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The Use of Hedging Strategies in Research Articles: A Corpus Comparison of Native and Non-Native Researchers

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Abstract

Research writing in the academia has various important functions such as providing a means of sharing research findings across the world, creating opportunities for discussion of ideas and allowing for researchers to develop their reputation. Thus, research writing and publications in academic journals have become important means of communication among researchers. This communication through research papers has its own norms and conventions which are generally indicated by the academic journals themselves. Skilled research writers follow this scientific style with ease while novice and non-native research writers have to learn this type of rhetoric in order to get published in academic journals. While non-native research writers may have the necessary research writing skills in their native language, they may have difficulty transferring these skills into a non-native language. To this end, the purpose of the present study explores the use of hedging strategies by non-native Turkish researchers writing in the English language and their native peers from a comparative perspective. The genre used for comparison was published social sciences articles. In the scope of the study, two sub-corpora consisting of 100 lexico-grammatically tagged articles each extracted from the AAC-corpus and the TAC corpus were used in the study which were compiled by the researcher. AntConc concordancing program was employed to compare the hedging strategies quantitatively.

Keywords: *Research Paper, Hedging, Native Researchers, Non-Native Researchers, Corpus Linguistics*

Araştırma Makalelerinde Yumuşatma Stratejilerinin Kullanımı: Anadili İngilizce Olan ve Olmayan Araştırmacıların Derlem Yoluyla Karşılaştırılması

Öz

Akademik dünyada araştırma metinleri yazımının dünya çapında araştırma sonuçlarını paylaşmak, fikirlerin tartışılması için olanak yaratmak ve araştırmacıların tanınırlıklarını geliştirmesine yardımcı olmak gibi önemli işlevleri vardır. Bu sebeple, akademik dergilerdeki araştırma metinleri ve yayınlar araştırmacılar arasındaki iletişimin önemli bir aracı haline gelmiştir. Araştırma makaleleri yoluyla yapılan bu iletişimin genellikle akademik dergiler tarafından belirtilen kendi normları ve kuralları vardır. Deneyimli araştırmacılar bu bilimsel stili kolaylıkla takip eder ve kullanırken, deneyimsiz yazarlar ile anadilinde yazmayan araştırmacılar akademik dergilerde yayın yapabilmek için bu söylem türünü öğrenmek zorundadırlar. Buradan yola çıkarak bu çalışma anadili İngilizce olmayan Türk araştırmacılar ile anadili İngilizce olan araştırmacıların İngilizce araştırma makalesi yazarken kullandıkları yumuşatma stratejilerini karşılaştırmaktır. Karşılaştırmada kullanılan tür yayınlanmış sosyal bilimler makaleleridir. Çalışma kapsamında araştırmacı tarafından derlenmiş olan AAC (Amerikan Akademik Derlemi) ve TAC (Türk Akademik Derlemi) derlemlerinden ayrılan ve sözcüksel ve dilbilgisel olarak etiketlenmiş 100 er makalelik alt derlemler kullanılmıştır. Yumuşatma stratejilerinin kullanımını sayısal olarak karşılaştırmak amacıyla AntConc veri işleme programı kullanılmıştır.

Anahtar Kelimeler: *Araştırma Makalesi, Yumuşatma, Anadili İngilizce Olan ve Olmayan Araştırmacılar, Derlem Dilbilimi*

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1. Introduction

An important characteristic of today's academia is that with the influence of globalization, English has been widely accepted as the lingua franca of research writing. A majority of the academic journals published in the world today are published in English and these publications predominantly accept research papers written in English. To get acceptance in the academic world as researchers, make their voice heard and research findings to be acknowledged in the world, non-native researchers should write their research in English. This brings about challenges not only in the use of language at the surface but also in the use of the appropriate scientific rhetoric when making claims based on research findings. Thus, non-native researchers should express themselves in a foreign language both in linguistically and rhetorically acceptable ways.

