interactional metadiscourse devices in the abstracts of linguistics papers written by Saudi scholars (Abdulaal, 2020)

Next, table four shows similar results for the Saudi researcher's abstract sections in which interactive markers are significantly more applied than interactional markers. With 71 transition markers used in the Saudi abstracts, this specific interactive marker is predominantly the most employed device in the abstract section of this group. In comparison to attitude markers, engagement markers, and self-mentions, hedges and boosters are used exceptionally as interactional markers.

Discourse Devices		Native Abstracts	
		Total Number	Percentage %
Interactive	Transitions	63	17.2
	Frame Markers	72	19.7
	Endophorics	22	6.0
	Evidential Devices	63	17.2
	Code Glosses	24	6.6
Interactional	Hedges	36	9.8
	Boosters	21	5.7
	Attitude Markers	26	7.1
	Engagement Markers	6	1.6
	Self-Mentions	33	9.0
The Sum ∑	**366**		

Table 5. The frequencies of interactive and interactional metadiscourse devices in the abstracts of linguistics papers written by Native scholars (Abdulaal, 2020)

As far as abstracts produced by native scholars in the field of applied linguistics, it can be noticed in table five the dominant usage of interactive markers 244 in comparison to interactional markers 122. More specifically, frame markers are employed prevailingly more than transitions as interactive devices. Hedges, as interactional discourse devices are used predominantly more than any device in the same category. With the same aforementioned category, engagement markers are noted to be the least used discourse marker by far from all markers in both categories.

- **Hypothesis Testing**

To compare the possibility of statistical differences between the three groups, Algerian, Saudi, and Native Abstracts, the means of the three groups are compared using the One Way ANOVA test as a parametric test. To validate the first hypothesis stating that there is no statistically significant difference between the metadiscourse markers used in Algerian, Saudi and Native abstracts (H0), the prerequisite tests of One-Way ANOVA (Anderson Darling test of Normality and Levene's Test for Equality of Variance) were conducted. To test the normal distribution for the three groups of abstracts, Anderson Darling Test revealed that the P-value was > 0.05 (0.078), with skewness of 0.803 and kurtosis at 0.077 (see figure one).

Histogram
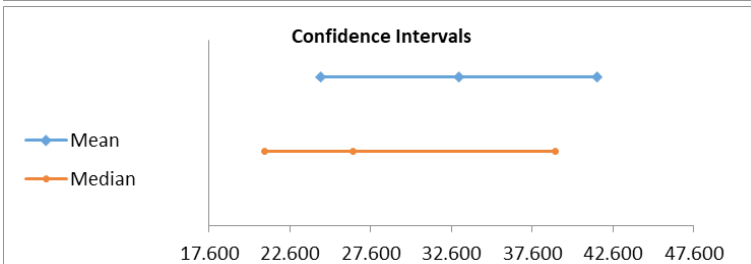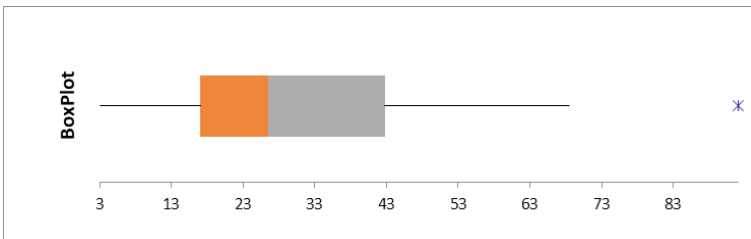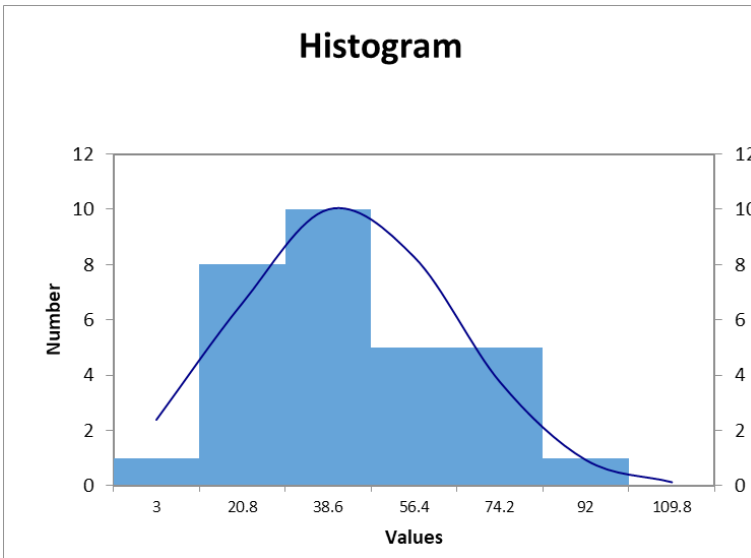
Anderson-Darling	Data is Normal
A-Squared	0.656
p	0.078
95% Critical Value	0.787
99% Critical Value	1.092
Mean	33.033
Mode	6.000
Standard Deviation	22.904
Variance	524.585
Skewness	0.803
Kurtosis	0.077
n	30.000
StdErr	4.182
Minimum	3.000
1st Quartile	17.000
Median	26.500
3rd Quartile	42.750
Maximum	92.000
Range	89.000
Confidence Interval	8.552
for Mean (Mu)	24.481
0.95	41.586
For Stdev (sigma)	18.241
	30.790
for Median	21.000
	39.000
k-Factor Two-sided	-32.050
0.99	98.117
k-Factor One-sided	-24.810
	90.877
k Two-sided	2.842
k One-sided	2.525

