

Hedging Strategies in English and Arabic Scientific Written Discourse

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Abstract

Hedging is especially a common phenomenon in scientific writing and can be realized through a wide variety of linguistic choices. It has the pragmatic effects which play an essential role in building the argumentative structure of the scientific discourse. The objective of this research is to conduct a stylistic and rhetorical study based on interlinguistic analysis of the aspects of hedging in the discipline of pharmacology to know the role of hedges and the ways in which they shape knowledge claims in pharmacological discourse and, consequently, to develop an understanding of how these textual functions are used to construct a representation of pharmacological knowledge. The data for this study are collected from some English and Arabic pharmacological research papers. The present study reveals that rhetoric plays a key role in the construction of knowledge within this genre, i.e. pharmacological research papers. It helps the unfolding of the text and it becomes essential in persuading audience and obtain negotiation of the information conveyed.

Key words: hedges, stylistics, rhetoric, pragmatics, polypragmatics, politeness, genre, pharmacology.

Languages: English and Arabic.

Introduction

Hedging is a basic feature in academic discourse that enables academic writers to show their certainty and doubt towards their statements, to show the amount of confidence they put on their claim, and to start a dialog with their readers (Rounds 1982). Through using hedges, writers leave some room for their readers to judge the truth value of a given assertion. Hedging expressions can also be used in describing methods and results, discussing findings, and drawing conclusions from the evidence.

The use of the term 'hedging' has been a part of linguistic terminology only since popularized by George Lakoff (1972). Although subsequent scholars have defined the term in slightly different ways to fit their linguistic inquiries, hedging always communicates a vagueness about truth value.

Brown and Levinson (1987: 145) defined hedges as "a particle, word or phrase that modifies the degree of membership of a predicate or a noun phrase in a set". Salager-Meyer (1994) focused on the distribution of five pre-established hedging categories (i.e., shields, approximators, authors' personal doubt, emotionally-charged intensifiers, and compound hedges) in two fundamental medical English genres - case report and research paper. Bloor and Bloor (1993) investigated the way in which economists make knowledge claims in research papers. They focused on different kinds of claims, namely field central, critical and meta-textual claims. Yang (2003) investigated the frequency and distribution of hedges across English and Chinese. Varttala (1999) emphasized the functions of hedging in research papers as the indicator of textual precision and interpersonal relationship.

Hyland (1998: 5) defined hedges as "the means by which writers can present a proposition as an opinion rather than a fact: items are only hedges in their epistemic sense, and only when they mark uncertainty". In this study, the definition by Hyland (1998) will be employed. Writers, through using hedging devices and showing uncertainty, try to show the amount of accuracy of their statements. At the same time, they attempt to save face in case of any possible falsification of their judgments. Through using hedges and attributing the ideas to oneself, they also invite readers to evaluate the truth value of the proposition as an independent and intelligent individual.

1. Hedging forms and functions

1.1. Hedging forms

The forms of hedges refer to formal lexical categories such as main verbs, nouns, adjectives, adverbs, and the structural lexical categories such as modal auxiliaries which exist as the main linguistic categories in most

languages. In this research, forms are limited to those which have epistemic functions in the academic discourse and can be used as hedging devices.

In addition to forms of hedging, functions of hedging constitute another main focus of this study. There are two main approaches taken in different studies towards hedging functions. They are hedging in politeness model and in polypragmatic model.

1.2. Hedging Functions

1.2.1. Hedging Functions in Politeness Model

Hedging has been treated as a sign of politeness by Brown and Levinson (1987). According to them, hedging is a strategy which is employed to reduce the risk of confrontation in social interactions. Myers (1989) states that the hedging expressions which are used in the interaction between writers and readers in scientific articles can be interpreted as politeness markers. The following example clarifies this point:

1.2.1.a. The findings *suggest* a common origin of some nuclear and mitochondrial introns and common elements in the mechanisms of their splicing. (Myers 1989: 14)

Due to the inappropriateness of the Politeness Model to account for hedging in academic discourse, Hyland (1998) devised a model to account for the multi-functional nature of hedging called Polypragmatic Model. This model is adopted in the present study.

1.2.2 Hedging Functions in Polypragmatic Model

Due to polypragmatic nature of hedging devices, Hyland (1998) confirmed that assigning specific meanings exclusively to particular forms is not possible. He, by proposing this scheme, tries to capture the multi-functional nature of the hedges which enables them to have a range of meanings at the same time.

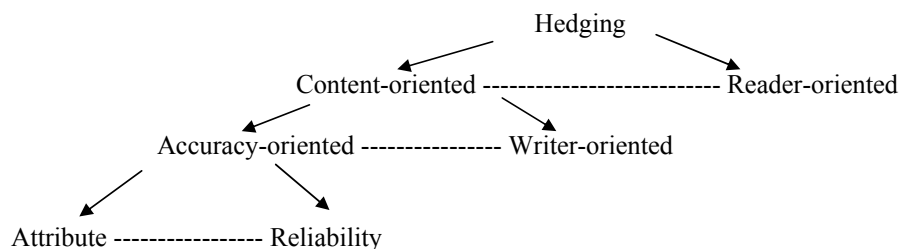


Figure 1: A Model of Scientific Hedging (Hyland 1998: 156)