Research papers follow certain rhetorical conventions among which the objectivity of claims is a major one. Researchers should use an objective language when they are writing about the findings of their research in the form of an academic research article since they should persuade their reader without making unsupported claims. The following quote by Hyland (2005) highlights the importance of rhetorical choices in research writing:

> *Academic knowledge is now generally recognized to be a social accomplishment, the outcome of a cultural activity shaped by ideology and constituted by agreement between a writer and a potentially skeptical discourse community… Academic writers do not only need to make the results of their research public, but also persuasive, and their success in gaining acceptance for their work at least partly depends on manipulating various rhetorical and interactive features* (p. 99).

An important feature of academic language is the use of hedging strategies to increase the credibility of claims. A commonly used definition of hedging has been provided by Hyland (1998) as "the means by which writers can present a proposition as an opinion rather than a fact". This definition highlights the idea that propositions in research articles are to be accepted as writers' opinions rather than facts unless they have been proven by experimental results. In social sciences, however, it is still difficult to introduce a research finding as a fact since the variables used are not easily controllable. Also, all statements which express new ideas presented by research are usually hedged in research papers since they have not gained acceptance (Myers, 1989). Academic writing is not only informative and content-oriented but also aims at convincing the reader.

Hedging is an important strategy in academic writing since in essence academic writing is a scientific activity which involves "cognition" and "discretion" (Hyland, 2000). The term was originally introduced by Lakoff (1972) as "words whose job is to make things more or less fuzzy". As a pragmatic dimension of academic prose, hedging has several functions:

It reduces the possibility of claims being rejected by other researchers,

It increases the credibility of the research,

It is used as a politeness strategy through which the writers of research acknowledge possible flaws in their claims. To express hedging, research writers utilize certain lexico-grammatical items. Among meta-discourse markers used for hedging are modal auxiliaries such as *might, could* or *would*; epistemic lexical verbs such as *seem, assume* and *suggest*; epistemic adjectives and adverbs such as *perhaps, likely* and *mainly* and other miscellaneous items such as *in general* and *assumption that* (Hyland & Tse, 2005). Other constructions commonly used for hedging are reference to limiting conditions of the research at hand, reference to method, model or theory, reference to lack of knowledge and use of modal nouns such as *possibility, assumption and estimate*. Research studies on hedging examine intercultural differences between research writers of various language backgrounds in terms of hedging strategies in their native language (e.g. Chinese, Turkish and Persian) versus in their non-native language (English).

In response to the issues identified above; the study explores the cultural based influences on the use of hedges by comparing published social sciences articles published in leading Turkish and American journals written in the English language by Turkish NNS research writers and NS research writers. Specifically, the study seeks to answer the following research question:

> "*Are there any differences or similarities in the use of hedges in published social sciences articles written in the English language by Turkish NNS research writers and NS research writers*?"

A commonly used definition of hedging is Hyland's (1998, p. 5), which states that hedges are "the means by which writers can present a proposition as an opinion rather than a fact" inspired by Lyon's definition of epistemic modality, "[a]ny utterance in which the speaker explicitly qualifies his commitment to the truth of the proposition expressed by the sentence he utters ...is an epistemic modal, or modalized utterance" (Lyons 1977, p. 797), I will define epistemic modality markers as linguistic expressions that qualify the truth value of a propositional content (for example, *perhaps, probably*). Epistemic modality markers, thus, mark to what extent one can rely on the information which is being conveyed by the proposition.

According to Meyer's definition, hedging, or the mitigation of claims, is a rhetorical device used to convince and influence the reader and is crucial to the writer of scientific texts. Holmes (1988) defined hedging as such: "Hedges are self-reflective linguistic expressions employed to express epistemic modality and modify the illocutionary force of speech acts." There are various uses of hedges in research articles; hedges can be used to: qualify the writer's commitment to a proposition (Vande Kopple, 1985), show uncertainty about the truth of an assertion (Crismore, et al., 1993), withold commitment and open dialogue (Hyland, 2005).

Referring to academic research articles, the knowledge they contain is predominantly new knowledge, therefore hedging is a common strategy used in this type of texts. Myers (1989) explains this phenomena indicating that all statements conveying new knowledge are hedged because they have not yet gained acceptance.