Figure 1. Anderson-Darling Normality Test of Algerian, Saudi, and native abstracts

Concurrently, a normal distribution is proven via the probability plot below in figure two for the three groups of abstracts with a P-value > 0.05 and the Standard Deviation (SD) equals 22.904 as shown in figure two below. As a result, the Null Hypothesis (H0) stating that there is no statistically significant difference between the three groups of abstracts is accepted and the alternative (HA) is rejected.
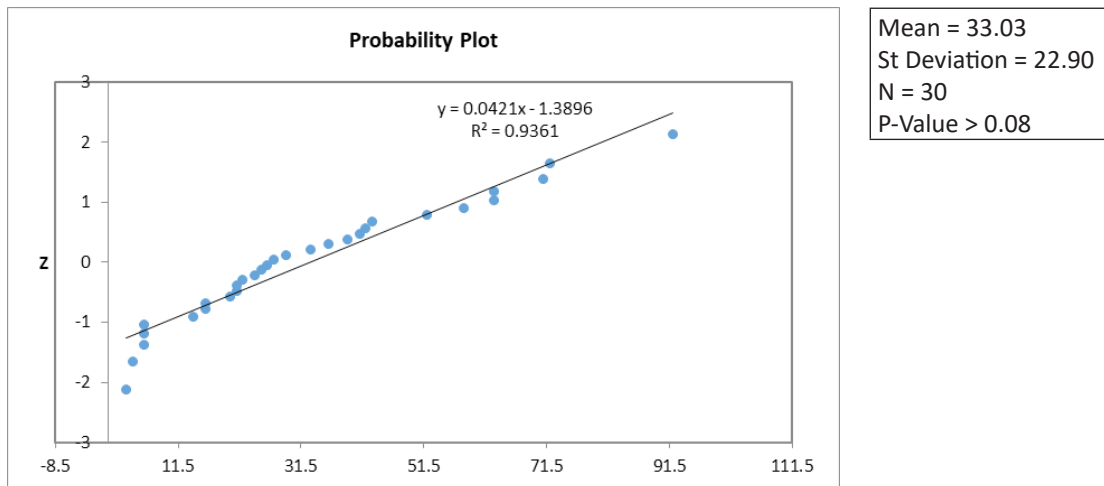
Figure 2. Probability Plot of the Normal Distribution of the Three Categories of collected abstracts

The second required test for the One-Way ANOVA is Levene's test Equality of Variances and Multiple Comparisons (homogeneity of variance) are inferential statistical tests. This required test is conducted to evaluate the supposition related to the variance of the population from which we have drawn samples and to ensure their equality (i.e. the null hypothesis H0: μ1 = μ2). Contrary to this, the alternative hypothesis (Ha) states that the variances between the populations from which we drew the samples are unequal (i.e. HA: μ1 ≠ μ2).

