Journal of Humanities and Tourism Research

Research Article

The Use of Metadiscourse Markers in the Academic Writing of Hard and Soft Domains

Üstsöylem Belirleyicilerinin Fen ve Sosyal Bilimler Alanlarındaki Akademik Yazımlarda Kullanımı

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Citation: Alia, M. M., Jomaa, N. J. ve Yunus, K. (2020). The use of metadiscourse markers in the academic writing of hard and soft domains. *Journal of Humanities and Tourism Research*, 10 (3): 627-644.

Submitted: 03.08.2020
Accepted: 27.08.2020

Abstract

The authorial voice is a significant aspect in the academic genres. Therefore, the issue of metadiscourse markers has been analysed by several studies. Hence, this study explores the use of metadiscourse in the abstracts of 100 journal articles published in ten Scopus indexed journals listed as the top free access journals based on the Scientific Journal Ranking (SJR) website. Five journals belong to the hard domain, whereas the other five journals belong to the soft domain. The Systemic Functional Linguistics approach (SFL) was adopted to analyse the frequency and wordings of modality within the 100 abstracts. Data were analysed manually qualitatively and quantitatively in order to highlight the possible similarities and differences between the abstracts of the hard domain and the soft one. The findings showed that the writers of both sets of abstracts employed finite modal operators, verbs, mood adjuncts, and comment adjuncts in expressing modality. These metadiscourse markers expressed different types, value, and orientation regarding modalization and modulation. Consequently, these findings could be employed pedagogically to equip novice writers with the linguistic skills that basically contribute to their academic success in writing academic genres.

Keywords: *Academic writing, Metadiscourse Markers, Modality, Systemic Functional Linguistics*

Özet

Yazarsal aktarım akademik türler içinde önemli bir yer teşkil etmektedir. Üstsöylem belirleyicilerinin analiz edildiği birkaç çalışma bulunmaktadır. Bu çalışmada Scientific Journal Ranking (SJR) adlı internet sitesinin sıralamasında yer alan 10 Scopus endeksli dergiden seçilen 100 makalenin özetindeki üstsöylem belirleyicilerinin kullanımı incelenmiştir. Bunlardan 5 dergi fen bilimleri, diğer 5 dergi ise sosyal bilimler alanına aittir. Araştırmaya konu olan 100 özetin frekans ve cümle yapısı bakımından analiz edilmesinde Sistemik Fonksiyonel Dilbilim (SFL) yaklaşımı kullanılmıştır. Elde edilen veriler fen ve sosyal bilimler alan özetleri arasındaki benzerlik ve farkları tespit etmek amacıyla nicel ve nitel olarak analiz edilmiştir. Bulgular yazarların özetlerde kiplik belirtmek için sınırlı sayıda kip, fiil, yardımcı ifade ve yorum belirteçleri kullandıklarını göstermektedir. Bu üstsöylem belirleyicileri kiplik ve modülasyona dair farklı tür, değer ve yönelim göstermektedir. Sonuç olarak, bulgular, akademik alanlarda çalışacak yeni yazarların donanımına katkıda bulunması amacıyla Eğitim Bilimsel açıdan kullanılabilir niteliktedir.

Anahtar Kelimeler: *Akademik yazım, Üstsöylem Belirleyicileri, Kiplik, Sistemik Fonksiyonel Dilbilim*

1. INTRODUCTION

Studies on the academic writing have focused on stance, particularly in linguistics-based writing research (Gray & Biber, 2012; Hyland, 2012; Liu, 2013; Hamoy, 2014; Akinci, 2016; Jomaa & Bidin, 2017; Hyland & Jiang, 2018a; Jomaa & Alia, 2019). Since the level of personality in a text is crucial to maintain successful interaction with the readers and establish a convincing argument, writers annotate their claims either explicitly or implicitly to correspond with the context of the field and the audience's expectations. In this line, Jomaa and Alia (2019) argue that writers should meet these expectations by means of understanding the linguistic principles of each discipline. Therefore, the advanced academic literacy assumes that mastering the disciplinary practices plays a role in enhancing students' control of the varied cultural and linguistic structures that are essential for them to engage critically with the texts (Hyland & Jiang, 2018a) by means of the metadiscourse markers. In other words, successful writers should be familiarized with using a range of rhetorical features to highlight the novelty of their research, evaluate their findings, and establish harmony with their readers (Hyland & Jiang, 2018b). Therefore, Morton and Storch (2019) recommended exploring the use of the authorial voice in L2 academic writing. Hence, this study explores the use of metadiscourse markers in the abstracts of 100 journal articles in the soft and hard disciplines utilising the Systemic Functional Linguistics approach.

2. LITERATURE REVIEW

Writing skill is the most difficult one since it needs constant practices as well as reading good sources. In other words, academic writing skills have to be learnt because the issue is not just about putting thoughts into words. Rather, academic writing involves logic, credibility, conviction, clarity, precision, cohesion, and organisation. Hence, a good piece of academic writing should be well-supported and demonstrates a critical thinking (Hei & David, 2015). In this regard, writing in English as a non-native speaker has influences on the ability of the writer in conceptualizing the writer-reader relationship in the different cultural contexts since communicating ideas by means of the written language can be considered as building the relationship between the author and the reader.