Academic writing in essence is not only informative and content-oriented but also aims at convincing the reader. Hedging contributes to the claims made in the research paper by adding credibility to the writer/researcher since the strategy shows the reader that the writer is well aware that the new knowledge presented should be backed up by research evidence. This kind of approach also reflects the ethics of the research paper.

Hyland (1996) categorized eight main types of hedges. His categories and examples are shown in Table 1.

Table 1. Types of Hedges (adapted from Hyland, 1996)

Types of hedges	**Examples**
Lexical verbs	appear, believe, …
Adverbials	possibly, apparently, …
Adjectives	likely, possible, …
Modal verbs	may, should, …
Limiting conditions	under these conditions, so, it is difficult to conclude whether, …
Modal nouns	Possibility, assumption, estimate, …
Model, theory, method	If this scheme is correct, then the orientation, …
Lack of knowledge	It is not known whether such a weak temperature response, …

Hu & Cao (2011) put hedging devices into four major categories: modal auxiliaries (*might, would, could*, etc.), epistemic lexical words (*seem, assume, suggest*, etc.), epistemic adjectives and adverbs (*perhaps, likely, mainly*, etc.) and miscellaneous (*in general, assumption that*, etc.). This categorization decreased the number of categories by combining categories together such as adverbs and adjectives. These categories help researchers to investigate and compare the use of hedging across cultures and disciplines.

The academic field has become one of the most diverse communities of our times since it embraces research from all around the world. The common ground that brings together all researchers from different language backgrounds is the language of communication which is English. A second unifying factor is the conventions of academic writing which apply to the research paper as a genre. In this respect, it becomes important to understand cultural differences in academic writing as Vold (2006) states: "Awareness of cultural differences within academic discourse, such as the differences in the use of hedges, is important for researchers who want to express themselves and read academic texts in languages other than their own." (p. 63) Vold (2006) investigated the existence of cultural identity in academic prose and whether these identities are national or discipline-specific in nature in the scope of the KIAP project (Kulturell Identitet i Akademisk Prosa = 'Cultural Identity in Academic Prose'). He compared epistemic modality markers with a cross-cultural and cross-linguistic perspective between French and English researchers. His findings suggested that there were differences between English and French speakers in respect to their preference of epistemic modality markers; namely, English speaking researchers use significantly more epistemic modality hedges compared to French speaking colleagues. On the other hand, he concluded that while disciplinary affiliation and gender had little

influence, disciplines made a difference. The research had implications for teaching academic writing since it could contribute to the cross-cultural understanding between academics.

Generally, very little research has been done on hedging in languages other than English. Recent research on hedging has reached various conclusions such as that cross-cultural and cross linguistic differences affect the use of hedges and boosters (Hu & Cao, 2011), that second language learners' ability or inability to use hedges is related to socio-cultural factors, classroom instructions, disciplinary culture and disciplinary appeals (Kim & Lim, 2015) and that cross disciplinary differences affect the use of hedges, thus there are differences between journals of different disciplines (Taşpınar, 2017).

2. Methods

In the present study, two sub-corpora extracted from two parallel corpora compiled by the researcher were used to investigate the use of hedges by native and non-native researchers. The TAC (Turkish Academic Corpus) consisting of research articles written by Turkish researchers in the English language and published in refereed journals and the AAC (American Academic Corpus) consisting of research articles written by native English speaking researchers comprised the data for the comparison. The following steps were followed in the study.

- Two sub-corpora of 100 files each were randomly selected from the main Corpora.
- Both sub-corpora were tagged with the Biber (2000) tagger for lexico-grammatical categories and this made analyses easier.
- The sub-corpora were analyzed by using AntConc concordancing program.
- For each lexico-grammatical category, tags were searched and frequencies were calculated. These frequencies were compared between the two Corpora.
- Frequency counts were normalized to per 1000 words since the word counts of the two sub-corpora were not the same.
- For the statistical analysis, Mann-Whitney U test was used to test whether there is a significant difference between the frequencies of hedging devices by NS and NNS researchers.

Table 2 below shows the sources included in the TAC corpora and the word counts.