In figure three below, the p-value in Levene's Test for Equality of Variances and Multiple Comparisons Test is 0.760 (i.e., p >.05). This indicates the equality of the variances among the populations from which the samples are drawn. To sum up, the null hypothesis (H0) is accepted while the alternative is rejected.
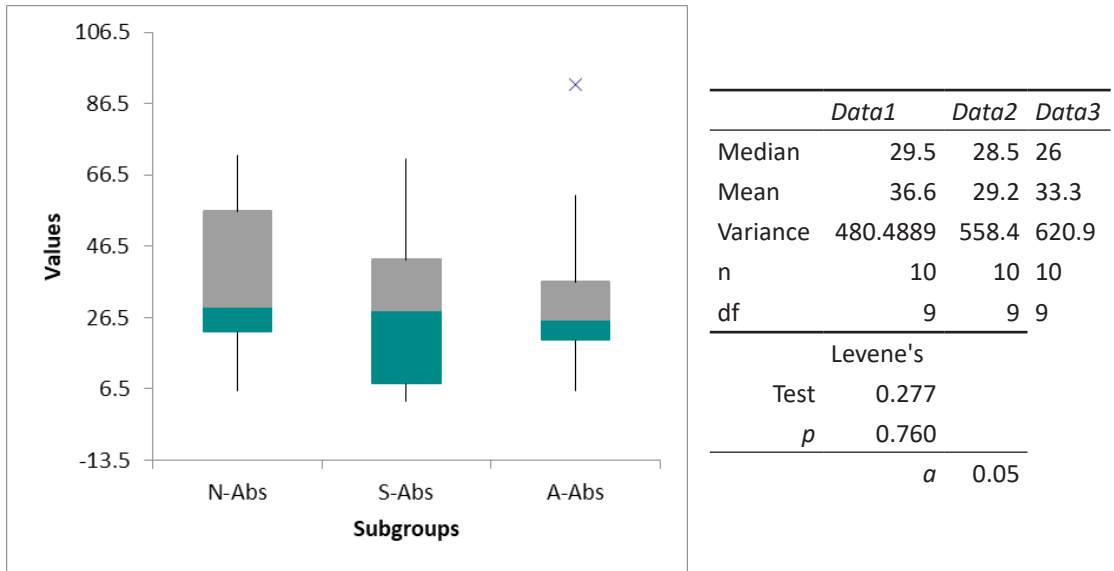
	Data1	Data2	Data3
Median	29.5	28.5	26
Mean	36.6	29.2	33.3
Variance	480.4889	558.4	620.9
n	10	10	10
df	9	9	9
Levene's			
Test	0.277		
p	0.760		
a	0.05		

Figure 3. Levene's Test for Equal Variances Among Native, Saudi, And Algerian Abstracts Multiple Comparison Intervals for Standard Deviation, A = 0.05

As mentioned above in figures one, two, and three, normality and homogeneity were satisfied through the Anderson-Darling Normality Test and Levene's Test for Equality of Variances, we move to the One-Way ANOVA test to assess if there is a significant statistical difference between the means of the three groups of abstracts (Algerian, Saudi and Native abstracts). Below, the p-value is indicated to be 0.782, which is higher than 0.05; accordingly, the null hypothesis (Ho) states that $\mu1 = \mu2 = \mu3$ is accepted and the alternative states that at least two of the means of the three groups of abstracts are not equal is rejected. To sum up, the accepted hypothesis clarifies that there is no significant statistical difference between the amounts of metadiscourse markers of both categories (i.e. Interactive and Interactional) between Native, Algerian and Saudi abstracts in their research papers in the field of applied linguistics.

Groups	Count	Sum	Average	Variance		Scheffe	57.79524	
N-Abs	10	366	36.6	480.4889		Post Hoc	N-Abs	S-Abs
S-Abs	10	292	29.2	558.4		S-Abs	7.4	
A-Abs	10	333	33.3	620.9		A-Abs	3.3	4.1
						Colored cells have significant mean differences		
ANOVA				Cannot Reject Null Hypothesis because p > 0.05 (Means are the same)				

Source of Variation	SS	df	MS	F	P-Value	F crit
Between Groups	274.8667	2	137.4333	0.248405	0.782	3.354131
Within Groups	14938.1	27	553.263			

In table six below, a detailed and summarized count of metadiscourse markers in the three groups of abstracts (Native-N, Saudi-S, and Algerian-A) is drawn for the sake of a deeper and more clarified contrastive analysis. The devices are coded from one to ten to closely examine the similarities and the differences between the metadiscourse markers usage in the three groups. By considering the Native-N abstracts as a benchmark as shown in the first column, both Saudi and Algerian abstracts will be compared to this benchmark by going through each metadiscourse marker individually.