The varied use of the metadiscourse markers may also reflect different social norms for interpersonal relationships (Ozdemir & Longo, 2014). That is, writing in the second language depends on several linguistic devices to reveal the writer's stance and positioning. These include citations, reporting verbs, and metadiscourse markers. The role of this latter aspect, namely metadiscourse, is to organize texts, reveal the stance of the writer, and engage the readers (Jomaa & Alia, 2019). Hence, stance can be seen as an attitudinal dimension and contains structures which reveal the ways the writers introduce themselves and express their opinions and commitments. It is the way that writers intrude to stamp their personal authority onto their arguments or step back and disguise their engagement (Hyland, 2005, 2018). Therefore, several studies have been conducted on the use of the authorial voice in the academic genres (e.g. Jomaa & Alia, 2019; Dressen-Hammouda, 2014; Hood, 2010; Zhao & Llosa, 2008). That is, corpus-based approaches have provided insights by identifying and quantifying the linguistic and rhetorical features related to the use of the authorial voice (e.g. Hyland, 2008, 2010; Thompson, 2012). For instance, Hyland's study focused on the disciplinary differences in the use of the authorial voice. In his study, Hyland (2010) investigated the use of the interactional and evaluative linguistic devices, such as boosters and hedges across disciplines. In their study, Morton and Storch (2019) found that students in the humanities and social sciences used more 'self-mentions' compared to students from the hard sciences due to epistemological differences of the disciplines.

A study by Ozdemir and Longo (2014) investigated the cultural variations in the use of the metadiscourse markers between Turkish (26) and USA postgraduate students' abstracts (26) in MA thesis written in English employing Hyland's (2005) taxonomy. Hence, the corpora in their study comprised a total of 52 thesis abstracts written in English. The analysis revealed that Turkish students used metadiscourse transitions, frame markers, and hedges more than USA students.

In another study, Noorian and Biria (2017) investigated the persuasive role of the interpersonal metadiscourse markers in L2 opinion articles written by a group of American and Iranian EFL journalists. Though both groups were found to use interpersonal metadiscourse, significant differences concerning the occurrences of the interpersonal markers were noticed due to different factors like culture-driven preferences, genre-driven conventions, and Iranian EFL writers' extent of foreign language experience. As a result, their study stressed the need for more contrastive studies in the area of metadiscourse in L2 writing courses.

The ethnolinguistic factors were explored by Hashemi and Hosseini (2019) to investigate the effect of culture on adopting a stance in the applied linguistics research articles of two groups: native speakers of Persian and native speakers of English based on Hyland's (2005) model. The findings revealed varied use of stance markers, whereby hedges, boosters, attitude markers, and self-mentions were utilized differently. Their findings also illustrated that culture affects stance features, thereby may negatively affecting the Persian writers' socialising into an English culture. Consequently, their study implied that EFL writers should be provided with the conventions and patterns like thinking devices for a better academic writing.

In the context of the Malaysian universities, Jomaa and Alia's (2019) study related to the use of the metadiscourse in L2 academic writing analysed the frequency of modality in the citations of the literature review chapters of 20 Ph.D. theses employing the Systemic Functional Linguistics. Their study identified the constituents of the clause involving mood adjuncts, comments adjuncts, and finite modal operators which are used to communicate modalisation and modulation in the integral and non-integral citations. The findings showed that EFL postgraduates showed lack of knowledge in the evaluative expressions and a difficulty in adopting an authorial stance (Jomaa & Bidin, 2017). However, due to having limited information on how expert authors use the metadiscourse in outstanding journals, the current study explored the use of metadiscourse devices in Scopus indexed journals representing the hard and the soft domains.

3. METHOD

3.1.Research Framework

The present study is based on analyzing the use of the metadiscourse markers in the abstracts of ten Scopus indexed journals in the hard and the soft domains. The metadiscourse constituents were analyzed based on the modality under the Systemic Functional Linguistics (Halliday, 1985; Halliday & Matthiessen, 2014). According to Halliday & Matthiessen (2014), polarity is a choice between yes and no, but there are intermediate degrees which reveal that these are not the only possibilities. These degrees can be described as different sorts of indeterminacy that fall in the middle like '*sometimes*' or '*maybe*'. These intermediate levels, between the positive and negative poles, are known collectively as MODALITY. Hence, the modality system construes the region of uncertainty that lies between '*yes*' and '*no*'. In other words, modality can be explained as the speaker's judgment or the request of the judgement of the listener/reader on the status of what is being said (It could be…./ Could not it be?) Both polarity and modality can be realized through the Mood element either through the Finite element (It must be….) or through a separate mood Adjunct (It certainly is……..). The interpersonal judgment, however, extends beyond the 'core' grammatical system of modality to include the assessments of temporality and intensity.

These can be realized like modality through mood Adjuncts (e.g. It already is……/ It almost is……), and other types of assessments beyond the mood itself that relates either to the proposition being exchanged (e.g. Fortunately, it is……) or to the act of exchanging it (e.g. Frankly, it is……).

Sampling

The current study employed a purposeful sampling in choosing the abstracts of ten top journals, including, as shown in Table 1, Economics, Linguistics, Literature, Education and History that belong to the hard domain. On the other hand, Medicine, Engineering, Chemistry, Physics, and Computer Science belong to the hard domain. Ten articles were taken from each journal.

Table 1. The sampling of the current study

Specialisation	Number of abstracts	Year/s of publication	Words
Economics	10	2018/2019	1605
Linguistics	10	2016/2017/2018	1969
Literature	10	2018/2019	2154
Education	10	2018	2044
History	10	2018	2586
Medicine	10	2016/2017/2018	2888
Engineering	10	2017/2018/2019	3058
Chemistry	10	2019	1709
Physics	10	2017/2019	1809
Computer Science	10	2019	2115
Total	100 Abstracts		21937 words

4. RESULTS

4.1.Components of the Clause

In clauses of the abstracts used to exchange information, two components are involved: MOOD and RESIDUE. MOOD involves the 'Subject' and the "Finite', whereas the RESIDUE consists of a 'Predicator', a 'Complement', and an 'Adjunct' as explained in Examples (1) and (2).