Hyland (1998) divided hedges in the context of academic discourse into two main categories: *content-oriented hedges* and *reader-oriented hedges*. According to him, content-oriented hedges “serve to mitigate the relationship between propositional content and a non-linguistic mental representation of reality; they hedge the correspondence between what the writer says about the world and what the world is thought to be like” (p.162). He further divides the content-oriented hedges into *accuracy-oriented* and *writer-oriented* hedges. The *accuracy-oriented* hedges refer to “writer’s desire to express proposition with greater precision” which are further divided into *attribute* and *reliability* hedges (p.162). Attribute hedges help writers to specify more accurately how far their results “approximate to an idealized state” and reliability hedges indicate the amount of writers’ certainty or uncertainty in a proposition (p.164). The writer’s main motivation for using writer-oriented hedges is to make a shield for the self against any probable falsification of the proposition. This end is achieved through minimizing his involvement in the proposition and keeping a distance from it. The main distinction between writer-oriented and accuracy-oriented hedges is that writer-oriented hedges mostly are concerned with the writer’s presence in the text rather than increasing precision which is the main concern of *accuracy-oriented hedges*.

The second main category is *reader-oriented* categories. The main distinction between this category and *content-oriented* is that reader-oriented hedges mostly deal with the interpersonal interaction between readers and writers. Certainty and categorical markers do not invite readers into a negotiation and imply that the assertion made by a writer is the only possible interpretation of the phenomenon. *Reader-oriented hedges* make readers involved in a dialog and address them as thoughtful individuals to respond and judge the truth value of the proposition. Due to the challenges faced in distinguishing accuracy and writer-oriented hedges as two sub-categories of content-oriented hedges from reader-oriented hedges, the latter type is not included in the categorization of the hedging functions. The polypragmatic model is adopted in this study.

2. The objective of this study

This research examines hedging as a rhetorical device in research papers (RPs) in the discipline of pharmacology, classifying hedgings by form and by function in corpora of comparable size in both English and Arabic to know the role of hedges and the ways in which they shape knowledge claims in pharmacological discourse. It addresses the following questions:

3. The research questions

This study addresses the following six research questions:

- Q1: What is the frequency of the hedging forms in the English pharmacological RPs?
- Q2: What is the frequency of the hedging forms in the Arabic pharmacological RPs?
- Q3: Are hedging forms equally distributed in the English and Arabic pharmacological RPs?
- Q4: What is the frequency of the hedging functions in the English pharmacological RPs?
- Q5: What is the frequency of the hedging functions in the Arabic pharmacological RPs?
- Q6: Are hedging functions equally distributed in the English and Arabic pharmacological RPs?

4. Methodology

4.1 Data selection

The data of this study is composed of twenty English and Arabic RPs in pharmacology: ten Arabic RPs and ten English RPs. Experts of pharmacology were contacted by the researcher to discuss and comprehend fully the content of the RPs.

4.2 Procedures

In order to meet the main objectives of this study, epistemic expressions such as main verbs, adjectives; adverbs, nouns, and modal auxiliaries that show uncertainty and tentativeness were identified. The list of items expressing doubt and uncertainty provided by Hyland (2000) were used as a guideline.

Firstly, the stage of identification main verbs were divided into two categories: “epistemic judgmental” verbs and “epistemic evidential” verbs. According to Hyland (1998: 120), epistemic judgmental verbs “reflect appraisals by the speaker of the factive status of events” and are subcategorized into “speculation” and “deduction”. Speculative verbs such as *indicate* and *suggest* show that the stated proposition is based on some conjecture. Deduction verbs like *estimate* and *calculate* show some “inferential reasoning or theoretical calculation” (p.121).

Secondly, after identifying the hedging forms in the two sets of data, the researcher provided possible contextual interpretations of the hedging de-

vices to identify their functions. At this point, a distinction was made between two sub-categories of content-oriented hedges, namely accuracy-oriented and writer-oriented hedges, as two functions of hedges. Another main category, namely reader-oriented hedges, has also been provided.

Thirdly, the frequency of hedging forms in this study is calculated per "word." The researcher decided to consistently use a standardized size of 2,000 words to show the frequency of the hedging forms and functions in English and Arabic Pharmacological RPs.

5.3 Data Analysis

5.3.1 Distribution of Forms of Hedging

The frequency of hedging forms was calculated and distributed based on their categories. The three main categories of 'main verbs, non-main verbs, and modal auxiliaries' were used to show the distribution of hedging forms in this study. Main verbs were divided into two categories: 'epistemic judgmental' verbs and 'epistemic evidential' verbs. According to Hyland (1998: 120), epistemic judgmental verbs 'reflect appraisals by the speaker of the factive status of events' and are subcategorized into 'speculation' and 'deduction'. Speculative verbs such as *indicate* and *suggest* show that the stated proposition is based on some conjecture. Deduction verbs like *estimate* and *calculate* show some 'inferential reasoning or theoretical calculation' (p. 121). Epistemic evidential verbs are the main verbs which 'refer to evidentiary justification, either based on the reports of others, the evidence of the writer's sense, or the feasibility of matching evidence to goals' (p. 124). The subcategories of evidential verbs are quotative (e.g., *report*, *note*), sensory (e.g., *appear*, *seem*), and narrators (e.g., *attempt*, *seek*). Modifiers were also sub-categorized into 'adverb, adjective, and then noun'.

The frequency of hedging forms in this study is consistently calculated per 'word'. A standardized size of 2,000 words is used to show the frequency of hedging devices of RAs and provide a basis for comparison. Once the RPs were selected, they were analyzed in terms of the hedging forms and functions.

