UNIVERSITY OF MURCIA

International Journal of English Studies

IJES

www.um.es/ijes

The Mitigation of Scientific Claims in Research Papers: A Comparative Study

PEDRO MARTÍN-MARTÍN*
University of La Laguna

ABSTRACT

In the context of academic writing, authors tend to mitigate the force of their scientific claims by means of hedging devices in order to reduce the risk of opposition and minimise the face threatening acts that are involved in the making of claims. This study explores the phenomenon of hedging in the research article (RA) from a cross-cultural perspective. To this end, a total of 40 RAs written in English and Spanish in the field of Clinical and Health Psychology were analysed in terms of the frequency of occurrence and distribution of the various strategies and the linguistic devices associated to each strategy which perform a hedging function in the different structural units of the articles. The results of the comparative quantitative analyses revealed that there are similarities between the two languages regarding the distribution of hedges across the structural units of the RAs, although a certain degree of rhetorical variation was also found mainly in terms of the frequency of use of the strategy of indetermination (i.e. modality devices and approximators) which occurs to a much greater extent in the English texts. This suggests that the English RAs in the field of Clinical and Health Psychology, as a whole, involve more protection to the author's face.

KEYWORDS: academic writing, scientific claims, hedging, research articles

Address for correspondence: Pedro Martín-Martín. Departamento de Filología Inglesa y Alemana, Campus de Guajira 38071, La Laguna, Spain. Tel: 00 34 922 317649. Fax: 00 34 922317611; e-mail: pamartin@ull.es

I. INTRODUCTION

In the communicative situation which implies a negotiation between writers and readers in the academic context, researchers generally make use of hedging as an important rhetorical strategy which allows them to mitigate the strength of scientific claims in order to reduce the potential threat that new claims make on other researchers (Myers, 1989), and in order to gain community acceptance for a contribution to disciplinary knowledge by showing that they are familiar with the discourse conventions of a particular academic community (Hyland, 1994, 1998).

Hedging has been generally taken to mean those expressions in language which make messages indeterminate, that is, they convey inexactitude, or in one way or another mitigate or reduce the strength of the assertions that speakers or writers make. In pragmatics, a *hedge* is generally defined either as one or more lexico-syntactic elements that are used to modify a proposition. Likewise, the term *hedging* is used to refer to the textual strategies of employing linguistic means such as hedges in a context for specific communicative purposes, i.e. politeness, mitigation, vagueness and modality (see Markannen & Schröder, 1997).

The use of *hedge* as a linguistic term goes back at least to the early 1970's when Lakoff (1973) published his article "Hedges: A Study in Meaning Criteria and the Logic of Fuzzy Concepts". In this publication, Lakoff was not interested in the communicative value of the use of hedges but was concerned with the logical properties of words and phrases like *rather, largely, sort of, very*, in their ability "to make things fuzzier or less fuzzy" (Lakoff, 1973: 195). According to Lakoff, hedges such as *sort of* typically modify predicates in terms of category assignment, therefore his primary interest was not the qualitative aspect according to truth but grading (see Clemen, 1997). Since Lakoff's (1973) early work on hedging, the concept itself has broadened and varying positions have emerged from research areas such as politeness (see Brown & Levinson, 1987) and linguistic vagueness (see Channell, 1990). These various approaches have pointed to a great variety of motives in using hedging devices, for instance, face-saving strategies intended to obtain speaker's or writer's acceptance, mitigation and modification of utterances, avoidance of commitment and intentional vagueness. Through this extension, the concept of hedge has overlapped with several other concepts such as modality[1] and evidentiality[2].

The fact that hedges frequently occur in academic discourse, which has been traditionally characterised by its rationality and neutrality, points to the fact that scientific texts are not merely a collection of conventions that can be explained in terms of the norms

for conveying scientific information, that is, scientific texts are not only content-oriented and informative but also seek to convince and influence their audience. An increasing number of research studies on a variety of disciplines (see, for example, Hyland, 1994, 1996, 1998, 2000; Salager-Meyer, 1991, 1994, 1998; Skelton, 1997; Meyer, 1997; Lewin, 1998) has been able to demonstrate just how academic discourse is both socially-situated and structured to accomplish rhetorical objectives. In this research tradition, politeness has been seen as a main motivating factor for hedging, because as Myers (1989: 5) states "scientific discourse consists of interactions among scientists in which the maintenance of face is crucial". Myers (1989) applied Brown and Levinson's (1987) model to a corpus of biology research articles (RAs) and found that some of the politeness strategies that are used in spoken interaction can be extended to scientific texts. He argues that in scientific discourse the making of claims, and even the mere act of presenting one's findings, threatens the negative face of other researchers. As a result, the use of politeness strategies (e.g. hedges) is frequent in a bid to mitigate Face Threatening Acts (FTAs) involved in the social interactions between writers and readers.

In scientific writing vagueness has also been seen as a motivating factor for the use of hedges. In order to avoid making categorical assertions the writer will make vague statements if, for example, exact data is missing or if precise information is irrelevant in preliminary results. Hedges thus protect writers from making false statements by indicating either a lack of complete commitment to the truth value of a proposition, or a desire not to express that commitment categorically. This role of hedging as an indicator of vagueness and imprecision has been discussed in the framework of LSP texts by, for example, Salager-Meyer (1994), who claims that the association of hedges with evasiveness does not necessarily show confusion or imprecision. On the contrary, hedges, for Salager-Meyer, 1994: 151), can be considered as "ways of being more precise in reporting results". She also argues that academics may choose to remain vague in their claims to show their readers that they do not have the final word on the subject, revealing that typical features of science are "uncertainty, skepticism and doubt". Taking this into consideration, hedges, because of their mitigating and evasive effect, can increase the credibility of a statement in academic texts.

