NON-LEXICAL STRATEGIC HEDGES IN WRITTEN ACADEMIC DISCOURSE

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Abstract: This paper focuses on the linguistic realizations and pragmatic functions of non-lexical strategic hedges in the current written academic discourse. By summarizing the three types of non-lexical strategic hedges occurring in research articles previously identified by Ken Hyland – reference to limited knowledge, reference to limitations of model, theory or method and reference to experimental limitations, this contribution aims to draw attention to rhetorical strategies specific to scientific reporting and thus to facilitate their identification and understanding. However, the appropriate interpretation of non-lexical strategic hedges depends on the readers' level of professional expertise as well as on their familiarity with the conventions of scientific reporting established in a certain discourse community.

Keywords: non-lexical hedges, written academic discourse, scientific research articles, rhetorical strategies, linguistic realizations.

The use of hedges in written academic discourse allows writers to introduce new knowledge claims with accuracy, caution and humility in order to gain the approval and recognition of their respective discourse communities. By assuming an appropriate degree of authorial presence, successful writers are able to signal membership to a particular discourse community in the attempt to gain authority, credibility and consequently, various types of rewards. At the same time, when introducing hedged claims, writers assign readers the active role of employing contextual understanding in order to participate in the creation of scientific knowledge and thus, ultimately in the creation of the world.

Recent research on hedging in written academic discourse revealed the following: the lack of consensus on a clear definition, which led to conflicting views on the lexical realizations and pragmatic functions of hedges (Salager-Meyer, 2000; Varttala, 2001; Lewin, 2005; Vold, 2006; Vasquez and Giner, 2008; Fraser, 2010), the importance of the socio-pragmatic context for the correct usage and interpretation of hedges (Salager-Meyer, 2000; Hyland and Salager-Meyer, 2008; Fraser, 2010; Millán, 2010; Alonso-Alonso *et al*, 2012), the need to find practical solutions for teaching hedges to non-native learners (Hyland, 2000; Lewin, 2005; Vold, 2006), and the importance of the correct usage of hedges as an integral part of the pragmatic competence required for successful written academic communication (Fraser, 2010; Alonso-Alonso *et al*, 2012; Hyland and Salager-Meyer, 2008).

Moreover, the role played by cultural factors was also stressed (Lewin, 2005; Vold, 2006; Martín- Martín, 2008; Hyland and Salager-Meyer, 2008; Millán, 2010; Alonso-Alonso *et al*, 2012) while the use and interpretation of hedges by native vs. non-native speakers of English was studied (Hyland, 2000; Hinkel, 2005; Burrough-Boenisch, 2005; Martín- Martín, 2008; Hyland and Salager-Meyer, 2008; Alonso-Alonso *et al*, 2012) alongside the role of cross-linguistic and cross-disciplinary variation (Varttala, 2001; Hyland, 2001; Hyland and

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Tse, 2004; Vold, 2006; Millán, 2010; Vasquez and Giner, 2008; Alonso-Alonso *et al*, 2012) and the response of the target readers (Hyland, 2000; Lewin, 2005; Alonso-Alonso *et al*, 2012).

Despite these numerous studies, it was Ken Hyland (1996a, 1996b, 1998a) who provided the first and most detailed classification and characterization of hedges according to their linguistic realization and pragmatic function in scientific written discourse currently available in the literature. In his view, the lexical realizations of hedges include epistemic lexical verbs, adjectives, adverbs, nouns and modals. Besides these, three non-lexical strategic devices are also employed in scientific research articles: reference to limited knowledge in the field, reference to limitations of the model, theory or method and reference to experimental limitation.