Example (1)

They	can	experience and develop an awareness of the behaviors required to facilitate their future.
Subject	Finite	
Mood		Residue

(Soft domain/Linguistics/First abstract)

Example (2)

Vaccination and health care providers	should	check CDC's influenza website periodically for additional information.
Subject	Finite	
Mood		Residue

(Hard domain/Medicine/10th abstract)

4.2.Mood Components of the Clause

The MOOD component of the clause consists of two constituents which are the 'Subject' and the 'Finite', as in Example (3).

Example (3)

Russia	Can	Only connect to the political, economic, and cultural life of eurasia.
Subject	Fınıte	
Mood		

(Soft domain/History/4th abstract)

The second essential constituent of the MOOD in full declarative clauses is the 'Finite' which is the verbal type element. The functional role of the 'Finite' in the clause is to make the proposition definite and arguable. In other words, the 'Finite' is used to express modalisation (probability/certainty) and modulation (obligation/inclination). Example (4) demonstrates the 'Finite' as a constituent in the clause.

Example (4)

Players	may	show characteristics different than their player type.
Subject	FINITE	
Mood		Residue

(Soft domain/Education/1st abstract)

Table 2 shows the number and frequencies of using the 'Finite' to express modality in the abstracts of the journal articles.

Table 2. 'Finite' in the Abstracts of Hard Domain and Soft Domain Articles

Modality	Soft domain		Hard domain		Total
	F	%	F	%	
Modalisation (probability and usuality)	54	50.5%	53	49.5%	107
Modulation (obligation and inclination)	9	42.86%	12	57.14%	21
Total	63	49.2%	65	50.8%	128

The abstracts of the soft and hard domains journal articles approximately have the same percentage of using the 'Finite' to express modalisation (50.5%) and (49.5%), respectively. Quantitatively speaking, this percentage may be affected by tenor as a variable of the register. Therefore, after taking this issue into consideration, the authors of the soft domain journals used more finite modal operators expressing modality compared to the hard domain. Although the difference is not that noticeable, it may reveal the influence of tenor that is represented by the authors of each domain. Those who belong to the academic community of the soft domain inclined to use a higher frequency of modality since the soft domain is based on the strength of the arguments. Conversely, those who belong to the academic community of the hard domain used modality with a lower frequency since the hard domain is based on facts rather than arguments. Consequently, modality was used with a lower percentage. However, the authors in the soft domain used less 'Finite' modal operators (42.86%) than the authors in the hard domain (57.14%) to express modulation, (9) and (12), respectively. These occurrences, however, may not be generalized due to the small numbers of the abstracts.

Identifying the 'Finite' constituent is based on the sequence. In other words, when there is a group of verbal elements, the 'Finite' constituent is the first part of the verbal group, as in example (5).

*(5) Children **could play** the game autonomously with minimum adult assistance. (Soft domain/Education/8th abstract)*

In some examples, there is no explicit 'Finite' constituent in the clause. Rather, the 'Finite' is fused with the predicator, as in example (6).

(6) *The evidence collected **suggests** that PEN is a suitable replacement for TPB in liquid argon neutrino detectors. (Hard domain/Physics/2nd abstract)*

In example (6), the first clause has no explicit 'Finite' constituent. Rather, the 'Finite' is fused with the Predicator '*collected*'. Hence, the 'Finite' constituent is of two kinds; *Temporal Finite Verbal Operators* anchor the proposition by reference to time. These give tense to the finite, including the present, past or future. The examples below demonstrate the use of the 'Finite' as a '*Temporal Finite Verbal Operator':*

*(7) The present study **investigates** how Ian McEwan's Enduring Love (1997) re-defines human ethical qualities within a Darwinian framework. (Soft domain/literature/4th abstract)*

*(8) We **investigated** their effects on the gas transfer velocity of CO_2 in a large annular wind-wave tank filled with natural seawater from the North Atlantic Ocean. (Hard domain/Ocean Engineering/4th abstract)*

*(9) Quadrivalent vaccines **will** include an additional influenza B virus strain, a B/Phuket/3073/2013–like virus (Yamagata lineage). (Hard domain/Medicine/10th abstract)*

In examples (7) and (8), the 'finite verbal operator' in '*investigates*' refers to the simple present and the 'finite verbal operator' in '*investigated'* refers to the simple past. However, in example (9), the 'finite verbal operator' represented by '*will*' refers to the future tense explicitly.

The other kind of Finite is called '*Finite Modal Operators*'. These kinds of 'Finite' make the proposition arguable by allowing the author to adopt a stance and project his/her voice. In other words, the author can express his/her attitude through either modalisation involving probability and/or usuality or modulation involving obligation and/or inclination. This stance can range from high, though median to low. The examples below illustrate such use of the 'Finite Modal Operators' to express modalisation (probability and certainty).

*(10) Russian domination, influence, control and pressure **may** also be reasons for lack of progress and success. (soft domain/history/5th abstract).*

*(11) This Special Issue **will** hold great interest for both experts and general readers. (Soft domain/history/6th abstract)*

In example (10), the Finite '*may*' reveals a low stance of probability. In contrast, the Finite Modal Operator '*will*' in example (11) expresses a median stance of probability. Consequently, between positive and negative clauses, two degrees of probability were found, including median and low, as in Figure 1.

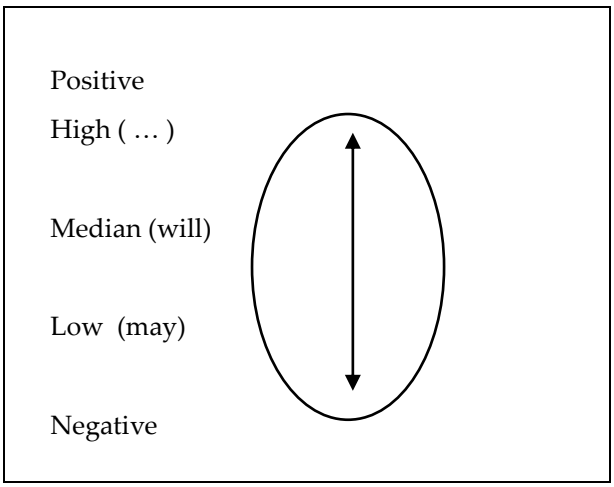


Figure 1. Finite Modal Operators to Express Degrees of Probability

Finite Modal Operators are not limited only to Modalisation to express probability, but they are also employed to express Modulation with different rates of stance ranging from high through median and low. Modulation included expressing either obligation and/or inclination, as in examples (13) and (14).