Over the last decade, there has been an increasing interest in cross-cultural studies which have analysed the phenomenon of hedging in academic texts. Ventola and Mauranen (1990) found that Finns writing in English showed less variation in expressions of epistemic modality than did native speakers of English. Clyne's (1991) interlanguage study of German scholarly writing in English revealed that German writers hedge more both in their native

language and in English than do native speakers of English. Following the work by Clyne (1991), Kreutz and Harres (1997) analysed the distribution and function of hedging in English and German academic writing, and found that while hedges serve to downtone and mitigate arguments in English texts, their main function in German writing may be one of "assertion and authority". Vassileva (1997) examined hedging in English and Bulgarian research articles. Her results revealed differences in the distribution of hedges throughout the research articles and in the means of realising hedging in both languages. The results of all these studies point to the view that the pragmatics of hedging is culturally determined. Although the strategy of hedging in the RA has been analysed in a number of languages other than English, contrastive studies of this phenomenon in English and Spanish papers have received less attention, with the exception of Oliver del Olmo's recent work (2004) in the field of Medicine.

Considering the importance of this strategy, especially for non English-speaking background academics, in this study, I attempt to expand this area of research by exploring the socio-pragmatic phenomenon of hedging in the research article from a cross-cultural (English/Spanish) perspective and in the specific discipline of Psychology. For the purposes of the analyses, I start by proposing a taxonomy of hedging devices on the basis of the major lexico-grammatical forms and strategies used to hedge in the corpus. In the next sections, I report on the results obtained from the comparative analyses of hedges and attempt to work out a ranking of hedging strategies according to the degree of protective function realised. This is followed by a discussion of the possible explanations for rhetorical variation and the pedagogical implications of the results obtained.

I. 2. Towards a classification of hedging devices

Hedging in academic writing can be expressed by means of various lexical, grammatical and syntactic devices depending on how broadly we understand the term. However, due to the fact that hedging is primarily viewed as a socio-pragmatic phenomenon there is little agreement among linguists about what linguistic devices should and should not be considered as hedges. There are some functionally-based approaches, such as Crompton's (1997, 1998) that consider *hedge* as a concept reserved for expressions of epistemic modality with the sole function of avoiding commitment. Most of the researchers on the notion of hedging are, however, unwilling to see form and function as inextricably linked, but prefer to read certain forms as hedges in certain contexts but not in others. One such researcher is Salager-Meyer (1994, 1998, 2000), who favours an eclectic approach which includes various manifestations

of the concept. In her 1994 paper, she argues that many studies of hedging have not placed enough emphasis on the fact that hedges are primarily the product of a mental attitude and have looked for prototypical linguistic forms for their realization without considering that these linguistic forms may not always have a hedging function. Salager-Meyer also suggests that "the only way to identify hedging devices is by means of introspection and contextual analysis with the help and advice of an expert in the discipline analyzed" (Salager-Meyer, 1998: 298).

If hedging is the product of a mental attitude (as posited by Salager-Meyer, 1994; 1998; 2000), and therefore a subjective phenomenon which functions in a particular context, it is not surprising that, as mentioned earlier, there is so little agreement -among those who seek to establish the category- on which lexical items, phrases or syntactic structures should be classed as hedges and which strategies can be used to convey a hedging function in a given context. Clemen (1997: 243), for example, provides a list of the most frequent hedging devices, such as epistemic qualifiers, certain personal pronouns, indirect constructions, parenthetical constructions, subjunctive / conditional, concessive conjuncts, negation. Hyland (1994: 240) includes "If"-clauses, questions and time references. The use of passive, agentless and impersonal constructions has also been classified as a hedging device by many authors (e.g. Markkanen & Schröder, 1997; Salager-Meyer, 1998; Clemen, 1997).

In addition to lexico-syntactic items, other authors such as Hyland (1996, 1998) have pointed to the existence of other discourse-based strategies that weaken scientific statements by limiting the confidence invested in the claims made for the research. Hyland refers to those cases in which the writers draw attention to the limitations of the model, theory or method used, an effect which is often achieved by "commenting on the difficulties encountered", the "shortcomings of findings" or "the possibility of alternative explanations".

Along the same lines, Lewin (1998) claims that in the discourse stratum the realizations of certain optional genre structures (moves/steps) can be considered as hedges since their function is to protect the author from possible attack (e.g. "establishing the gap the present research is meant to fill" or "offering implications for future research"). What seems to be clear is that the varying categorizations at the present stage, enriching as they are, present considerable problems when it comes to the analysis of corpora of academic texts.