As far as the pragmatic functions of hedges are concerned, Hyland repeatedly stressed their polypragmatic character and divided them into two main categories: content-motivated hedges (further subdivided into accuracy-based hedges, which include attribute and reliability hedges, and writer-based hedges) and reader-motivated hedges. The distinction depends on how writers anticipate the possible objections of the target audience in an academic context that grants readers of scientific research articles the power to accept or deny the knowledge claims introduced by these hedges. Content-motivated hedges are generally employed when scientific writers aim for that their claims to meet adequacy conditions in order to be accepted by the target audience while reader-motivated hedges facilitate the fulfillment of acceptability conditions so that newly introduced information is accepted by fellow scientists. Hyland's contribution remains relevant for subsequent studies because his taxonomy is not only comprehensive and practical, but it is also based on the study of scientific research articles where hedges of various pragmatic functions occur most frequently.

Although Hyland did not claim to have overtly aimed to provide a working definition of hedges, he often regarded hedging as being central to academic writing where it helps writers express new knowledge claims with tentativeness, caution, modesty and possibility rather than with certainty and categorical commitment. By doing so, scientists open a line of dialogue with their readers, avoid the rejection or denial of claims and thus establish themselves as valuable members of their discourse communities. In this context, a hedge is "any linguistic means used to indicate either a) a lack of complete commitment to the truth of a proposition or b) a desire not to express that commitment categorically" (Hyland, 1996a). His classification of hedges into two main types (content-motivated and reader-motivated) according to their pragmatic function is also based on this definition.

The fact that hedges can take numerous linguistic forms renders the task of defining, describing, categorizing and analyzing their functions rather painstaking. Indeed, after having reviewed previous research on hedges in his first contributions on the topic (1996a, 1996b, 1997, 1998a, 1988b), Hyland concluded that most of the work on hedges was either carried out in the area of conversation analysis, or, when applied to scientific research writing, it mainly focused on modality or semantic aspects by using frequency studies or inadequate corpora that failed to show how hedging is usually realized in different genres or scientific domains. He also stressed the importance of studying the use of hedges in scientific research

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articles in order to understand how knowledge claims are habitually established and how scientists from various fields conduct and present their research.

One of the key assumptions behind Hyland's treatment of hedges is the belief that hedging represents a writer's attitude in a certain situation or context (similar with Salager-Meyer's mental attitude, 1994), which implies that hedging in written academic discourse should be closely connected with the socio-pragmatic contexts in which it occurs, and that, consequently, a thorough understanding of the mechanisms operating within these contexts enables a more comprehensive understanding of hedges. This is why Hyland's approach to hedges has always included an analysis of the characteristics of academic writing as well as of the social context in which scientific statements are expressed. He analyzed the key features of scientific research articles as the main medium for the expression of new knowledge claims, the importance of appropriately expressing claims in various disciplines through suitable interpersonal and rhetorical strategies, the features of the target discourse communities that claims are addressed to, the interaction between writers and readers as members of these communities, as well as the issue of hedging from the point of view of non-native scientists and learners, thus also introducing new teaching perspectives that other authors neglected, or failed to tackle altogether.

John Swales (1990) was another contributor to the study of hedges as part of his more ample approach to genre and move analysis in the context of written academic discourse and English for Specific Purposes. Thus, he regarded hedges as "rhetorical devices both for projecting honesty, modesty and proper caution in self-reports, and for diplomatically creating research spaces in areas heavily populated by other researchers" (Swales, 1990: 175). He also interestingly pointed out that although the degree of author involvement in the text depends on the conventions of academic writing in the hard vs. the soft sciences, and on the norms of their respective discourse communities, the differences in the use of persuasive tools seem to lie in the *Methods* and *Results* rather than in the *Introduction* or *Discussion* sections of research articles. In this respect, humanistic authors attempt to produce increasingly detailed *Methods* and *Results* sections while authors of hard science texts seem to do the opposite.

Indeed, this trend was noticed while reading recent linguistics research articles: thorough descriptions of the methods used as well as statistical analyses and interpretations based on a type of background knowledge previously required only in the hard sciences have been noticed since the 1990s and are a current prerequisite for international publication. Thus, evidence supported by statistical calculations and inferences has become one of the most persuasive rhetorical tools in recent years in a field formerly characterized by theoretical descriptions and assumptions.