This study focuses just on lexical hedges and structural hedges are not taken into account. The decision whether the structural categories considered to have hedging functions proved to be more complex than lexical categories. For example, passive forms are the structural categories commonly mentioned to be connected to hedging in academic discourse. However, there is not general agreement over its true function. Hyland (1998) who has advocated the hedging functions of the passive forms has provided some examples in which passive forms are accompanied by some other epistemic forms

to create a hedging effect. The following example is taken from Hyland (1998) to further illustrate this point: The BS fraction is assumed to originate from the center of the.... (Hyland, 1998, p. 172). Table 5.3.3.1 and Table 5.3.3.2 are taken from the data of the study to be used as examples of the frequency of hedging forms in English and Arabic pharmacological RPs.

5.3. 1.1 The Hedging Forms in English and Arabic Pharmacological RPs:

Table 5.3.1.1.1 The Frequency (F) of Hedging Forms in English Pharmacological RP

The hedging forms in English pharmacological RPs		Examples	F
Main Verb	Judgmental	These data suggest reduced volume of distribution after 2 days of 20 g/day Cr administration. Steenge et al. (1998) also tested the effects of insulin on plasma Cr in humans. In their study, 100 mM Cr was administered as an enteral infusion at 2.5 ml min with an intravenous insulin infusion at varying rates. Peak Cr levels were reached 1 to 1.5 h after start of infusion. Although the majority of studies on Cr have been on exercise performance in healthy subjects, recent evidence indicates Cr may be useful in the treatment of certain diseases. Cr was theorized to be useful in diseases of mitochondria where energy production is altered. The effects of Cr on cardiac tissue have been investigated. It was recently hypothesized that Cr supplementation could be cytotoxic (Yu and Deng, 2000).	68
	Evidential	A decrease of 20% in plasma Cr AUC was shown to be dependent on insulin infusion rate.	18
Noun		The majority of synthesis in humans occurs in the liver and kidney. the data by Schedel et al. (1999) indicate this possibility.	4
Modifiers	Adverb	- Creatine is a naturally occurring compound obtained in humans from endogenous production and consumption through the diet. - These benefits have been applied to disease models of Huntington's, Parkinson's, Duchenne muscular dystrophy, and applied clinically in patients with gyrate atrophy, various neuromuscular disorders, McArdle's disease, and congestive heart failure.	51

Cont. Table 5.3.1.1.1 The Frequency (F) of Hedging Forms in English Pharmacological RP

The hedging forms in English pharmacological RPs		Examples	F
		-Previous reviews have focused primarily on the improvements in exercise performance seen in human subjects ingesting Cr (Balsom et al., 1994; Mujika and Padilla, 1997; Volek and Kraemer, 1997; Juhn and Tarnopolsky, 1998a; Demant and Rhodes, 1999; Graham and Hatton, 1999; Jacobs, 1999; Kraemer and Volek, 1999; Benzi, 2000). -Typically, organs that contain the highest levels of AGAT and/or GAMT have the lowest levels of creatine kinase, the enzyme responsible for the phosphorylation of Cr to PCr (Walker, 1979). -In general, human muscle tCr levels can range from 110 to 160 mmol kgDM (Harris et al., 1974). -Where ATP is being generated aerobically, This energy and pH buffer is one mechanism by which Cr works to increase exercise performance. -Cr can potentially prevent tissue damage by two possible mechanisms. -After a single 5-g dose, plasma Cr reached a mean-Cmax of approximately 100 mg l at a Tmax of 1 h. found a nonsignificant 7% difference in AUC between day 1 and day 3 in the Cr without carbohydrate group. This lack of difference was probably caused by incomplete elimination of Cr from the blood on day 3. On day 1, plasma Cr reached near baseline by 270 min; however, at day 3, plasma Cr was 7 times higher than baseline at 270 min. -Analogues of Cr were used initially to study Cr metabolism and uptake. These analogues are currently being investigated as a treatment for Huntington's disease, anti-tumor agents, and as antiviral agents. -Research has corroborated the reports from athletes that Cr can increase exercise performance and muscle mass especially in conjunction with resistance training.	
	Adjective	- Recent research on creatine has demonstrated positive therapeutic results in various clinical applications. The purpose of this review is to focus on the clinical pharmacology and therapeutic application of creatine supplementation.	127

Cont. Table 5.3.1.1.1 The Frequency (F) of Hedging Forms in English Pharmacological RP

The hedging forms in English pharmacological RPs		Examples	F
		-The benefits of Cr supplementation on exercise performance have been extended as a possible therapeutic agent in the treatment of disease conditions. -The purpose of this review is to focus on the clinical applications of Cr supplementation through the understanding of the physiological role of Cr, the benefits of Cr supplementation under healthy and diseased conditions, and on the limited information on the pharmacokinetics of exogenous Cr. -Since Cr is only produced in certain organs and utilized in others, it must enter the blood to reach other tissue systems such as skeletal muscle. -It is possible the exercise may increase the translocation of CreaT to the muscle membrane similar to effects seen between exercise and GLUT-4 translocation. Cr exerts various effects upon entering the muscle. -Several mechanisms have been proposed to explain the increased exercise performance seen after acute and chronic Cr intake. -Possible side effects of Cr supplementation have been previously reviewed by Juhn and Tarnopolsky (1998b).	
Modal	Auxiliary	-The increase of these stores can offer therapeutic benefits by preventing ATP depletion, stimulating protein synthesis or reducing protein degradation, and stabilizing biological membranes. -In the body, there is little Cr found at the site of production, and therefore Cr must be transported from areas of synthesis to areas of storage and utilization. -Since Cr is only produced in certain organs and utilized in others, it must enter the blood to reach other tissue systems such as skeletal muscle. -It is possible the exercise may increase the translocation of CreaT to the muscle membrane similar to effects seen between exercise and GLUT-4 translocation. -It is this reaction that can serve as both a temporal energy buffer and pH buffer. -the reaction will proceed toward the right and increase PCr levels.	120