The taxonomy of hedging devices which I propose in this study draws on the different classifications that can be found in the literature. For the analysis, I have primarily considered the socio-pragmatic context in which hedges occur, as it appears that it is virtually impossible to attribute a function to a hedge without considering both the linguistic and situational

context. A preliminary analysis of the corpus revealed that the linguistic devices which the writers in both languages use at a lexico-grammatical and syntactic level for the explicit function of hedges can be described as realising the following basic strategies:

1. Strategy of **Indetermination**, by giving a proposition a colouring of lesser semantic, qualitative and quantitative explicitness as well as of uncertainty, vagueness and fuzziness. This strategy may comprise:

1.1. **Epistemic modality**, which can be realised by means of:

- Modal auxiliary verbs expressing possibility[3], such as *may, might, can/poder.*
- Semi-auxiliaries such as *to seem, to appear/parecer.*
- Epistemic lexical verbs such as *to suggest/sugerir, to speculate/especular, to assume/suponer*, that is, verbs which relate to the probability of a proposition or hypothesis being true.
- Verbs of cognition such as *to believe, to think/creer.*
- Modal adverbs (*perhaps/ quizás, possibly/ posiblemente, probably/ probablemente*).
- Modal nouns (*possibility/posibilidad, assumption/suposición, suggestion/ sugerencia*).
- Modal adjectives (*possible/posible, probable, likely/probable*).

1.2. **Approximators** of quantity, frequency, degree and time[4] such as *generally, approximately, most, relatively, frequently*, *varios, la mayor parte, prácticamente, recientemente*, etc., which indicate an unwillingness to make precise and complete commitment to the proposition expressed.

2. Strategy of **Subjectivisation**. This includes:

2.1. The use of **first personal pronouns (I/we) followed by verbs of cognition (think, believe) or performative verbs (suppose, suggest)**, that can be interpreted as the writers signalling that what they say is simply their personal/subjective opinion. In this way, the writers show respect for the reader's alternative opinion and invite the reader to become involved in the communicative situation. In this subcategory, I have also included those linguistic devices which express **the author's personal doubt and direct involvement** such as *to our knowledge, in our view, in my experience*.

2.2. **Quality-emphasising adjectival and adverbial expressions** such as *extremely interesting, particularly important; de gran utilidad, resultados esperanzadores*, that is, emphatic expressions that Hyland (1998) names "boosters" and which are equivalent to what Salager-Meyer (1991, 1994, 1998) terms as "emotionally-charged intensifiers", which are used to convince the readers of the importance / truth of the propositions expressed by revealing the writer's emotional state. At the same time, these expressions can be considered as a positive politeness strategy (Myers, 1989) as they show solidarity with the discourse community by exhibiting responses that assume shared knowledge and desires.

3. Strategy of **Depersonalisation**. This refers to those cases in which the writers diminish their presence in the texts by using various impersonal, agentless and passive constructions in order to relieve themselves of responsibility for the truth of the propositions expressed. This strategy is syntactically realised by means of:

3.1. **Agentless passive and impersonal constructions**[5] such as *an attempt was made to see..., it seems/appears that...; se ha efectuado un análisis de..., se concluye/demuestra que....*

3.2. **Impersonal active constructions** in which the personal subject is replaced by some non-human entity such as *findings, results, data*, as in the following examples: *The findings suggest/ reveal..., these data indicate...; los resultados mostraron/sugieren...*

II. RESEARCH DATA AND METHODS

A total of 20 research articles written in English and another 20 written in Spanish over a period of five years (2001-2005) were selected at random for the present study[6]. Since the literature on academic discourse has reported the existence of generic variation across disciplinary boundaries (see, for example, Bhatia 1998), the sample here was restricted to the discipline of Psychology. Considering that Psychology is divided into several subfields of knowledge (i.e. Clinical and Health, Behavioural, Cognitive and Neural, Social, Developmental and Educational), in order to avoid any possible variation across subdisciplines, I have compiled the corpus from research papers in the specific subfield of

Clinical and Health Psychology. In order to have a homogeneous corpus, in both groups of texts all the selected articles conformed to the IMRAD structural pattern, i.e. Introduction-Methods-Results-Discussion/Conclusion.

The texts in English were selected from publications in two of the most prestigious international journals in this field: *Health Psychology* and the *British Journal of Clinical Psychology*. As for the representativeness of the texts, I took for granted that all the writers, whether native speakers of the English language or not, largely conformed to the rhetorical practices of the international English-speaking academic community, as the research papers had been accepted for publication by the English-speaking editorial board. Since there are no specific journals in Spanish dealing with the subfield of Clinical and Health Psychology, the 20 RAs in this language (all related to the particular field under research) were drawn from two leading journals in Spain of general Psychology: *Anales de Psicología* y la *Revista de Psicología General y Aplicada.* For the selection of these particular journals I primarily considered their importance for the disciplinary community by following the recommendation of specialist informants. I also took into account how frequently these journals were consulted by users of the social sciences library at my university. Another approach I considered was selection by means of the listing of journals ranked by impact factor in the Journal Citation Report (Social Science edition). While the international journals would have been amenable to this approach, I ultimately decided that it was not appropriate in a cross-linguistic study such as the one reported here, since the Spanish journals are not indexed in this list.

In a preliminary stage of the analyses I attempted to identify the possible linguistic devices that writers in both languages used at a lexico-grammatical and syntactic level for the function of hedging. For the purposes of the analysis, I chose to divide hedges into three separate categories depending on the function that they realised in the texts (see Section I. 2). In a cross-linguistic analysis, as the one described here, it is of particular importance to present clear equivalences of the realization of hedges in both languages. Thus, for example, the conditional mood in Spanish was considered a realization of a hedge equivalent to the form *would* in English. Once the taxonomy was established after the preliminary analysis of a subgroup of texts, I proceeded to carry out a comparative quantitative analysis in terms of the frequency of occurrence and distribution of hedges in each of the structural units of the articles that constitute the corpus. The instances of hedges were examined in context to ensure that they expressed a hedging function. The most complicated methodological problem related to the analysis was in deciding on how to present the frequencies of the use of hedges, since in hedging not only single words are used, but also combinations of two, three or more