Table 2. The composition of TAC corpora

Journal	# of texts	# of words
Anadolu University Journal of Social Sciences	8	60791
Ankara University, Journal of Faculty of Educational Sciences	1	5985
Çukurova Üniversitesi School of Education Journal	3	18714
Hacettepe University Journal of the Faculty of Education	15	62402
Journal of Sociology*	1	7924
Blacksea Research Journal	2	9876
Middle East Technical University Journal of the Faculty of Architecture	20	152183
Turkish Online Journal of Distance Education	33	157347
The Turkish Online Journal of Educational Technology	41	174203
Trakya University Journal of Social Sciences	4	21859
Turkish Journal of Psychiatry**	85	348822
Zonguldak Karaelmas University Journal of Social Sciences	4	20342
Turkish Psychological Counseling and Guidance Journal	15	13482
Balikesir University Journal of Social Sciences Institute	2	9876
Cukurova University Social Sciences Journal	1	4073
EKEV Academy Journal***	8	50239
Journal of Social Sciences****	4	15681
Journal of Theory and Practice in Education	23	114773
Turkish Journal of Psychology	12	25944
Total	**282**	**1.274.516**

As can be seen in Table 2, the TAC consists of approximately 1,274,516 words compiled from published research articles written in English by Turkish non-native speakers of English. All research articles were chosen from among research carried out in the social sciences. More corpora of Turkish non-native researchers could help comparisons of academic writing by Turkish writers across disciplines.

Table 3 below shows the sources included in the AAC corpora and the word counts.

Table 3. The composition of TAC corpora

Journals	# of texts	# of words
American Educational Research Journal	56	663.226
American Journal of Community Psychology	27	227.816
American Journal of Distance Education	37	149.723
American Journal of Economics and Sociology	81	576.513
American Journal of Philology	44	517.669
TESOL Quarterly	24	208.021
Arts and Social Sciences Journal	9	51.049
Educational Planning	4	25.963
Educational Research Quarterly	10	32.219
ELT Journal	49	187.705
Total	**341**	**2.639.904**

In the study, lexico-grammatical items used for hedging were put into five main categories: modal auxiliaries, epistemic lexical verbs, adverbials, adjectives and nouns.

These categories were then divided into sub-categories according to the lexico-grammatical tags provided by Biber (2000). Since the sub-corpora used in the analyses were tagged by using the Biber tagger, it became easier to find frequencies of each category in the sub-corpora. The categories and the codes used to identify each lexico-grammatical item are provided in Table 4.

Table 4. Categories of Hedging Used in the Study

Hedging category	**Code**
Modal auxiliaries	
Possibility modals	^md+pos+++
Prediction modals	^md+prd+++
Epistemic lexical verbs	
Base form of private verbs (believe, feel, think)	^vb+vprv
Base form of verb + seem/appear	^vb+seem+++
Past tense form of private verbs (believe, feel, think)	^vbd+vprv++xvbn+
Past tense form of verb + seem/appear	^vbd+seem+xvbn+
Present progressive form of private verbs (believe, feel, think)	^vbg+vprv++xvbg+
Infinitive verb + private verb (believe, feel, think)	^vbi+vprv++xvbg
3rd person singular form of private verbs (believe, feel, think)	^vbz+vprv+++
3rd person singular form of verb+seem/appear	^vbz+seem+++
Adverbials	
Multi-verb adverbs	^rb"++++
Adverb+downtoner	^rb+down
Adverb+hedge	^rb"+hdg"+++
Adjectives	
Attributive adjectives (possible, general, common, probable, likely, etc.)	^jj+atrb++
Nouns	
Noun that complement	^tht+ncmp

3. Findings

The word counts of hedging devices from each category were found by using the AntConc concordancing program and then normalized to per 1000 words. Frequencies for each category were compared separately. In this section, the comparisons of frequencies are compared and examples from corpora are provided for each category. Table 5 below shows the comparison of the frequencies of modal auxiliaries used as hedges.