(13) *With this approach, the rotational effects* ***must*** *be included in the contact formulation.* (Hard domain/Computer science/5th abstract)

(14) The study explains why game-based learning activities with Kinect technology ***should*** *be integrated into the foreign language courses. (Soft domain/Education/10th abstract).*

In example (13), the Finite Modal Operator '*must*' is used to express a high stance of obligation. On the other hand, the Finite Modal Operator '*should*' in example (14) expresses a median stance of obligation, as demonstrated in Figure 2.

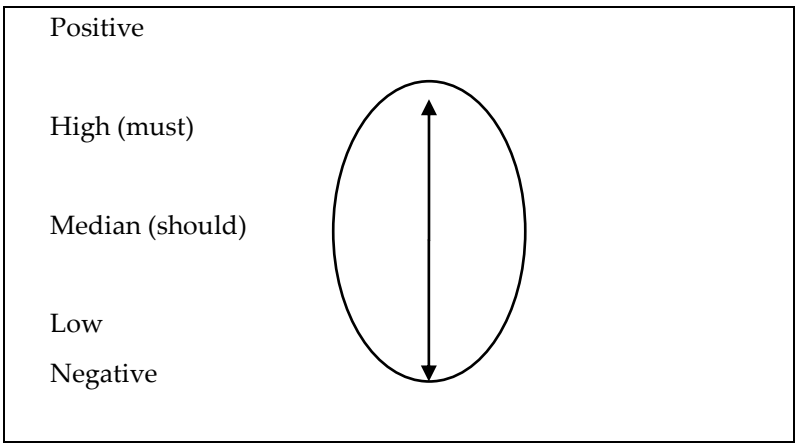


Figure 2. Finite Modal Operators to Express Degrees of Obligation

These Finite Modal Operators are also used to express inclination, as in example (15).

(15) *Accordingly, more focus* ***will*** *be on the poet's experiences. (SD/Literature/6th abstract)*

Finite constituents can carry another semantic feature which is *polarity*. This polarity makes the proposition either positive or negative, as in example (16).

(16) In practice, this means that researchers ***cannot*** *eliminate or even alleviate problems of model misspecification by choosing K. (soft domain/economics/6th abstract)*

However, in non-finite clauses, there is no 'Finite' constituent. This includes perfective and imperfective clauses as in example (17).

*(17) The findings are significant in that they suggest a relationship between content analysis for SP and SNA measures, **implicating** SNA as an emerging research method for the investigation of SP. (Soft domain/linguistics/2nd paragraph)*

To conclude, 'Finite' constituents were either explicitly used or implicitly fused with the predicator. These 'Finite' constituents significantly indicate the tense, make the proposition arguable, and imply polarity. Figure 3 presents the numbers of finites revealing modality in the abstracts of each journal.

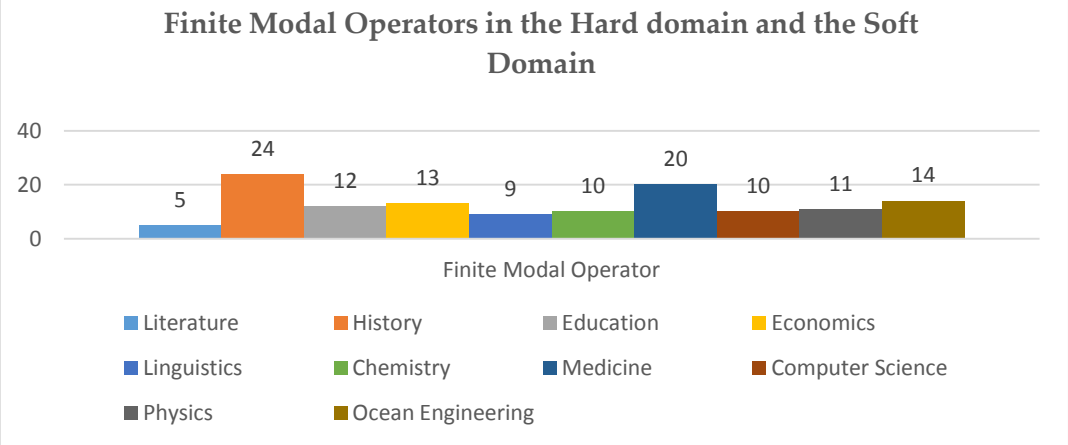


Figure 3. The Frequencies of Finite Modal Operators Revealing Modality

The highest percentage of finite was found in the abstracts of history from the soft domain and medicine from the hard domain, (24) and (20), respectively. Unexpectedly, the lowest occurrence of the use of finite to express modality was found in the literature abstracts (5). In contrast, the medicine abstracts showed a higher frequency of the finite modal operators expressing modality. This result might show the tendency of the authors in the medicine field to discuss the probable effects of specific vaccinations. That was also true for the history abstracts which showed the highest percentage compared to other abstracts. This can be ascribed to the authors' tendency to make their discussion arguable. The other journals included finite modal operators to express modality, modalisation and modulation, ranging from (9) in the Linguistics abstracts through (10), (10), (11), (12), (13) in the Computer Science, Chemistry, Physics, Education, and Economics, respectively, to (14) in Ocean Engineering abstracts.