To return to Swale's approach to hedges, his reference to "honesty, modesty and proper caution" could be interpreted as referring to the two most important types of hedges according to pragmatic function later described by Hyland (1996a, 1996b, 1988a): content-motivated, since "honesty" refers to the accurate and reliable presentation of claims, and reader-motivated, since "modesty and caution" mediate the writer's interaction with the target readers within the RA, which is a "reconstructive process deriving from a need to anticipate and discountenance negative reactions to the knowledge claims being advanced" (Swales, 1990: 175). These last two attributes may also hint to hedges as politeness strategies, although

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Swales did not explicitly attempt to classify the linguistic realizations of hedges or their pragmatic functions. However, he also made other valid observations on hedges, such as the fact that "high-level claims are likely to be important but risky, whilst low-level claims are likely to be trivial but safe" (Swales, 1990: 117).

Besides lexical hedges, which represent the main linguistic realization of hedging in written academic discourse, Hyland (1996a, 1988a) also identified three non-lexical strategies that academic writers often employ in order to distance themselves from claims and seek self-protection from possible rejection by the target audience.

The structure of these complex strategies varies, which makes them difficult to identify and interpret. However, by making reference to limited knowledge, limitations of the model, theory or method used, as well as to experimental limitations, writers can express their commitment, or lack thereof, to the truth and validity of claims, thus respecting the conventions of written academic discourse. Each of these three strategies shall be briefly presented below accompanied by examples, for easier identification in other contexts.

Scientific research articles include frequent references to already established knowledge, be that concepts, theories, methods of investigation, findings by other authors, etc. Although such references can be found in *Introduction* as well as in *Results* and *Discussion* sections, their function differs depending on the source of the information presented and its place of occurrence.

According to Swales (1990), in *Introduction* sections authors summarize previously established knowledge in the field as part of the "establishing a territory" move. This enables them to identify a knowledge gap that becomes their "niche", which they "occupy" after having previously "established" it. Therefore, *Introduction* sections include well-known, recognized facts that serve as a framework for the study in progress, as well as references to limited knowledge, also in accordance with the available literature, whose aim is to support and validate the need for the research about to be reported. As a result, these limitations can be introduced directly, without hedging, since they justify the present research without posing threats to the author. The reliability of the information included in this opening section is beyond the author's responsibility, whose only role is to select it according to its relevance for the respective study. By doing this, writers can actually help build their identity as up-to-date, well-informed and dynamic professionals in the field.

On the contrary, writers are directly and fully responsible for all the information included in the *Results* and *Discussion* sections of their own studies. Under these circumstances, the strength of knowledge claims can be reduced if these are introduced after having consciously prepared the ground by creating a problematic scientific environment that decreases the involvement and responsibility of the writer. By expressing doubts related to the availability or precision of some scientific information, writers can influence the expectations of the readers, as in the first example below, hedge their own interpretation of the results, as in the second example, or suggest the possibility of alternative explanations, as in the last example: "*Nothing is known about* the chemical constitution of the fluorescent material. This could be due to protein-metal complexes such as...";
"We do not know whether the increase in intensity of illumination from 250 to 1000μ E/m^2 per s causes induction of one specific..."; *Once cannot exclude* a possibility that the activity of

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EF-s Kinase in wheat germ is inhibited at a given stage of ontogenesis in some manner...” (Hyland, 1998a: 142). The use of the stem *know*, which forms nouns and verbs in these hedging instances helps place the focus on the idea of insufficient knowledge outside the writer’s control, which could affect the results of the reported study.