Table 5. Comparison of Modal Auxiliaries as Hedges

	Native-AAC				**Non-native-TAC**		
MODAL AUXILIARIES	tag code	raw numbers	items per 1000 words	%	raw numbers	items per 1000 words	%
POSSIBILITY MODALS	^md+pos+++	4707	200	20	2483	229	23
PREDICTION MODALS	^md+prd+++	1963	83	8	907	84	8

A comparison of the use of modal auxiliaries by native and non-native researchers in terms of frequency showed that there was only a small difference which

was not very significant. While native researchers used 200 possibility modals and 83 prediction modals as hedges, non-native researchers used 229 possibility modals and 84 prediction modals as hedges. Therefore, we can conclude that native and non-native researchers show a similar tendency in using modal auxiliaries as hedges.

Some examples of the use of modal auxiliaries extracted from the corpora are provided below:

Examples of possibility modals used as hedges:

1a. Other things being equal, **we might expect** students who completed a particular mathematics curriculum in high school to perform well on a placement test whose content and structure tend to match the high school mathematics curriculum, but there appears to be little evidence one way or the other (NS Corpus soc.sci.ns.001.txt).

1b. the way that mathematics placement information is used **can mean** different initial course placement recommendations (NSCorpus: soc.sci.ns.001.txt).

1c. with the results of this study, the practical **implications may be** considered numerous such that online (NS Corpus: soc.sci.ns.108.txt).

In 1a, 1b and 1c the use of modal auxiliaries as hedges creates a sense of tentativeness instead of expressing direct judgements.

Examples of prediction modals used as hedges:

2a. prepared, the interpretation of our course-taking findings **would be quite different**. In short, our results suggest (NS Corpus:soc.sci.ns.001.txt).

2b. such that pooled SDs **would no longer represent** the measurement scale and would tend to bias estimates (NS-Corpus :soc.sci.ns.057.txt).

2c. would no longer represent the measurement scale and **would tend to** bias estimates (NS-Corpus :soc.sci.ns.057.txt).

In 2a, 2b and 2c the use of prediction modals gives the meaning that the statement which is to be made is connected to a condition.

Table 6. Comparison of Epistemic Lexical Verbs as Hedges

		Native AAC			Non-native TAC		
epistemic lexical verbs	tag code	raw numbers	items per 1000 words	%	raw numbers	items per 1000 words	%
base form of private verbs (believe, feel, think)	^vb+vprv	7677	326*	33	3196	295*	29
base form of verb + seem/appear	^vb+seem+++	580	25	2	241	22	2
past tense form of private verbs (believe, feel, think)	^vbd+vprv++xvbn+	2031	86	9	918	85	8
past tense form of verb + seem/appear	^vbd+seem+xvbn+	132	6	1	49	5	0
present progressive form of private verbs (believe, feel, think)	^vbg+vprv++xvbg+	548	23	2	256	24	2
infinitive verb + private verb (believe, feel, think)	^vbi+vprv++xvbg	1076	46	5	468	43	4
3rd person singular form of private verbs (believe, feel, think)	^vbz+vprv+++	378	16*	2	306	28*	3
3rd person singular form of verb+seem/appear	^vbz+seem+++	185	8	1	102	9	1

Another lexico-grammatical item commonly used for hedging is epistemic lexical verbs such as believe, feel, seem, appear etc. As shown in Table 6, except for base form of private verbs and 3rd person singular forms of private verbs, there is a similar tendency to use epistemic lexical verbs as hedges between native and non-native speakers. Whereas native researchers tend to prefer to use the base form of private verbs slightly more frequently, non-native researchers tend to use 3rd person form more frequently.

Examples of Epistemic Lexical Verbs Used as Hedges:

3a. averages (GPAs) in the year before the inquiry. It **seems highly likely that** there is an association (soc.sci.ns.002.txt).

3b. So the court's decision specifically to define science **appears to have effectively mitigated** much of the claims (soc.sci.ns.003.txt).

In 3a and 3b, the use of seems and appear as a hedge contributes to the meaning by mitigating the claims made in the statements so that the researcher avoids making direct and strong claims.

Table 7 shows the comparison of the use of adverbials as hedges by native and non-native researchers in their research papers. When we compare the normed counts, we can see that there is a similar tendency of native and non-native researchers regarding the use of adverbials as hedges. There are only slight differences in the normed counts.