4.3.Residue Component of the Clause

The second component of the clause is RESIDUE, which is less essential to the arguability of the clause. Similar to MOOD, the RESIDUE includes more than one constituent, including a 'Predicator', a 'Complement', and an 'Adjunct'. The predicator, which is the lexical part of the verbal group, carries the lexical meaning and specifies the type of the processes involved in the clause, as demonstrated in examples (18) and (19).

(18) This article examines U.S. policy toward the supercontinent of Eurasia from the collapse of the Soviet Union to the present. (Soft domain/History/6th abstract)

(19) The presented work proposes to improve the Distinct Lattice Spring Model in order to deal with non-regular domains. (Hard domain/Computer science/5th)

In both examples (18) and (19), when analyzing the clause based on the constituents used, the predicator 'examines' is divided into two parts; half a part is in the MOOD component of the clause, whereas the other part is in the RESIDUE component of the clause, as in example (20) .

(20)

Strong winds	transported		the larval plume far longshore, to the NW, away from the Capricorn Bunker Group
Subject	Finite	Predicator	Complement
Mood		Residue	

(Hard domain/Ocean Engineering/3rd abstract)

The 'Complement' constituent that follows the predicator is the second constituent of the RESIDUE, as in example (21).

*(21) This will require **computational models**. (Hard domain/Chemistry/4th abstract)*

The main function of the 'Complement' is to enhance the clarification of the communicated information. 'Adjunct' is another constituent of the RESIDUE that is either adverbial or prepositional rather than nominal and adds additional information that is not essential to the clause.

*(22) This paper studies sinthomatique writing (a) **in Saul Bellow's** **Herzog** (b) **in the form of letter-writing**. (Soft domain/literature/3rd abstract)*

Adjuncts that add information to the interpersonal meanings encompass two types: Modal Adjuncts and Comment Adjuncts. Modal Adjuncts are also constituents that add interpersonal meanings to the clause. Only two types of Modal Adjuncts including Mood Adjuncts and Comment Adjuncts were found in the abstracts of the 100 abstracts. Mood Adjuncts are considered as a part of the MOOD component of the clause, thus revealing a meaning that is closely related to the Finite Modal Operators. In other words, the Mood Adjuncts were used to express modalisation (probability and usuality). For more clarification, in example (23), the Mood Adjunct '*likely*' expresses a median stance of probability, whereas example (24) includes the Mood Adjunct '*always*' to reveal a high degree of usuality of the action.

*(23) Instruction on perception contrasts is more **likely** to be successful with the use of phonetically variable input. (Soft domain/linguistics/8th paragraph)*

*(24) Although these recommendations are meant to serve as a source of clinical guidance, health care providers should **always** consider the individual clinical circumstances of each person seeking family planning services. (Hard domain/Medicine/6th abstract)*

Table 3 demonstrates the number of Mood Adjuncts used in Modalisation to reveal either probability or usuality. (28) Mood Adjuncts were used in the abstracts of the ten journals. (42.86%) of Mood Adjuncts were used in the soft domain abstracts, whereas (57.14%) were used in the hard domain abstracts. That is probably because both groups are familiar with the use of the mood adjuncts. The majority of these Mood Adjuncts express modalisation (usuality); (61.11%) were used in the hard domain abstracts, whereas (38.89%) were used in the soft domain abstracts. That may be ascribed to the good level of knowledge in using such expressions by the authors in the hard domain more than those in the soft domain. The high use of usuality markers can be due to the focus on the importance of mood adjuncts in teaching the English tenses. This was followed by Mood Adjuncts to reveal probability.

Table 3. Mood Adjuncts in the Abstracts of the Soft and Hard Domain Abstracts

Modalization	Soft domain		Hard domain		Total
	F	%	F	%	
Probability	5	55.56%	4	44.44%	9
Usuality	7	38.89%	12	61.11%	19
Total	**12**	**42.86%**	**16**	**57.14%**	**28**

The stance of revealing probability by means of the Mood Adjuncts is also of different degrees ranging from high through median to low, as in examples (25) and (26).

(25) *The authors assume that the evolution of the international system goes in the direction of a new bipolarity, where Eurasia will play a role of a new geostrategic and economic pole, while the West, **probably** limited by "Greater America" will become another one. (Soft Domain/History/2nd abstract)*

(26) *The systematic increase in the ligand quotient with dissolved iron concentration **likely** contributes toward the trend of increasing ligand quotient. (HD/Ocean engineering/9th abstract)*

The Mood Adjuncts '*probably*' and '*likely*' are used to express a median stance of probability. Similarly, Mood Adjuncts are also used to reveal the stance of frequency and usuality. This stance has different grades, ranging from high through median to low, as in examples (27), (28), and (29), respectively.

*(27) Although these recommendations are meant to serve as a source of clinical guidance, health care providers should **always** consider the individual clinical circumstances of each person seeking family planning services. (Hard Domain/Medicine/6th abstract)*

*(28) In IO applications, normalizations are **usually** made on switching costs, such as entry costs and scrap values. (Soft Domain/Economics/7th abstract)*

*(29) The 2016 U.S. Selected Practice Recommendations for Contraceptive Use (U.S. SPR) addresses a select group of common, yet **sometimes** controversial or complex, issues regarding initiation and use of specific contraceptive methods. (Hard Domain/Medicine/9th abstract)*

Figure 4 illustrates the Mood Adjuncts of probability and frequency and their different degrees used in the abstracts of the articles in both hard and soft domains.