Cont. Table 5.3.1.1.1 The Frequency (F) of Hedging Forms in English Pharmacological RP

The hedging forms in English pharmacological RPs		Examples	F
		-Future research should focus on humans especially with respect to changes in myosin and actin metabolism in Type 2 muscle fibers. -Another mechanism by which Cr may increase muscle mass is Cr may be involved in satellite cell activity (Dangott et al., 2000). -Recently studies have examined whether Cr supplementation would reduce exercise-induced muscle damage. -The ioncontaminants as well as dicyandamide could be a potential health hazard.	
Total			388

Table 5.3.1.1.2 The Frequency (F) of Hedging Forms in English Pharmacological RP

The hedging forms in English pharmacological RPs		Examples	F
		Our studies indicate that both these extracts are pharmacologically safe and did not show any significant adverse reactions at the tested doses. Our results indicate the need to include pharmacokinetic herbdrug. interaction studies as evidence for safety especially for technology-based extracts. The serum total bilirubin and creatinine were estimated using kits from Labkit, Spain. Creatinine kinase-MB (CKMB) and troponin I was estimated by kits from Teko diagnostics, CA, USA, and Monobind Inc., CA, USA, respectively. The area under curve for metformin (AUCM) was calculated in all the groups. the study suggests that both extracts of CA are safe. Antidiabetic activities of CA are known in the literature [37,38]; however, its cardiovascular effects have not yet been evaluated. We suggest that safety of technology-based extracts cannot be assumed especially when it amounts to major deviation from the traditional process.	8

Cont. Table 5.3.1.1.2 The Frequency (F) of Hedging Forms in English Pharmacological RP

The hedging forms in English pharmacological RPs		Examples	F
Main Verb	Judgmental	Hence, it is recommended that co-administration of CA-SFE with modern medicine should be avoided unless supporting.	
	Evidential	Some potential adverse reactions have been reported [5, 6]. Herbal medicines when co-administered with synthetic drugs may result in herb-drug interactions influencing bio-availability leading to adverse events. Technology-based extracts such as SFE has no prior evidence of traditional use and hence we attempted a safety pharmacology study. It is predicated that herb-drug interactions may be under-reported, under-estimated and probably may occur more frequently than the drug-drug interaction.	8
Noun		This study is very relevant and important because metformin is classified as a hard drug, which does not get metabolized in the body and therefore increases possibility of herb-drug interactions.	5
Modifiers	Adverb	Our studies indicate that both these extracts are pharmacologically safe and did not show any significant adverse reactions at the tested doses Our results indicate the need to include pharmacokinetic herbdrug interaction studies as evidence for safety especially for technology-based extracts. the need for more rigorous clinical and scientific research on herbal and traditional medicine is strongly advocated for larger acceptances and visibility. Traditional herbal medicines have a long history of use and are generally considered to be safer than synthetic drugs. Traditional medicine-inspired approaches remain important especially for the management of chronic diseases as well as to facilitate natural product drug discovery. Increasing regulatory concerns in drug development have broadened the scope of safety to include general pharmacology. It is predicated that herb-drug interactions may be under-reported, under-estimated and probably may occur more frequently than the drug-drug interaction.	40

Cont. Table 5.3.1.1.2 The Frequency (F) of Hedging Forms in English Pharmacological RP

The hedging forms in English pharmacological RPs		Examples	F
Adjective		Our studies indicate that both these extracts are pharmacologically safe and did not show any significant adverse reactions at the tested doses. the need for more rigorous clinical and scientific research on herbal and traditional medicine is strongly advocated for larger acceptances and visibility. Combinations of herbal medicines or phytochemical actives are found to be beneficial in certain diseases when given along with modern synthetic drugs. However, during concurrent use with modern medicines.	95
Modal	Auxiliary	-Use of any modern technology or solvents to prepare purified or beneficiated extracts may be needed and desirable. -Such extracts should be treated as Evidence-Based Complementary and Alternative Medicine 7 newer entities, and basic safety and pharmacokinetic herb drug interaction studies are desirable. -However, whether such new technology-based extracts can or should replace the traditional extraction processes is still debatable. -It is predicated that herb-drug interactions may be under-reported, under-estimated and probably may occur more frequently than the drug-drug interaction. -Modulation of OCT2 would have changed the elimination pattern; however, we did not observe any such changes when co-administered with metformin. Hence, it is recommended that co-administration of CA-SFE with modern medicine should be avoided unless supporting	20