words, as well as various grammatical devices. I finally calculated each instance as a separate example of a hedge, although recognising the existence of strings of hedges which reinforce the strength of hedging and therefore provide more protection to the author's face, as in the following examples: "*It is suggested* that..." In this instance the author combines two different hedging strategies, i.e. an impersonal passive construction (strategy of depersonalisation) and an epistemic verb (strategy of indetermination), which for the purpose of the quantitative analysis have been treated as two separate instances of hedges. Similarly, in "*The results suggest that...*", the author uses an impersonal active construction in which the personal subject is replaced by a non-human entity (strategy of depersonalization), and this is combined with the epistemic verb to reinforce the hedging function. This is another example which I have recorded as two separate instances of hedges. Finally, the percentage of hedges with respect to the total number of occurrences in each category was also recorded, in order to appreciate more clearly the distributional variability per structural unit in both groups of texts.

III. RESULTS OF THE ANALYSIS OF HEDGES

Following the taxonomy of hedges proposed in this study, in this section, I start by reporting on the results obtained from the analyses of the various strategies which perform a hedging function in the different structural units of the articles.

Structural unit	**Strategy**	ENGLISH	SPANISH
Introduction	Indetermination	294 (18.4%)	105 (7.3%)
	Subjectivisation	27 (1.6%)	33 (2.3%)
	Depersonalisation	195 (12.2%)	258 (18.1%)
Methods	Indetermination	6 (0.3%)	18 (1.2%)
	Subjectivisation	2 (0.1%)	2 (0.1%)
	Depersonalisation	270 (16.9%)	342 (24.1%)
Results	Indetermination	135 (8.4%)	51 (3.5%)
	Subjectivisation	6 (0.3%)	3 (0.2%)
	Depersonalisation	162 (10.1%)	207 (14.5%)
Discussion/Conclusion	Indetermination	297 (18.6%)	129 (9.1%)
	Subjectivisation	9 (0.5%)	27 (1.9%)
	Depersonalisation	192 (12.1%)	246 (17.3%)
Totals		1595 items	1421 items

Table 1: Frequency of occurrence and distribution of hedging strategies in the structural units of the research articles

The results in Table 1 show that, although overall there is a higher preference for the use of modality devices and approximators (strategy of indetermination) by the writers in English, the distribution of this strategy varies similarly across the different structural units of

the articles: the most heavily-hedged units both in English and Spanish are the Discussion/Conclusion unit and the Introduction unit. This is unsurprising in that it is in these sections that writers make the highest level of claims and tentatively explore implications not directly tied to their findings. Instances of the fairly wide range of approximator devices with a mitigation function that writers in both languages use in these two structural units are the following: *generally, often, much, mainly, somewhat, virtually, frequently, relatively, most, some, approximately; muchos, la mayoría, varios, algunos, diversos, la mayor parte, prácticamente, recientemente*, etc., expressing various degrees of quantity, quality, frequency and time. The modal markers most frequently used in the Discussion/Conclusion unit in both languages are epistemic verbs (*to suggest, to indicate, to tend, to propose; sugerir, indicar, señalar*) and modal verbs (*may, can, might; poder*). It is in this unit, especially in the English texts, in which most instances of groups of modality devices in the same sentences were found, reinforcing in this way their epistemic force, as in examples 1 and 2:

> (1) Evidence *suggests* high emotional intelligence *could* buffer against the negative impact of a toxic social environment. (Eng. 7)

> (2) Esto, *quizás*, *pueda* deberse a que fue muy escasa la representación del subtipo específico en nuestro estudio. (Span. 8)

In the Introduction unit, the modality devices most frequently used are modal verbs (*can, would, may, might; poder*) followed by epistemic verbs (*to suggest, to indicate, to tend; parecer, pretender, proponer*) and modal nouns (*assumption, possibility, indication; posibilidad, tendencia*), especially in those moves[7] in which writers try to establish the relevance of their work for the research community, mainly by showing their knowledge of their research topic or claiming centrality, as in the following examples:

> (3) Recent work addressing emotional expression and adjustment to cancer *suggests* that coping through actively processing and expression emotion *can* lead to better long-term psychological adjustment. (Engl. 7)

> (4) Las repercusiones del dolor crónico *pueden* ser numerosas, y es muy *probable* que las personas que lo padecen experimenten pérdidas importantes en la esfera laboral, económica, familiar, social, sexual, etc. (Span. 1)

Epistemic modality is also frequently found in the Introduction unit in both languages in those moves in which writers try to justify their work in their research field by indicating a gap, that is, by pointing out possible topics or areas that still need research, or by showing disagreement with the results of previous studies (see Swales, 1990:141). In this particular move, epistemic modality constitutes an important rhetorical device, especially in the international publications in English, diminishing as it does the degree of disagreement with the ideas sustained by other authors and thus protecting the writers from criticism, as in examples 5 and 6:

> (5) However, the role of attempts to control intrusive thoughts in childhood anxiety disorders *seems* to have been neglected. (Engl. 11)

> (6) Es un hecho bien documentado que la EA lleva asociado un deterioro del conocimiento semántico […]; sin embargo, no *parece* ocurrir lo mismo cuando hablamos de disociaciones categoriales vivo/no vivo, hecho éste que continúa siendo debatido por los investigadores. (Span. 19)

In the Results unit, as shown in Table 1, the frequency of occurrence of indetermination strategies is not as high as in the previous structural units (8.4% in English and 3.5% in Spanish). On the occasions that writers use modality to present the results obtained, the modality markers most frequently used are epistemic verbs, modal verbs and semi-auxiliaries. Finally, with regard to the Methods unit of the English and Spanish articles, very few examples of modality devices and approximators (0.3% in English and 1.2% in Spanish) were found in both groups of the texts.