		Native Abstracts "N"	Saudi Abstracts "S"	Algerian Abstracts "A"
1.	Transitions	63	71	92
2.	Frame markers	72	41	58
3.	Endophorics	24	52	20
4.	Evidential devices	63	43	25
5.	Code glosses	22	4	27
6.	Hedges	33	6	39
7.	Boosters	6	3	21
8.	Attitude markers	26	14	29
9.	Engagement markers	36	16	6
10.	Self-mentions	21	42	16

Table 6. Summary of the Metadiscourse Markers in Native (N), Saudi (S), and Algerian (A) Abstracts

For a more in-depth analysis of metadiscourse markers in the three groups' abstracts, the scatterplot in figure four below details the findings. As for transitions, which are the relatively most used markers in both Saudi and Algerian abstracts, both seem to

be using this specific marker more than the natives, with a closer count of the natives from the Saudi side. Frame markers as the most employed marker in Native abstracts and Saudis' usage of this marker are further from Algerians'. What has been recorded as well is the close count of endophorics in Algerian abstracts to the benchmark, while Saudis' usage of this device is almost double the norm. Evidential devices are among the most employed devices in native abstracts, both Saudi and Algerian abstracts come far below N-level with a closer count for Saudi abstracts. Algerian abstracts are very close to the norm of native abstracts as far as the use of code glosses is concerned, while Saudi abstracts count way less. Shifting to interactional metadiscourse markers, the amount of hedges used in Algerian abstracts is very close to the native level, and the Saudi abstracts count way less. Contrary to hedges, boosters are used in Saudi abstracts in a closer number to the native level than Algerian abstracts. Attitude markers are used more closely by Algerian researchers to their native counterparts than Saudis do. Both Saudi and Algerian abstracts scored very low count of engagement markers in comparison to the native level. Finally, with double the number, self-mentions in Saudi abstracts are higher than the normal (native) rate, while Algerian abstracts are relatively closer to the norm.
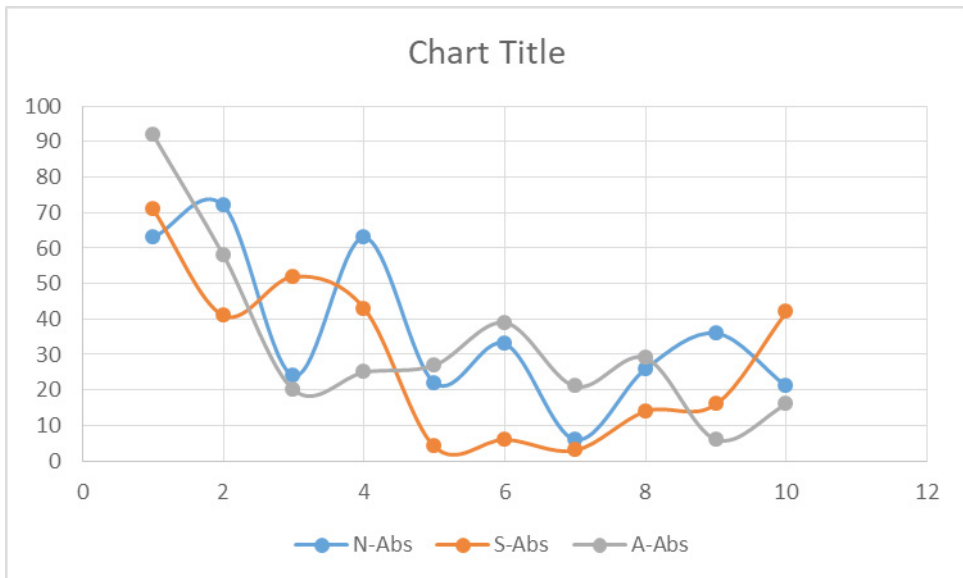

Figure 4. Scatterplot of Native-N, Saudi-S, and Algerian-A Recorded Metadiscourse Devices in the Abstract Section

Discussion and Summary of the Main Results

This section summarizes the main research results by providing a brief elaboration of the three main research questions raised in this study. The first investigated the usage of metadiscourse markers, both interactive and interactional, in Saudi and Algerian research abstracts in the field of applied linguistics in comparison to their native

counterparts. By taking the native abstracts and their use of metadiscourse markers in this important section of research papers as a benchmark, it has been noted that the Saudi abstracts were closer to the native norm in the employment of transitions only. The remaining interactive and all interactional discourse markers in Saudi abstracts were far in count from the native benchmark. The Saudi scholar's use of transitions is a clear indication of the attention they pay to keeping a smooth flow of ideas in a coherent and organized manner.