Table 5.3.1.1.3 The Frequency of Hedging Forms in Arabic Pharmacological RP

The hedging forms in Arabic pharmacological RPs		Examples	F
Main Verb	Judgmental	- يفترض أنها تنقص اخطار التنخر It is assumed to reduce the dangers of necrosis - ويحتمل أن ينقص الوفيات It is supposed to decrease death.	3
	Evidential	- وفي مناطق متورطة قد تبدو كحالة حادة تتطلب الجراحة الفورية -In the areas involved it may seem an urgent case requiring a quick surgery. - قد تبدو المنطقة الملتهبة منتفخة The inflamed area may seem swollen.	14
Noun		هنالك ضرورة لفترات معالجة أطول بكثير عندما تكون الأظافر مصابة -There is a necessity for much longer periods of treatment when the nails are injured. يجب تجنب الاستعمال الموضعي لمستحضرات تحتوي على مضادات جرثومية مستعملة بصورة واسعة في الطب العام بما يها البنسليلينات، سلفوناميدات، سترپتومايسين، وجنتامايسين. بسبب احتمال تحريض التهاب الجلد بالتماس وتفضيل ظهور جراثيم مقاومة. -The localized use of the formulations containing anti-bacterial which are used widely in general medicine because of the possibility of the dermatitis and the preference of the resistant bacteria	5
Modifiers	Adverb	قبل الرأس تنتقل عادة مباشرة بالملامسة بين شخص وآخر. Usually lice transfer directly from one person to another by touching each other. أنها أحياناً تهاجر إلى الرئتين لتشكل كثرة الحمضات سعال وارتشاحات رئوية. they sometimes transfer to the lungs to the large numbers of eosinophils cough and pulmonary. غالباً ما تهاجر البقرة بالأنسجة تحت الجلد مسببة الطفح الزاحف، حكة، شري، وزيادة في الحمضات. Often larva tissue under the skin transfers causing rashness, itching, urticaria, and an increase in eosinophils. - يجب أن لا يتبلع لأنها سامة خصوصاً للرضع It should not to be ingested because it is poisonous especially for infants.	13

Cont. Table 5.3.1.1.3 The Frequency of Hedging Forms in Arabic Pharmacological RP

The hedging forms in Arabic pharmacological RPs		Examples	F
	Adjective	حصل تطور كبير في معالجة الأمراض الجلدية. إلا أن مثل هذه الأمراض لا تزال شائعة في كثير من الجماهير الريفية في البلدان النامية. -Great development has occurred in the treatment of skin diseases. However, such diseases are still common in many of the rural masses in developing countries. - بعض الاضطرابات المهددة للحياة نادرة مثل الفقاع -Some life-threatening disorders such as pemphigus are rare.	48
Modal	Auxiliary	-الإسكان السيئ، والتغذية غير الكافية والحالات غير الصحية وتلوث البيئة قد تساهم أيضاً في انتشار مثل هذه الأمراض. Poor housing and inadequate nutrition and unsanitary conditions and environmental pollution may also contribute to the spread of such diseases. - يجب معالجة الأفراد المصابين بسرعة. The infested must be cured quickly. -يمكن للبعوض أن تحدث آفات موضعية. Mosquitoes can cause localized lesions.	121
Total			179

Table 5.3.1.1.4 The Frequency of Hedging Forms in Arabic Pharmacological RP

The hedging forms in English pharmacological RPs		Examples	F
Main Verb	Judgmental	قد اقترحت مختلف الأنظمة العلاجية رغم أن زرقات وريدية نظامية من بنزائين بنسيللين هي الأكثر فعالية. Various curing systems have been suggested. ورغم أنها تعطى عادة كل ٤ أسابيع فإن معطيات حديثة تشير إلى أن إعطاءها كل ٣ أسابيع يزيد من فعاليتها في منع رجعة الحمى الرئوية Although it is usually given every 4 weeks, recent studies indicate that giving it every 3 weeks increases the effectiveness of preventing irreversible lung fever.	2
	Evidential	-----	0

Cont. Table 5.3.1.1.4 The Frequency of Hedging Forms in Arabic Pharmacological RP

The hedging forms in English pharmacological RPs		Examples	F
Noun		هنالك عدة متغيرات تؤثر على رجعة هجمات الحمى الرئوية تشمل الزمن، منذ أحدث هجمة للمرض، عمر المريض واحتمال الخطورة الناجمة عن البيئة. There are several variables affecting the irreversible lung fever including the time, since the most recent attack of the disease, the patient's age and the potential risk caused by the environment. وحتى في المرضى الملقحين بصورة مناسبة فإن احتمال خطورة الالتهاب الجرثومي بأغلبية ساحقة يستمر مدى الحياة. أعظم احتمال خطورة يكون في الأطفال الصغار في أول سنتين بعد استئصال الطحال. Even with the patients who are approrraitely vaccinated, the possibility of serious bacterial infection by an overwhelming majority lasts lifetime. The most dangerous potential occurs with young children in the first two years after splenectomy.	12
Modifiers	Adverb	فإن معطيات حديثة تشير إلى أن إعطاءها كل ٣ أسابيع يزيد من فعاليتها في منع رجعة الحمى الرئوية، خصوصاً في مرضى لديهم احتمال خطورة عالية. The recent data indicates that giving it every 3 weeks increases the effectiveness in preventing irreversible lung fever, especially in patients with high risk potential. بالنسبة لمرضى لم يحصل لديهم التهاب قلب في هجمة سابقة أن تكون فترة الوقاية لما لا يقل عن ٥ سنوات بعد الهجمة الأخيرة وعلى الأقل حتى بلوغ سن الـ ١٨ سنة وغالباً لمدة أطول في حال وجود احتمالات خطورة عالية). The patients, who did not get inflammation of the heart attack in the previous period, should have at least 5 year peiod of prevention after the latest attack, at least until the age of 18 years and often longer in the case of a potential high risk.	4
		معظم العوامل الأساسية التي تؤثر على الالتهابات الجراحية هي الطهارة (النظافة) والتقنيات الجراحية الجيدة. الوقاية الكيميائية قبل العمليات الجراحية تمارس بصورة واسعة في عمليات جراحية معينة ويمكن أن تنقص حوادث التهابات الجرح بعد العملية. Most of the main factors that affect the surgical infections is the purity (cleanliness) ومن الضروري اختيار المضادات الجرثومية لهذا الهدف وتجهيها ضد الجراثيم المتوقع مصادفتها خلال جراحة معينة. It is necessary to choose antimicrobial for this purpose.	7