The analysis of first person forms of cognitive and performative verbs, and quality-emphasising adjectival and adverbial expressions (strategy of subjectivisation) revealed that this strategy was not much favoured among the writers of the articles in either of the languages (2.7% in English and 4.5% in Spanish). Most of these devices occur in the Introduction unit, particularly in the subunit corresponding to a move in which the writers highlight the relevance of their research, and in the Conclusion/Discussion unit of the articles. In these cases, the use of these linguistic devices contributes to emphasising the importance of the work. In the sample analysed there were instances of expressions such as *major element, increased attention, potentially effective, particularly important, significant role, useful tool, particularly worthwhile*, *reliable, considerable*; *importantísima relación, sumamente importante, factor importante, considerable porcentaje, claros resultados, datos*

tremendamente preocupantes, indudable, *desafortunadamente*, *enormemente*. These expressions were also found, to a much lesser extent, in the Methods unit of both the English and the Spanish texts.

The analysis of agentless passive and impersonal constructions, and impersonal active constructions (strategy of depersonalisation), as seen in Table 1, revealed that although the frequency of occurrence of these expressions is overall higher in Spanish, the distribution of these elements across the different structural units is similar in both languages. The Methods unit is where the writers opted for this strategy most frequently (16.9% of the cases in English and 24.1% in Spanish). Typical expressions found in the corpus are "Participants *were asked/ recruited/ required/ administered/ evaluated...*"; "Los sujetos *fueron entrevistados/seleccionados...*"; "The data were *collected/ examined/ compared/ analysed...*"; "*Se procedió, se aplicó, se llevaron a cabo, se elaboró, se utilizó, se ha calculado, se empleó...*". In these cases, the passive voice allows the writers to describe the materials and methodological procedures in a detached way, thus avoiding direct personal attribution. A further motivation for the use of the passive in this structural unit, as suggested by Hyland (1988), can be interpreted as an effort by the writers to demonstrate that they used the appropriate procedures established by previous researchers as part of an accepted scientific method. In this way, the writers demonstrate a deferential attitude to the other members of the disciplinary community and, at the same time, show that they are credible and competent members of the discourse community with a mastery of the genre conventions of their discipline, one of which is a preference for the use of passive and impersonal constructions to report procedures. The second more frequently hedged unit is the Introduction section, especially the sub-unit representing a move in which the author describes the main features of his/her research. On these occasions, the writers used passive constructions to avoid making overtly explicit their personal contribution to the research, as in the following examples: "The effects of X *are tested/ studied/ reported...*", "An attempt *was made* to see..."; "En este artículo *se plantea/ se expone/ se presenta/ se propone/ se describe/ se examina/ se analiza...*". The authors opted on other occasions for replacing the personal subject by some impersonal subject that acts as the agent of the research: "*This paper tested/ aims/ reports/ describes...*", "*The current (present) investigation attempted/ studied/ focuses on/ examines/ explores...*"; "*Este trabajo plantea/ analizó/ presenta/ exploró...*". The impersonal constructions are also quite frequent in the Introduction unit, specifically in the sub-unit corresponding to a move in which the authors show their knowledge of the topic (e.g. "*It has been suggested/ observed/ assumed/ claimed...*"). In these cases, the use of impersonality

contributes to reducing the responsibility for the propositions expressed by implying that the writer's claims are supported by other researchers that share her/his opinion. At the same time, by using these impersonal constructions, the writer avoids attributing responsibility for the claims made to any particular researcher. In the Conclusion/ Discussion unit, where the highest level of claims is made, a common strategy is the use of impersonal active constructions which, by nominalising a personal projection, suggest that the situation described is independent of human agency. This is a rhetorical practice with a relatively high frequency of occurrence, mainly in the English texts (e.g. "*The findings revealed...*", "*These results support/ show...*", "*The discussion considers...*"; "*Los resultados mostraron/ demuestran...*", "*El análisis corroboró...*"). On most of these occasions, these non-human subjects are used with epistemic verbs (especially in the English texts). This contributes to further reducing the degree of commitment by combining a shift of responsibility from the author to the non-human actor, and a mitigation of claims provided by the aspect of modality which the epistemic verb conveys: "*The results suggest/ indicated...* "; "*Los resultados sugieren/ indicaron/ señalan...*". Alternatively, the inclusion of personal pronouns increases the authorial presence in the texts, although epistemic verbs are still used, as in "*our findings suggest...*". The use of impersonal and passive constructions also constitutes a useful rhetorical practice when the writers try to establish the implications drawn from the results obtained in their study. Typical syntactic constructions found in the sample are: "*It is concluded/ suggested that...*", "The results *are interpreted* as...", "The findings/ implications *are discussed*"; "Estos resultados *se discuten/ se explican /son discutidos...*". Finally, in the Results unit, the writers in both groups opted for the use of the depersonalisation strategy in a relatively high frequency of cases, revealing that the writers in both languages prefer to report the main results of their research by using impersonal constructions (e.g. "*It was found/ observed...*"; "*Se obtuvo/ aprecia/ observó/ evidencian...*").