Table 7. Comparison of Adverbials as Hedges

	Native speaker (AAC)				Non-native speaker (TAC)		
ADVERBIALS	tag code	raw numbers	items per 1000 words	%	raw numbers	items per 1000 words	%
MULTI-VERB ADVERBS	^rb"++++	837	36	4	350	32	3
ADVERB+DOWNTONER	^rb+down	1915	81	8	937	86	9
ADVERB+HEDGE	^rb"+hdg"+++	227	10	1	112	10	1

Examples of Downtoners Used as Hedges:

4a -based care settings. Although scores were **slightly lower** for the control-group classes soc.sci.ns.008.txt.

4b. Course of each of these curricula, **which generally took** 5 or 6 years. At the soc.sci.ns.001.txt.

4a and 4b are examples of downtoners, slightly and generally used as hedges. In 4a, the writer cannot state a definite difference between the scores, so he chooses to mitigate by using slightly. In 4b, the writer uses generally to show a common trend which does not include every case.

Table 8. Comparison of Adjectives as Hedges

	Native speaker (AAC)				Non-native speaker (TAC)		
ADJECTIVES	tag code	raw numbers	items per 1000 words	%	raw numbers	items per 1000 words	%
attributive adjectives (possible,general, common,probable, likely, etc.)	^jj+atrb++	396	17	2	153	14	1

Table 9 shows the comparison of the use of nouns (noun that complements) as hedges by native and non-native researchers. In this category also, there is a similar tendency of both groups in the use of this hedge strategy. There is just a small difference between the normed counts. This shows that both native and non-native speakers use this category of hedges with the same frequency in their research papers and that there is not a difference between the two groups.

Table 9. Comparison of Nouns as Hedges

	Native speaker (AAC)				**Non-native speaker (TAC)**		
NOUNS	tag code	raw numbers	items per 1000 words	%	raw numbers	items per 1000 words	%
Noun That Complement	^tht+ncmp	564	24	2	318	29	3

To compare the normed frequency of the hedging devices, Mann-Whitney U test was employed. The normed counts in a total of 18 categories were compared between native and non-native speakers. The results of the Mann-Whitney U test are provided in Table 10. The results showed that there was no significant difference between the two groups in terms of the use of g-hedging devices.

Table 10. Results of Mann-Whitney U test

	Mann- Whitney U test		
	Sum of Ranks	Count	U Statistics
NNS	332	18	161
NS	333,5	18	162,5
critical value	99		

4. Results and Discussion

This study investigated whether there were differences in the use of hedging devices in research articles between native and non-native researchers. Both groups of researchers used English as the language of publication. While one group were non-native Turkish researchers who wrote in English, the other group consisted of native speakers of English. The use of hedges were compared in five main categories: modal auxiliaries, epistemic lexical verbs, adverbials, adjectives and nouns. For each category, normed counts of hedging devices were compared.

As a result of the comparisons, except for slight differences in the use of hedging devices, no significant difference was found. For example in the AAC, slightly more private verbs, reference to limiting conditions and adverbs were used. On the other hand, in the TAC, adverb downtoners and noun+that complements were slightly more frequent. However, the differences were very small and not statistically significant.

Therefore, it can be concluded that Turkish researchers have a similar tendency to use hedging as a rhetorical device compared to American native researchers in English research papers. The results could be an indication that, when researchers use the same language, in this case English, they could be adopting the rhetorical conventions of that language and succeed in using similar strategies with the native speakers of that language. In other words, when researchers are using a language other than their native language when they are writing, they seem to apply the pragmatic conventions of that culture, not their own cultural norms. However, research which compares hedging strategies cross-culturally have examined strategies in the researchers' native languages. For this reason, it would be interesting to examine research papers written in Turkish to see whether there are different strategies employed in terms of hedging.

In terms of capability of complying to the conventions of research paper writing, Turkish researchers seem to follow similar patterns compared to native speaker researchers, which is an indication that their awareness of academic writing conventions with regard to the use of hedging is high.

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