Cont. Table 5.3.1.1.4 The Frequency of Hedging Forms in Arabic Pharmacological RP

The hedging forms in English pharmacological RPs		Examples	F
	Adjective	مصادر الجراثيم التي قد تسبب الالتهاب هي بصورة رئيسية داخلية المنشأ من نبيت المرض الجرثومي التي قد تسبب الالتهاب هي بصورة رئيسية داخلية المنشأ من نبيت المريض الجرثومي السوي في موضع الجراحة (مثلاً الجلد، الفم، جهاز الهضم، المهبل، أو جهاز البول). The sources of the germs that may cause inflammation are mainly domestic origin of the patient's bacterial flora in the normal position of the surgery (eg skin, mouth, digestive system, vagina, or urinary system). هنالك بعض المبادئ العامة التي يمكن صياغتها حسب المريض بصورة إفرادية. There are some general principles that can be formulated according to the patient individually. أعظم احتمال خطورة يكون في الأطفال الصغار في أول سنتين بعد استئصال الطحال. The greatest potential to be dangerous in young children in the first two years after splenectomy. بأن تكون فترة إعطاء المضادات الجرثومية قصيرة ما أمكن وتتوافق مع الفعالية السريرية. That the period given antimicrobial as short as possible and consistent with clinical efficacy.	
Modal	Auxiliary	مصادر الجراثيم التي قد تسبب الالتهاب هي بصورة رئيسية داخلية المنشأ من نبيت المرض الجرثومي التي قد تسبب الالتهاب هي بصورة رئيسية داخلية المنشأ من نبيت المريض الجرثومي السوي في موضع الجراحة (مثلاً الجلد، الفم، جهاز الهضم، المهبل، أو جهاز البول). The sources of the germs that may cause inflammation are mainly domestic origin of the patient's bacterial flora in the normal position of the surgery (eg skin, mouth, digestive system, vagina, or urinary system) يجب أن تكون الوقاية مستمرة خلال الحمل، إلا أنه يجب تجنب السلفوناميدات لما لها من احتمال خطورة على الجنين. Prevention must be continued during pregnancy, but sulfonamides must be avoided because of their potential risk to the fetus.	14

5. 3.2 Distribution of Functions of Hedging

At this point, a distinction was made between two main categories: *content-oriented hedges* and *reader-oriented hedges*, and content-oriented hedges, namely accuracy-oriented hedges, which are further divided into *attribute* and *reliability* hedges, and writer-oriented hedges. **Table 5.3.3.1** and **Table 5.3.3.2** are taken from the data of the study to be used as examples of the frequency of hedging functions in English and Arabic pharmacological RPs.

5.3. 2.1 The Hedging functions in English and Arabic Pharmacological RPs:

Table 5.3.2.1.1 The Frequency of the Hedging Functions in English Pharmacological RP

Types of Hedges	Subcategories of the types of Hedges	Examples	F
Content-oriented hedges	Accuracy-oriented hedges	Castor oil-induced enteropooling is not influenced by diphenoxyate (5 ml/kg p.o) in rats. EEGS 200 and 400 produced a dose-dependent reduction in intestinal weight and volume. EEGS 200 and 400 mg/kg, p.o dose produced 34.43% and 54.77% inhibition of volume of intestinal content respectively with significance ($P < 0.001$). The weight of intestinal content was also reduced significantly at both the doses.	8
	Writer-oriented hedges	Theory suggests that sustained employment and living in the community may have important therapeutic benefits in addition to the obvious economic ones.	90

Table 5.3.2.1.2 The Frequency of the Hedging Functions in English Pharmacological RP

Types of Hedges	Subcategories of the types of Hedges	Examples	F
Content-oriented hedges	Accuracy-oriented hedges	A psychoactive drug, psychopharmaceutical, or psychotropic is a chemical substance that crosses the blood-brain barrier .	48
	Writer-oriented hedges	What may appear to be a slight or insignificant variation in the chemical structure of a drug may greatly alter the intensity of the cell's response to the drug.	138

Table 5.3.2.1.2 The Frequency of the Hedging Functions in Arabic Pharmacological RP

Types of Hedges	Subcategories of the types of Hedges	Examples	F
Content-oriented hedges	Accuracy-oriented hedges	الإرقاء البدئي هو وقف لفقد الدم من وعاء دموي إثر تعرضه لأذى (رض أو قطع) وهو المرحلة الأولى من التخثر. The Initial hemostasis is to stop the loss of blood from a blood vessel after being hurt (trauma or cut) the first phase of coagulation. يجرى الدم ضمن الأوعية الدموية بشكل سائل، وذلك نتيجة توازن فيزيولوجي للعناصر التي تلعب دوراً في الإرقاء. Blood runs through the blood vessels in liquid form as a result of physiologic equilibrium of the elements that play a role in hemostasis.	202
	Writer-oriented hedges	يبدو أن دور الصفيحات الدموية أكثر أهمية في الخثرات الشريانية منها في الوريدية. The role of platelets seems more important in arterial thrombosis than in veins.	38

Table 5.3.2.1.3 The Frequency of the Hedging Functions in Arabic Pharmacological RP