Figure 1 shows that, as regards the overall frequency of occurrence of hedges realising the various strategies in both languages, there are similarities in relation to the use of hedging devices to achieve the strategies of subjectivisation and depersonalisation. The last of these strategies has been shown to be preferred by the writers in Spanish (74.1% of the total number of occurrences) and also by the writers in English (51.3%).

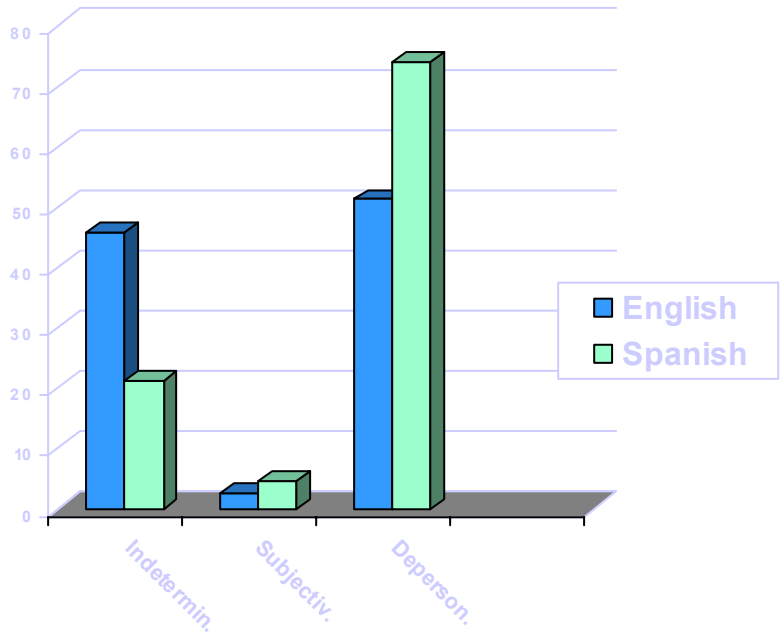

Figure 1. Overall number of hedging devices used in the articles.

The results in Figure 1 also show that there is, however, a marked difference in the frequency of occurrence of the strategy of indetermination. Its use constitutes 45.8% of the total number of hedges in the English texts, whereas in Spanish this strategy is used in 21.3% of the total number of hedges.

IV. GRADING OF HEDGES

Considering that a main function of hedges in research article writing is the minimalization of FTAs, following Namsaraev (1997), I have attempted to work out a ranking of hedging strategies, depending on the degree to which this minimalization of FTAs is achieved. As noted earlier, the mitigation of FTAs is closely related to the demonstration of deference to the scientific community (see, Myers, 1989). Table 2 represents a possible rank of gradation of the hedging devices suggested in this study according to the degree of protection realised or the degree of the writer's deference before the scientific community.

Strategy	**Degree of protection**
	0
Subjectivisation	+
Indetermination	+ +
Depersonalisation	+ + +

Table 2. Gradation of hedging strategies according to the degree of the protective function realised

Out of the three hedging strategies described in this study, the strategies that most clearly indicate the writer's deference to the scientific community and that, consequently, most effectively minimise the FTAs involved in this particular communicative situation (research paper writing) are the strategies of depersonalisation and indetermination. The latter strategy (epistemic modality and approximators) allows writers to express propositions less categorically and thus make them more acceptable to the reader. This strategy also diminishes the writer's commitment to the truth value of the proposition, although it leaves the author's face unprotected from possible criticism. It is, however, the strategy of depersonalisation (agentless passive and impersonal constructions) that allows writers to distance themselves from what they say, thus also reducing their commitment to the truth value of the proposition. Commitment reflects the relation between the writer and the proposition and, at the same time, reflects the relation between the writer and the reader. Therefore, we may assume that the scale of commitment / detachment represents a scale of interpersonal relations between the writer and the community: the higher the degree of detachment, the higher the degree of deference to the community and, therefore, the higher the degree of protection. It is thus not surprising to find that these two strategies, giving as they do more protection to the writers, are the ones most frequently used in both languages.

V. CONCLUSIONS

The analysis of the various lexico-syntactic elements that perform hedging functions in the research articles has revealed that this rhetorical strategy is favoured by the writers in both languages, although a slightly higher tendency was reported in the English research papers. The total number of hedging devices found in the English texts is 1595 as opposed to 1421 in Spanish. In terms of the distribution of hedges across the different structural units of the texts, the results of this study have shown that there are similarities between the two languages. It is in those sections where the highest level of claims is made (i.e. the Introduction and the Conclusion/Discussion units) in which most hedging devices are used. The results also show

that the most frequently used strategy in both groups of texts is the strategy of depersonalisation. This indicates that, despite the fact that the research articles in both languages are not completely devoid of personal attribution, the use of impersonal and agentless passive constructions is a highly favoured strategy for the writers of research papers both in English and Spanish.

The most striking difference that can be drawn from the results is that the authors of the English texts use the strategy of indetermination (realised by modality devices and approximators) to a much greater extent than the writers in Spanish. If we consider that this strategy provides a relatively high degree of protection (as seen in Table 2), it can be concluded that the English research articles in the subfield of Clinical and Health Psychology, as a whole, involve more protection of the author's face. The English-speaking writers resort more frequently to making their claims more tentative and indeterminate, and thus mitigate the strength of their assertions in a bid to achieve greater acceptance from the members of the research community. The fact that in a relatively high proportion of the Spanish texts the writers do not use any of the epistemic modality devices points to a tendency which may well be motivated by the particular interpersonal relations between writer and reader. An alternative explanation for the low frequency of occurrence of modality in the Spanish RAs might simply be that this rhetorical strategy has not been conventionalised as part of Spanish academic style, since a hedging function is generally achieved in the Spanish texts by means of the strategy of depersonalisation, which, as has been argued offers the highest degree of protection. Spanish writers may thus consider the use of modality an additional protective strategy which is in fact unnecessary as, in the relatively small community in which they work, the risk of retaliation from a peer is considerably reduced.