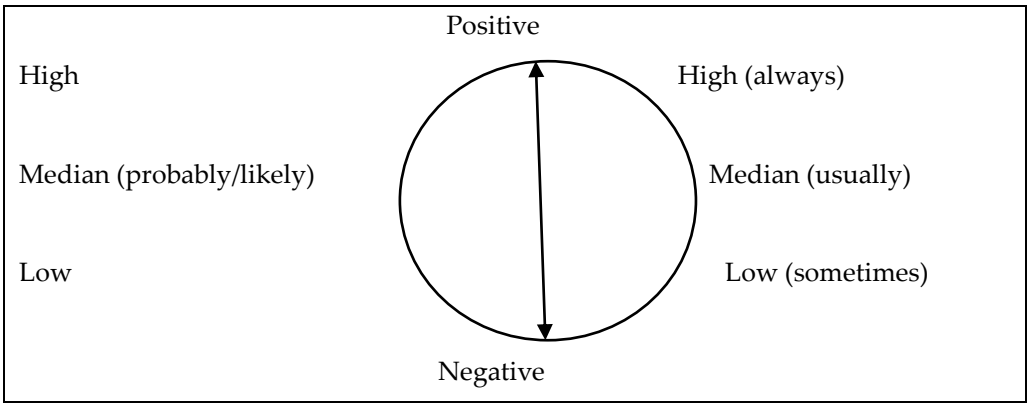


Figure 4. Mood Adjuncts of Probability and Frequency

Mood Adjuncts are also used to express other aspects of stance. These included expressing PRESUMPTION through using the Mood Adjunct 'markedly', as in example (30).

*(30) By optimizing the reaction conditions, the CO conversion could be **markedly** increased to 49.3% with a slight drop in selectivity. (Hard Domain/Chemistry/ 9th abstract)*

Another type of Mood Adjunct is used to express TIME by means of using the adverbial '*still*', as in example (31).

*(31) Students **still** cannot develop their language skills. (Soft Domain/Education/ 10th abstract)*

Mood Adjuncts can express DEGREE through using the adverbial '*entirely*' as in example (32).

*(32) Men are presented as normal sexual beings, whereas women are **entirely** excluded from this discourse. (Soft Domain/Literature/2nd abstract)*

Other Mood Adjuncts can also express INTENSITY through using the adverbials '*only*' in example (33) and '*really*' in example (34).

*(33) Results of a paired Wilcoxon signed-rank test found that participants entered the course with high expectations for the digital textbook and ratings remained high over the term, with **only** one area showing a significant decrease in engagement. (Soft Domain/linguistics/7th abstract)*

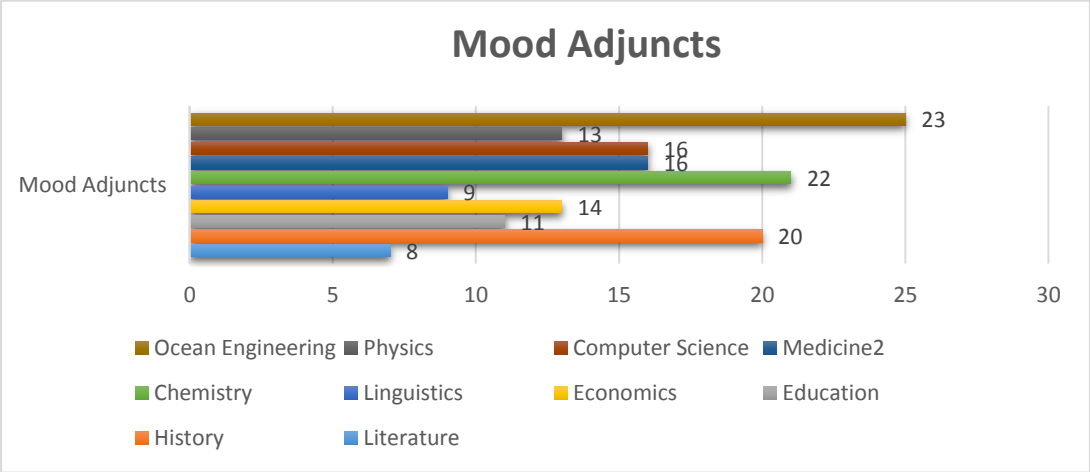
*(34) However, this calibration process may be fastidious and **really** hard to manage. (Hard Domain/Computer science/ 5th abstract)*

Figure 4 presents the number of Mood Adjuncts used in the abstracts of the articles. (152) Mood Adjuncts are used in the abstracts; a total number of 62 (40.8%) of Mood Adjuncts is used in the abstracts of the soft domain, whereas 90 (59.2%) Mood Adjuncts are used in the abstracts of the hard domain. Table 4 shows the number of modal adjuncts found in the abstracts of the journals that belong to the hard domain and the soft domain.

Table 4. The Numbers of the Modal Adjuncts Expressing Modality

Mood adjuncts	Soft Domain	Hard Domain
Probability and usuality	13	16
Intensity	13	10
Degree	20	39
Time	6	13
Presumption	10	12
Total	62	90
Total	**152**	

Figures 5 demonstrates the number of Mood Adjuncts used in the abstracts of each journal in the soft and hard domains.



Figures 5. The numbers of Mood Adjuncts used in the abstracts of each journal

Although Mood Adjuncts are secondary rather than basic constituents of the clause, they play highly significant functional roles in revealing different aspects of the author's stance. Thus, Mood Adjuncts were highly used in the abstracts, and that can be ascribed to the authors' familiarity of employing the mood adjuncts reflecting probability, usuality, degree, time and presumption, specifically by the authors in the hard domain.

Adjuncts can also add to the interpersonal meanings through using **Comment Adjuncts**. These types of Adjuncts express the author's stance about the whole clause, thus occurring in an initial position or directly after the 'Subject'. These adjuncts express different types of meanings. For example, some Comment Adjuncts express **ASSERTION** through using the adverbials '*importantly*' as in example (35).

(35) *More **importantly**, the approach is the first of its kind in the modeling of epithelial and embryonic cell layers.* (Hard Domain/Computer science/2nd abstract)

Some Comment Adjuncts express **HOW DESIRABLE** something is through using the adverbial '*unfortunately*', as in example (36).