Types of Hedges	Subcategories of the types of Hedges	Examples	F
Content-oriented hedges	Accuracy-oriented hedges	الاختيار الملائم لدواء لمرضى بصورة فردية تعتمد أيضاً على عوامل مثل عمر المريض، وجود مرض مستبطن، تعطل كلوي أو كبدي The appropriate selection of drugs for individual patients also depends on factors such as age of the patient, the presence of underlying disease, renal or hepatic failure	14
	Writer-oriented hedges	أنه الحالات أن الجرثوم المشتبه به حساس لدواء معين ويفترض في معظم ذلك بسبب خصائصه المعروفة من معطيات الترصد. However, it is assumed in most cases, the bacterium which is suspected is sensitive to a particular drug because of the known characteristics of the surveillance data.	28

6. The results

The following tables list the frequency and percentage of the Hedging Forms and Functions in English and Arabic Pharmacological PRs:

Table 6.1 The Frequency and Percentage of the Hedging Forms in English Pharmacological RPs

No. of Paper	Verbs		Nouns	Adverbs	Adjectives	Modals
	Epistemic judgmental	Epistemic evidential				
1	8	8	5	40	95	20
2	1	2	6	7	48	56
3	1	12	1	28	56	40
4	1	0	0	3	8	77
5	7	18	4	22	56	81
6	5	6	3	25	72	30
7	2	6	1	20	19	42
8	68	18	4	51	127	120
9	1	10	0	13	8	50
10	1	10	0	13	30	26
Total	95	90	24	222	519	542
Percentage	4.75	4.5	1.2	11.1	25.95	27.1

Table 6.2. The Frequency and Percentage of the Hedging Functions in English Pharmacological RPs

No. of Paper	Content-oriented Hedges	Writer-oriented Hedges
1	7	176
2	16	120
3	48	138
4	11	89
5	129	188
6	8	141
7	8	90
8	18	388
9	3	82
10	3	82
Total	251	1494
Percentage	12.55	74.7

Table 6.3. The Frequency and Percentage of the Hedging Forms in the Arabic Pharmacological RPs

No. of Paper	Verbs		Nouns	Adverbs	Adjectives	Modals
	Epistemic judgmental	Epistemic evidential				
1	1	2	0	7	5	26
2	0	4	2	30	22	90
3	3	1	3	15	18	49
4	0	1	1	8	17	24
5	0	1	0	11	2	22
6	4	0	1	2	9	19
7	2	1	12	4	7	14
8	3	14	5	13	48	121
9	1	2	1	5	5	21
10	1	0	3	11	23	38
Total	15	26	28	106	156	424
Percentage	1	1.4	.8	5.3	7.55	20.75

Table 6.4 The Frequency of the Hedging Functions in the Arabic Pharmacological RPs

No. of Paper	Content-oriented Hedges	Writer-oriented Hedges
1	202	41
2	83	148
3	26	89
4	77	51
5	242	36
6	18	35
7	14	40
8	59	204
9	95	35
10	34	76
Total	850	755
Percentage	42.5	37,75

Table 6.5 The Percentage of the Hedging Forms in Arabic and English pharmacological RPs

Hedging Forms in pharmacological RPs	Main Verb		Nouns	Adverbs	Adjectives	Modals
	Epistemic judgmental	Epistemic evidential				
The English pharmacological RPs Per 2,000 words	4.75	4	1.2	11.1	25.95	27.1
The Arabic pharmacological RPs Per 2,000 words	1	.6	.8	5.3	7.55	20.75

Table 6.6 The Frequency of the Hedging Functions in the English and Arabic Pharmacological RPs

Hedging Functions In Pharmacological RPs	Content-oriented Hedges	Writer-oriented Hedges
The English Pharmacological RPs	439	1484
The Arabic Pharmacological RPs	1250	710

Table 6.7 The Percentage of the Hedging Functions in the English and Arabic Pharmacological RPs

Hedging Functions In Pharmacological RPs	Content-oriented Hedges	Writer-oriented Hedges
The English Pharmacological RPs	21.95	74
The Arabic Pharmacological RPs	62.5	35

The results of the ratio between the Hedging Forms in Arabic and English pharmacological RPs in Table 6.3.2.10 above are illustrated in diagram 6.1 below:

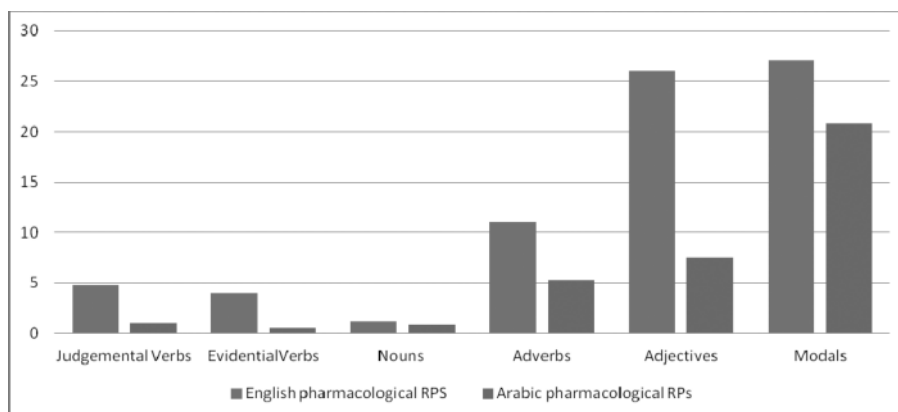


Figure 6.1 Distributions of the Hedging Forms in the Arabic and English pharmacological RPs