Rhetorical variation in the research papers analysed in this study must thus be interpreted mainly in relation to the specific features of the socio-pragmatic context where the texts have been produced, that is, the relationship between the writers and the discourse communities they are addressing, communities which differ both in terms of size and pressure to publish. In any case, it is difficult to establish to what extent rhetorical variation is conditioned by cultural or socio-pragmatic factors. Only through an ethnographic analysis of writers' motivations for the use of certain rhetorical strategies could one arrive at a satisfactory explanation for where the boundaries between cultural background and socio-pragmatic aspects lie.

The results obtained in the present study may have pedagogical implications not only for writers of English and Spanish as a second language, but also for teachers of LSP, since these may contribute to increasing our understanding of intercultural differences (and similarities) in academic writing. As Ventola (1997: 167) has noted, some areas where non-native writers of English need most textual training are in the awareness of cultural differences in "global and local structuring of texts and modality". Awareness of intercultural rhetorical preferences is then particularly useful for postgraduate students and novice writers if they want to make informed choices about whether and when to conform to the expectations of the target audience. Further exploration of the use of hedges, particularly from a cross-linguistic perspective would offer new insights into a rhetorical strategy which is gaining importance in scientific communication. By describing rhetorical preferences in both languages, this study has also attempted to contribute to the appreciation of the existence of different rhetorical traditions, mainly the role of academic Spanish in a more and more internationalised world.

NOTES

[1] Most linguistic approaches to modality differentiate two major subtypes: *deontic* modality, which, according to Lyons (1977: 823) "is concerned with the necessity or possibility of acts performed by morally responsible agents", and *epistemic* modality; the latter is the subtype of modality which is associated with hedging. Epistemic modality, as defined by Lyons (1977: 797), refers to "any utterance in which the speaker explicitly qualifies his commitment to the truth of the proposition expressed by the sentence he utters".

[2] Chafe (1986: 271) defines evidentiality as "any linguistic expression of attitudes toward knowledge". According to Chafe, knowledge has various modes: belief, induction, hearsay and deduction, each of which is based on a different source. Most of the examples that Chafe gives as realizations of these different modes are expressions that have also been included in hedges by other linguists (e.g. adjectives of modality, verbs of cognition, modal auxiliaries, modal adverbs). Chafe himself uses the term *hedge* to refer to "markers of low codability" and for expressions that denote that "the match between a piece of knowledge and a category may be less than perfect" (Chafe, 1986: 270).

[3] The subjunctive and conditional mood of the verbs in Spanish is included in this sub-type. I should also mention that, in this study, modals expressing ability were not recorded as hedges (e.g. "The results obtained *could* not be compared...").

[4] All these adverbial expressions have been recorded as hedges realising the strategy of indetermination, although it should be noted that not all approximators serve to make things vague, but to express propositions with greater precision (see, for example, Salager-Meyer, 1991, 1994; Hyland, 1996, 1998).

[5] In this study, I have only recorded the agentless passive constructions which refer to those cases in which the author is the implied agent, i.e. when the authors avoid the use of first person pronouns which serve to indicate a full commitment for the propositions expressed. For example, when the authors use constructions such as "In this study the phenomenon X was examined" instead of "In this

study I/we examined the phenomenon X", or "The data was analysed" instead of "I/We analysed the data".

[6] Due to constraints of space, I have not included here a list of references of the articles that make up the corpus of analysis. Full bibliographical details of the texts can be obtained by contacting the author.

[7] For the description of the rhetorical structure of academic texts, much of the ESP genre-based research has used the concept of *move* as the unit of analysis, following the pioneering work by Swales (1981, and then revised in 1990 and 2004). This term basically refers to a functional text element, as viewed in relation to the rhetorical goal of a text, and that tends to occur in typical sequences.

REFERENCES

Bhatia, V. (1998). Generic Conflicts in Academic Discourse. In Fortanet, I., Posteguillo, S., Palmer, J.C. & Coll, J.F. (Eds.), *Genre Studies in English for Academic Purposes.* Vol. 9 Filología. Universitat Jaume I: Collecció Summa, pp.15-28.

Brown, P. and Levinson, S. (1987). *Politeness: Some Universals in Language Usage.* Cambridge: Cambridge University Press.

Chafe, W. (1986). Evidentiality in English Conversation and Academic Writing. In Chafe, W. & J. Nichols (Eds.), *Evidentiality: The Linguistic Coding of Epistemology*. Norwood, N. J.: Ablex, pp. 261-272.

Channell, J. (1990). Precise and Vague Quantities in Writing on Economics. In Nash, W. (Ed.), *The Writing Scholar: Studies in Academic Discourse*. Newbury Park: Sage, pp. 95-117.

Clemen, G. (1997). The Concept of Hedging: Origins, Approaches and Definitions. In Markkanen, R. & H. Schröder (Eds.), *Hedging and Discourse. Approaches to the Analysis of a Pragmatic Phenomenon in Academic Text.* Berlin: Walter de Gruyter, pp. 235-248.