Another means of preparing a suitable ground for an upcoming claim is to refer to limited or unavailable knowledge by using questions. These can suggest that insufficient knowledge is due to unresolved issues, or that the writer is withholding commitment to claims: “*Is the sole function of phytochrome A to mediate the FR-HIR and, if so, under what circumstances in the natural spectral environment would this be important? Insufficient data are currently available* to definitely assess these questions”; “*Could such a putative interaction of an aminoacyl-tRDA synthesase with precursor tRNA have a physiological significance? Although it is premature to answer this question, it might be suggested* synthesase present in... “ (Hyland, 1998a: 143)

The *Methods* sections of research articles must provide a detailed and accurate description of the materials and methods used in the respective studies. According to the available literature, references to already established methods are made while new or adapted methodologies are described in order to explain the results obtained and, at least theoretically, to allow the future replication of the research reported.

However, references to methods may also be found in the *Results* and *Discussion* sections of original scientific papers, but with a different purpose. Similarly with the references to limited knowledge for decreasing the truth of claims or a writer’s commitment to them, *Discussion* sections may also mention deficiencies in the model, theory or methods used in the study in order to hedge the writer’s commitment to the accuracy of the findings generated by possibly faulty means, thus avoiding criticism and rejection: “*We are aware of the concerns expressed in the literature [26] concerning the application of homology based modeling* to sequences at this level of similarity. Our initial attempt in modeling has revealed the conservation of...”; “*The procedure only identifies* methylated nucleotides located within the recognition sequences of the sensitive enzymes. *In spite of its shortcomings, the method has been widely employed* to evidence this type of...” (Hyland, 1996a: 270)

Several other instances of limitations of the method were also found in the scientific corpus investigated and two main purposes for their use were suggested: to justify the technique used (the first example) and to hedge the replicability of the method (the last two examples that follow): “Internal necrosis of harvested tubers was evaluated visually, which *is the standard procedure used to characterize this disorder in potatoes*.”; “*In our hands* there was no significant change in V_{max} on illumination.”; “... approx 70% *according to our method* and some β-turn...” (Hyland, 1998a: 144-145).

Conditional sentences represent another means of expressing the writer’s lack of commitment to the methodology used and of thus hedging the accuracy of the findings obtained in this way. The speculative nature of such sentences decreases the involvement of the writer since the validity of the *then*- clause is closely related with the conditions mentioned in the *if*-clause: “*If* this scheme is correct, *then* the orientation of the heme plane will *almost* be parallel to the membrane plane as determined by ERP experimental studies” (Hyland, 1998a: 146).

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For similar hedging purposes, hypothetical conditionals are used to differentiate between possible and unreal situations. They either indicate that hypotheses are not true because the conditions required for their fulfillment are not met, ("These results suggest that if a flavonoid mutant with unaltered sinapte accumulation were available, it would be more sensitive to UV-B than tt 4"), or they leave the condition open without establishing the truth of propositions, in this way hedging the accuracy of the claims advanced ("*If correct*, this prediction *might* explain why previous exhaustive screen s have not detected mutants in phytochromes other than phytochrome B") (Hyland, 1996a: 270).

The third type of non-lexical strategic hedge refers to possible experimental limitations in order to express different levels of writer commitment to the truth of knowledge claims. For this purpose, negative determiners are usually used alongside items with negative connotations, such as *difficulty*, *problem* or *fail*. Through this strategy, writers can suggest that results are unavailable or that their accuracy is compromised "We have not been able to determine precisely whether GUS expression and Lotus leghemoglobin synthesis are initiated simultaneously, but..."), or difficult to establish based on the available data ("*This makes it difficult to compare signal sizes* between different chloroplast samples. Therefore, results under these conditions were *not considered conclusive*") (Hyland, 1998a: 147-148).

Although the realization of these non-lexical strategic hedges had not been formally recognized in the literature prior to Hyland's work, they seem to represent widespread hedging tools in scientific writing. However, since their linguistic realization can vary widely, their identification and interpretation greatly depends on their context of occurrence as well as on the content they express, rather than on their form. In other words, they are more likely to be perceived correctly by members of specialized discourse communities who, based on their knowledge of the phenomena described, are better able to evaluate claims and detect possible inaccuracies.

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