(36) ***Unfortunately**, the existing mapping algorithms can deal adequately only with relatively simple reactions but not those in which expert chemists would benefit from computer's help.* (Hard Domain/Chemistry/ 1st abstract)

Some Comment Adjuncts reveal the **VALIDITY** of something through using the adverbials '*generally*' in example (37).

(37) ***Generally**, this difficulty is bypassed by using inverse methods, also known as calibration processes, able to translate macroscopic stress–strain relationships into local force–displacement interaction laws compatible within DEM frameworks.* (Hard Domain/Chemistry/5th abstract)

The total numbers of comment adjunct used in the soft and hard domains are (13) and (18), 40.7% and 59.3%, respectively. Figure 6 shows the percentage of using the Comment Adjuncts in the abstracts of each domain.

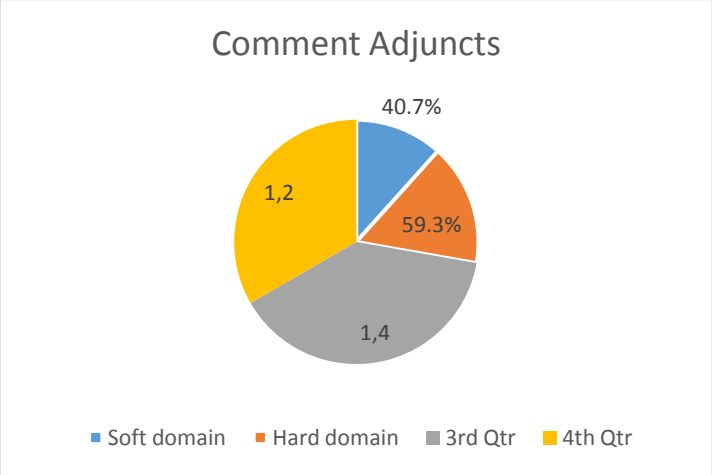


Figure 6. Comment Adjuncts Used in the Abstracts of the Hard and Soft Domains

Table 5 presents the number of comment adjuncts found in the abstracts of the ten journals' abstracts.

Table 5. Comment Adjuncts in the Abstracts of the Hard and Soft Domains

	Comment adjuncts	
	Number	%
Soft domain	11	40.7%
Hard domain	16	59.3%
Total	**27**	

Table 5 shows the use of comment adjuncts expressing modality in the abstracts of each domain. This may reflect the extent to which the authors are familiar with these conventions. Unlike the soft domain's authors, the authors of the hard domain journals showed a good level of familiarity with the use of the mood adjuncts. The authors in the soft domain were expected to use a higher level of adjuncts revealing modality since their studies depend on arguments more than those in the other group, and that can be attributed to their unfamiliarity with such conventions.

Table 6. Comment Adjuncts Expressing Modality in Each Journal's Abstract

Domain	Journal	*Occurrence*
Soft Domain	Linguistics	2
	Education	-
	Economics	2
	History	7
	Literature	-
	Total	**11**
Hard Domain	Chemistry	4
	Medicine	-
	Computer Science	6
	Physics	3
	Ocean Engineering	3
	Total	***16***

A few number of verbs were used in the abstracts to express obligation and inclination as shown in examples (38) and (39), respectively.

*(38) We investigated the pedagogical use of Spaceteam ESL, a mobile game that **requires** intelligible and fluent computer-mediated oral exchanges among players. (Soft Domain/Linguistics/9th abstract)*

*(39) This study thus **aims** to fill this gap in the literature. (SD/Linguistics/4th abstract)*

The total numbers of modality occurrences in the abstracts of the journals' articles in the soft and hard domains are (151) and (194), respectively. Regarding the authors' orientation in modalisation and modulation, both domains showed a higher percentage in the subjective orientation compared to the objective one, (62.6%) for the soft domain and (55.77%) for the hard one. However, the authors in the soft domain showed more subjectivity in their use of modality compared to the hard domain. That could be because of the fact that, unlike the soft domain, the hard domain depends on facts more than arguments and personal opinions. Consequently, the authors of the articles in the soft domain were less objective than those in the hard domain, (37.4%) and (44.23%), respectively.

Table 7 includes the total numbers of modality occurrences and the percentage of each orientation.

Table 7. The Orientation of Using Modality in the Abstracts of Hard and Soft Domains

Domain	Orientation	Occurrence	Percent	Total
SD	Objective implicit	32	35.2%	34(37.4%)
	Objective explicit	2	2.2%	
	Subjective implicit	57	62.6%	57(62.6%)
	Subjective explicit	-	0%	
Total				91
HD	Objective implicit	42	40.38%	46(44.23%)
	Objective explicit	4	3.85	
	Subjective implicit	56	53.85%	58(55.77%)
	Subjective explicit	2	1.92%	
Total				**104**

Examples (40, 41, 42, 43, 44, 45, 46 and 47) show the types of modality orientation that were found in the abstracts of each journal.

*(40) In IO applications, normalizations are **usually** made on switching costs, such as entry costs and scrap values. (Soft Domain/Economics/7th abstract) Objective/Implicit*

*(41) It **may** be that educating toward multiculturalism leads to an atmosphere of openness and egalitarianism. (Soft Domain/Education/1st abstract) Objective/Explicit*

*(43) We show that local misspecification **can** affect the asymptotic distribution. (Soft Domain/Economics/6th abstract) Subjective/Implicit*

*(44) Wounds in their tissues are **frequently** observed. (Hard Domain/Computer science/2nd abstract) Objective/implicit*

*(45) It is highly desirable to develop robust catalysts that **could** enhance the CO conversion. (Hard Domain/Chemistry/9th abstract) Objective/Explicit*

*(46) Persons **should** seek advice from their health care providers when considering family planning options. (Hard Domain/Medicine/6th abstract) Subjective/implicit*

*(47) We **believe** that the simulations will help to unravel new insights. (Hard Domain/Computer Science/2nd abstract) Subjective/Explicit*

Table 8 shows the modality orientation of each journal.