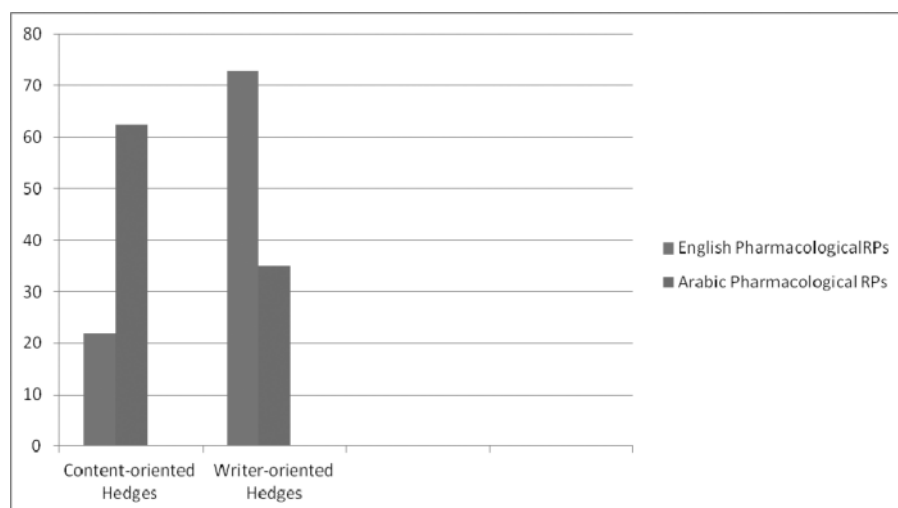


Figure 6.2 Distributions of the Hedging Functions in the Arabic and English pharmacological RPs

Figure 6.1 shows that the frequency of the use of the Hedging Forms in Arabic and English pharmacological RPs differs in the following respects:

- 6.1** As an answer to Q1, Q2, Q3, and Q4; English writers tend to use the judgmental verbs and the evidential verbs more frequently than do Arab writers because they prefer to give a space of freedom for the readers

to take part in the judgment while the Arab writers avoid sometimes to use such verbs to be more precise and accurate.

- 6.2** As an answer to Q1, Q2,Q3, and Q4; although the hedging verbs and the hedging nouns are used more frequently by the English writers than by the Arabs, their occurrence frequency in both Arabic and English pharmacological RPs is low comparing to the occurrence frequency of modifiers and modals. Nouns and verbs, grammatically speaking, are considered the head elements in the English and Arabic sentences, so it is recommended that hedging nouns and verbs are not used frequently.
- 6.3** As an answer to Q1, Q2,Q3, and Q4; the hedging adjectives, the hedging ad verbs and the hedging modals in both Arabic and English pharmacological RPs are used more frequently than the hedging verbs and the hedging nouns are. They, grammatically speaking, function as modifiers to the head elements in a sentence, i.e. nouns and verbs, therefore, they are the elements which carry the hedging meaning instead of the heads.

Figure 6.2 shows that the frequency of the Content-oriented Hedges and the Writer-oriented Hedges in Arabic and English pharmacological RPs differs in the following respect:

- 6.4** As an answer to Q4, Q5, and Q6; Arab writers tend to use the Content-oriented Hedges in the pharmacological RPs more frequently than do English writers. On the contrary, the Writer-oriented Hedges are used by English writers more frequently than they are by Arab writers. The Arab writes prefer to use assertive statements to be more precise and accurate when writing scientific discourses while the English writers prefer not to have complete commitment for the scientific facts and ideas they state and they tend to invite the readers into negotiation.

7. The main findings

- 7.1** Rhetoric plays a key role in the construction of knowledge within this genre, e.i. pharmacological RPs. It helps the unfolding of the text and it becomes essential in persuading the audience and obtain negotiation of the information conveyed.
- 7.2** Hedges help highlight the subjectivity of a proposition, the fact that a proposition may generally be subject to interpretation.
- 7.3** Hedges have a stronger function to convey politeness to a discourse. Even if an author is certain about the truth of his or her statements, it is highly recommendable for academic writing that their propositions

cannot be easily negated, so that there is little room offered for negotiation. After all, every statement, even if it is based upon very accurate data, is not definitive and decisive.

- 7.4 Hedging contributes to reduce confrontation in a dialogue between an author and other research colleagues or academics.
- 7.5 It helps the flow of new information. With the presence of hedges, a writer would be able to formulate statements describing new information or creating different viewpoints through persuasion and negotiation of information with audience.
- 7.6 Without the presence of hedges, a writer would be unable to formulate statements that describe new information or create different viewpoints through persuasion and negotiation of information with audience. In consequence, the primary communicative purposes of RPs would not be achieved if the absence of hedges is an obstacle to the information flow.

8. Implications for second/foreign language teaching

In the context of a pragmatically oriented approach to language teaching, the notion of interlinguistic differences in register conventions raises questions, such as, to what extent can errors be predicted, resulting from the transfer of register conventions from a learner's mother tongue to his or her second /foreign language?. How is the acquisition of register competence in a second /foreign language affected by the nature of registers with which a learner has been acquainted in his or her mother tongue, in his or her second language, or in both?

At a more practical level, further inter-linguistic studies of register conventions would heighten students' awareness of the difficulties which are related to certain pairs of languages in registers which a student is expected to master.

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تعنى بنشر الأبحاث والدراسات في تخصصات السياسة والاقتصاد والاجتماع والخدمة الاجتماعية وعلم النفس والأنثروبولوجيا الاجتماعية والجغرافيا وعلوم المكتبات والمعلومات



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مؤسسات

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