As far as endophorics, frame markers, code glosses, hedges, attitude markers, and self-mentions, Algerian abstracts seem to have a close count of metadiscourse markers to the native usage of these devices in this specific section of the research paper. The use of endophorics shows the Algerian researchers' sense of academic responsibility to avoid any form of plagiarism through citing and cross-referring sources. As for frame markers, their use shows efficient sequencing and organization skills to create some kind of in-text interactiveness by Algerian scientists. They also tend to elaborate and explain data through the use of code glosses to maintain a strong relationship with the reader. Ho and Li (2018) back up this by claiming that the proper use of hedges, evidential devices, and endophorics, as we noticed with Algerian scholars' abstracts, evidently helps the researchers attract readers' full attention and build their sheer trust in the author's words. The use of hedges indicates a careful distinguishing between facts, allegations, and claims, which we have noticed close between Algerian and Native abstracts. Finally, the number of attitude markers used in Algerian abstracts was very close to the benchmark (native abstracts), this indicates the tendency towards expressing perspectives and evaluation of propositional shared data and contents; also, self-mentions were close to the native rate but still lower as Algerians might be trying to keep their work objective to a certain degree. Unlike Saudi abstracts, Algerian ones contained a larger amount of transitions than the native norm, while the use of evidential devices, boosters, and engagement markers was way lower than the benchmark. Ultimately, the use of metadiscourse markers as formulaic expressions by the Algerian researchers in the abstract section is not far from the usage of these devices by natives. By taking both cases into account (Algerian and Saudi abstracts) with the native benchmark, we can say that formulaicity, as it helps reach oral fluency and native-like proficiency (Assassi and Benyelles, 2016), can also help show a certain native-like proficiency in academic writing through the use of metadiscourse markers.

The last question that needs to be answered as well is related to the relationship between the use of metadiscourse devices and the publishing rates in indexed journals taking the abstract section as a sample. By taking a look at the Saudi and Algerian abstracts and the number of formulaic metadiscourse markers used in the abstract section, we can notice how closely the Algerian abstracts are to the benchmark set by the researcher as the native abstracts. Given the description of the sample and the corpus under study (see table.2), we noticed the low frequency of research papers written by Algerian scholars and published in high-indexed journals in comparison to both Native and Saudi Scholars. In comparing the Algerian and Saudi abstracts to the benchmark (native abstracts) in using metadiscourse markers following the higher

frequency of published papers in indexed journals by Saudi researchers, we can conclude that the use of such formulaic markers is not the only indicator of research quality and scholarly leading publications. Nevertheless, this does not neglect the importance of metadiscourse markers in academic written research.

Conclusion and Implications

This research paper aimed at examining the use of metadiscourse markers in Algerian, Saudi, and Native research papers specializing in applied linguistics, which opting for the abstract section as an important part of academic written research. The mixed-methods study that examines these devices in both frequency and function resulted in a different frequency of use between the three groups. The study revealed the excessive use of transitions by Algerian researchers in the abstract section, while their use of frame markers and hedges is still higher than any other remaining devices. As for Saudi abstracts, we have noticed that they consist of higher frequencies of transitions and code glosses. Natives, on the other hand, counted heavily on the frame markers and evidential devices in developing their abstracts. What is concluded from these findings is that both Algerian and Saudi researchers approach persuasion in different rhetorical conventions. On the same train of thought, even if the Algerian researchers have less academic interaction (e.g. academic cooperation) with natives, possess less experience in publishing papers in high indexed journals in the field of applied linguistics, and are provided with fewer materials and opportunities in academia than Saudis, they are still closer to the native benchmark in using metadiscourse markers appropriately in the abstract section. Finally, this paper, through its findings, tried to shed light on the importance of metadiscourse markers in academic research in general and the abstract section in particular as the summary of the whole research article. Additionally, the researchers attempted to help educators put more focus on teaching metadiscourse markers and such formulaic expressions to their students for a better and more organized academic written product.

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