Table 8. The Modality Orientation in the Abstracts of Each Journal

Domain	Journal Specialization	Modality Orientation			
		OBJ/IMP	OBJ/EXP	SUB/IMP	SUB/EXP
SD	*Linguistics*	8	-	8	-
	Education	7	1	10	-
	Economics	6	1	12	-
	History	7	-	22	-
	Literature	4	-	5	-
	Total	**32**	**2**	**57**	**-**
HD	Chemistry	4	1	8	-
	Medicine	20	1	17	-
	Computer Science	5	-	8	1
	Physics	4	-	11	-
	Ocean Engineering	9	2	12	1
	Total	**42**	**4**	**56**	**2**

Table 8 presents the modality orientation in the journals separately. The highest occurrence in the objective one implicitly was noticeably clear in the second group; the mean number 8.4, and the highest journal in showing implicit objectivity was Medicine (20). On the other hand, the mean number in the soft domain abstracts was (6.4), and the Linguistics abstracts showed the highest occurrence of implicit objectivity orientation (8). The lowest, on the other hand, was shown in Literature (4). The total numbers of the explicit objective orientation in modality in the hard and soft domains were (4) and (2), respectively. On the other hand, the authors showed nearly the same implicit subjectivity in the soft domain (mean number 11.4) and hard domain (mean number 11.2). The highest occurrence was found in the History abstracts (22), whereas the lowest one occurred in the Literature, which is (5). Regarding the explicit subjectivity, only two occurrences where found in the hard domain, whereas none was used in the soft domain.

5. DISCUSSION

The present study adopted the modality of the Systemic Functional Linguistics Approach which aimed at exploring the use of the metadiscourse markers in 100 abstracts of 10 Scopus indexed journals listed as Q1 and are free access based on the SJR (Scientific Journal Ranking). Identifying the metadiscourse markers involved focusing on mood adjuncts, comments adjuncts, and finite modal operators used to communicate modalisation and modulation. In examining the stance of the writers, it was found that Finite Modal Operators as 'Finite' constituents and adverbials as Mood adjunct were used to reveal modalisation and/or modulation. Modalisation included probability and usuality, whereas modulation included obligation and inclination. The stance that was expressed ranged from a high stance through median to low. Comment Adjuncts were also employed in revealing varied stances. Both domains demonstrated a higher percentage in the subjective orientation compared to the objective one, (62.6%) for the soft domain and (55.77%) for the hard domain. On the other hand, the authors in the soft domain showed less objectivity in their use of modality than those in the hard domain, (37.4%) and (44.23%), respectively. That could be because the hard domain depends on facts more than arguments and personal opinions.

In this context, Dunleavy (2003) emphasized that a thesis writer should meet the expectations of their readers since English language is 'writer-responsible'. That is, the writer or the speaker is responsible for clarifying and organizing the concepts to make reading/speech easily understood by the readers/listeners (Hinds, 1987). One significant key to acknowledge their roles as writer responsible is through using metadiscourse (Dahl, 2004) in order to organize the text and

interact with the reader. Hence, Metadiscourses are used to reveal the academic voice which is rather challenging in English for non-native speaker writers (Shen, 1989; Jomaa & Bidin, 2017; Jomaa & Alia, 2019). Consequently, moderating a writer's claim is fundamental which should be neither too strong nor too weak.

Hyland (2005) and Hyland and Tse (2004) point out that metadiscourses that involve adverbs, such as hedges and boosters, are used to reveal the writer's stance and establish his/her membership to a certain academic community. The high density of mood adjuncts, comments adjuncts and finite modal operators in Applied Linguistics compared with the low number in Information Technology (Jomaa & Alia, 2019) showed the effect of tenor on the interpersonal meanings (Halliday, 1985; Halliday & Martin, 1993; Eggins, 1994; Halliday & Matthiessen, 2014). In other words, each field has its own readers who expect certain expressions and vocabulary from the writers.

6. CONCLUSIONS

Metadiscourses are used to reveal the writers' voice which is considered challenging for EFL and ESL writers (Shen, 1989; Jomaa & Bidin, 2017; Jomaa & Alia, 2019). Thus, moderating a writer's claim is fundamental which should be neither too strong nor too weak. Stance markers provide communicative strategies for emphasizing or understating a statement, especially the adverbs which are considered essential linguistic resources emplyed by writers to interact with the reader and to illustrate the degree of certainty regarding the provided information (Çakır, 2016).

Adopting the Systemic Functional Linguistics approach resulted in presenting several aspects of the metadiscourse markers, including modal adverbs, mood adjuncts, and comment adjuncts. Consequently, based on the discussion of several studies related to the use of the voice and authorial stance, it seems that the textbooks and academic materials prepared for postgraduate students should be improved in line with the disciplinary linguistic features and characteristics. In other words, these academic textbooks should focus on the norms and conventions of each discipline, such as using citations, reporting verbs, metadiscourse markers, and other discipline-specific linguistic structures. Swales' (1990, 2014) findings, Thompson and Tribble's (2001) taxonomy, Hyland's (1999) taxonomy, and Jomaa and Alia's (2019) findings can be significantly beneficial for students when included in the academic writing courses. The findings of the present study are based on analyzing the text in context. Thus, such outputs are quite applicable to be used in English for Academic Purposes (EAP) teaching (Gardner, 2012). Future studies are recommended to analyze the metadiscourse markers by non-native speakers in other genres or other disciplines in order to enrich the findings related to the field of stance and the authorial voice.

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