Clyne, M. (1991). The Sociocultural Dimension: The Dilemma of the German-speaking Scholar. In Schröder, H. (Ed.), *Subject-oriented Texts*. Berlin: Walter de Gruyter, pp. 49-68.

Crompton, P. (1997). Hedging in academic writing: Some theoretical aspects. *English for Specific Purposes*, 16, 271-289.

Crompton, P. (1998). Identifying hedges: Definition of divination?. *English for Specific Purposes,* 17, 303-313.

Gnutzmann, C. and Oldenburg, H. (1991). Contrastive Text Linguistics in LSP-research: Theoretical Considerations and some Preliminary Findings. In Schröder, H. (Ed.), *Subject-oriented Texts*. Berlin: Walter de Gruyter, pp.103-137.

Hyland, K. (1994). Hedging in academic textbooks and EAP. *English for Specific Purposes,* 13, 239-256.

Hyland, K. (1996). Talking to the academy: Forms of hedging in science research articles. *Written Communication,* 13, 251-281.

Hyland, K. (1998). *Hedging in Scientific Research Articles*. Amsterdam: John Benjamins.

Hyland, K. (2000). *Disciplinary Discourse. Social Interactions in Academic Writing.* Harlow: Pearson Education.

Kreutz, H. and Harres, A. (1997). Some Observations on the Distribution and Function of Hedging in German and English Academic Writing. In Duszak, A. (Ed.), *Culture and Styles in Academic Discourse*. Mouton de Gruyter: Berlin, pp.181-202.

Lakoff, G. (1973). Hedges: a study in meaning criteria and the logic of fuzzy concepts. *Journal of Philosophical Logic,* 2, 458-508.

Lewin, B. (1998). Hedging: Form and Function in Scientific Research Texts. In Fortanet, I., Posteguillo, S., Palmer, J. C. & J. F. Coll (Eds.), *Genre Studies in English for Academic Purposes*. Vol. 9 Filología. Universitat Jaume I: Collecció Summa, pp. 89-108.

Lyons, J. (1977). *Semantics* (Vol 1-2). Cambridge: Cambridge University Press.

Markannen, R. and Schröder, H. (1997). Hedging: A Challenge for Pragmatics and Discourse Analysis. In Markkanen, R. & H. Schröder (Eds.), *Hedging and Discourse. Approaches to the Analysis of a Pragmatic Phenomenon in Academic Text.* Berlin: Walter de Gruyter, pp.3-18.

Meyer, P. G. (1997). Hedging Strategies in Written Academic Discourse: Strengthening the Argument by Weakening the Claim. In Markkanen, R. & H. Schröder (Eds.), *Hedging and Discourse. Approaches to the Analysis of a Pragmatic Phenomenon in Academic Text.* Berlin: Walter de Gruyter, pp. 21-41.

Myers, G. (1989). The pragmatic of politeness in scientific articles. *Applied Linguistics,* 10,1-35.

Namsaraev, V. (1997). Hedging in Russian Academic Writing in Sociological Texts. In Markkanen, R. & H. Schröder (Eds.), *Hedging and Discourse. Approaches to the Analysis of a Pragmatic Phenomenon in Academic Text.* Berlin: Walter de Gruyter, pp. 64-81.

Oliver del Olmo, S. (2004). *Análisis Contrastivo Español/Inglés de la Atenuación Retórica en el Discurso Médico: el Artículo de Investigación y el Caso Clínico.* Unpublished Doctoral Dissertation, University of Pompeu Fabra, Spain.

Salager-Meyer, F. (1991). A genre-based and text-type analysis of hedging in written medical English discourse (1980-1990). *Interface,* 6, 33-54.

Salager-Meyer, F. (1994). Hedges and textual communicative function in medical English written discourse. *English for Specific Purposes,* 13, 149-170.

Salager-Meyer, F. (1998). Language is not a physical object. *English for Specific Purposes,* 17, 295-303.

Salager-Meyer, F. (2000). Procrustes' recipe: hedging and positivism. *English for Specific Purposes,* 19, 175-187.

Skelton, J. (1997). How to Tell the Truth in *The British Medical Journal*: Patterns of Judgement in the 19th and 20th Centuries. In Markkanen, R. & H. Schröder (Eds.), *Hedging and Discourse. Approaches to the Analysis of a Pragmatic Phenomenon in Academic Text.* Berlin: Walter de Gruyter, pp. 42-63.

Swales, J. M. (1981). *Aspects of Article Introductions*. Birmingham, UK: The University of Aston, Language Studies Unit.

Swales, J. M. (1990). *Genre Analysis: English in Academic and Research Setting.* Cambridge: Cambridge University Press.

Swales, J. M. (2004). *Research Genres. Exploration and Applications*. Cambridge: Cambridge University Press.

Vassileva, I. (1997). Hedging in English and Bulgarian Academic Writing. In Duszak, A. (Ed.), *Culture and Styles in Academic Discourse*. Mouton de Gruyter: Berlin, pp.141-157.

Ventola, E. (1997). Modalization: Probability - an Exploration into its Role in Academic Writing. In Duszak, A. (Ed.), *Culture and Styles in Academic Discourse*. Mouton de Gruyter: Berlin, pp.157-180.

Ventola, E. and A. Mauranen (Eds.) (1996). *Academic Writing: Intercultural and Textual Issues*. Amsterdam: John Benjamins.

