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Hedging in Academic Writing: A Contrastive Analysis of Scientific

Articles and Student Papers

Master's Thesis

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## *Introduction*

In terms of linguistics hedging is a topic that is commonly related to syntax and pragmatics. It is a valuable asset not only in academic writing but also in communication in general. As it influences the recipient's reaction, it can greatly affect understanding, which is why it is an essential aspect of the writer-reader interaction.

Due to the lack of general agreement with respect to the definition and taxonomy of hedging devices, there is no established consent regarding the mentioned topic. Many different definitions and taxonomies which arose as a consequence (Lakoff [1972], Salager-Meyer [1994], Crompton [1997], Hyland [1995, 1996]) will be highlighted.

The aim of this paper is to address and describe the main differences in using hedging in academic papers as written by experienced scholars and students respectively. As this study opened up the questions regarding possible obstacles in determining hedges, they will be tackled with the help of the results of the analysis carried out for this paper. There is enough space left for discussion, which has proved to be necessary after the thorough analysis of the articles used as dataset.

Key words: hedging, definition, taxonomy, shields, approximators, emotionally-charged intensifiers.

## ***1. What is Hedging?***

Hedging has been a widely discussed topic in pragmatics. However, there is still no unanimous definition of what it actually is. To start with, according to the Oxford dictionary, a hedge is “[a] word or phrase used to avoid overprecise commitment, for example etc., often, or sometimes”<sup>1</sup>. The Cambridge dictionary has a slightly different definition that says that a hedge is “a word or phrase that makes what you say less strong”<sup>2</sup>. In a nutshell, both of them state that hedging as a grammatical phenomenon is used to “soften what we say or write”<sup>3</sup>. If it is to be judged by scholars, this definition is incomplete, which shall be thoroughly elaborated in this paper.

Hedging is a term that was coined by George Lakoff in his work “Hedges: A Study of Meaning Criteria and the Logic of Fuzzy Concepts” in 1972. In this paper Lakoff defined hedges as “words whose meaning implicitly involves fuzziness – words whose job is to make things fuzzier or less fuzzy” (1972:271). Other than him many other linguists, like Channel(1994), Hyland (1995, 1996), Salager-Meyer(1994) and others analyzed and described the phenomenon as well. Though their definitions differed, all of them were united in one claim – the claim that hedges to some extent conveyed the writer’s uncertain attitude towards the respective statement.

Channel dedicated a whole book to this topic (1994) referring to hedging as “vague language”. Channel also presented numerous previous studies (1994) in order to try to define the term and present her own vision. In her book “Vague language” she realized that she was going to expand the extent of the term rather than reduce it. The working definition she used included the notion of hedging in three ways: a. expressions whose meaning can be contrasted with another that “appears to render the same proposition” (1994:20), b. expressions “purposely and unabashedly vague” (ibid.), c. expressions whose meanings are stimulated by “intrinsic uncertainty” defined by Peirce (ibid.). However, her analysis only resulted in discussing approximators as hedges, which, as will be shown in this paper, is only a small piece of a puzzle.

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<sup>1</sup><https://en.oxforddictionaries.com/definition/hedge>

<sup>2</sup><https://dictionary.cambridge.org/dictionary/english/hedge>

<sup>3</sup><https://dictionary.cambridge.org/grammar/british-grammar/emphasising-and-downtoning/hedges-just>

In his articles on hedging in scientific writing (1995, 1996) Hyland argued that “[h]edges (underlined) indicate interpretations and allow writers to convey their attitude to the truth of the statements they accompany, thereby presenting unproven claims with caution and softening categorical assertions” (1995:33). What is probably meant here is that hedging is used when addressing one’s own concerns about sounding contradictory, which could be regarded as an act of politeness towards the scientific community<sup>4</sup>. Despite that, this definition still does not seem specific enough, which is why another definition will be taken as guidance.

Salager-Meyer (1994) proposed another view of hedging, similar to that of Crompton (1997). We considered her premise on hedging as one of two ground ones:

Before going any further, it should be kept in mind that the definition of hedges we adopted in the present research goes beyond their mere association with speculation. Indeed, it embraces a three-dimensional concept: 1. that of purposive fuzziness and vagueness (threat-minimizing strategy); 2. that which reflects the authors’ modesty for their achievements and avoidance of personal involvement; 3. that related to the impossibility or unwillingness of reaching absolute accuracy and of quantifying all the phenomena under observation. (1994:6)

What is important to emphasize is that though the concept of fuzziness was kept as the crucial part of the definition, Salager-Meyer (1994) added her own insights concerning the assumption that “the gap ... necessarily exists between the writer’s mental processes (i.e., his/her intentions) and the linguistic realizations employed [and that it] can be solved to a great extent by carrying out a rigorous contextual analysis” (1994:152), which she later embedded into her proposition of a taxonomy of hedges. She has done a thorough research that combined formal and functional criteria, which resulted in a precise taxonomy that was used in this research.

Blisset makes an interesting observation that concerns the usage of hedging as “protection” tactics: "If a scientist is articulate, persuasive, if he goes to the heart of the matter, he is open to attack" (qtd. in Salager-Meyer 1994:2). Based on his statement, it could be claimed that it is self-explanatory how this term came to use in academic writing. The defending function of hedging could be considered as the primary one since it arises from the nomenclature itself. The scientist uses hedges as a shield (which also appears as a category, see

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<sup>4</sup>Scientific community = a network of scientists (Wikipedia)

Salager-Meyer's taxonomy [1994]) against the attack of the academic community because in the end he/she needs their approval. Hyland phrased that statement in the best way possible by saying that "hedges anticipate a need to justify claims because the writer is dependent on their ratification by the reader"(1996:6). The writer's intention is to express their own opinion, to show that they have formed one and to create new assumptions based on the evidence they had found. However, they are also afraid of the inaccuracy which could lead to embarrassment, which is why they are taking precaution when making new statements (Hyland 1996).

Hedges are sometimes used as positive or negative politeness strategies according to Myers (1989). In his work he explained them as "rational strategies used for dealing with the social interactions involved in publishing an article (e.g., solidarity with readers, unspeakability of direct criticisms, deference towards the scientific community)" (qtd. in Salager-Meyer 1994:3). Based on this claim, the politeness strategy pertains to the defence function as explained by Hyland (1995) and Blisset (qtd. in Salager-Meyer 1994). Thus, it can be said that Myers, Hyland and Blisset agree to some extent in the definition of hedging.

Peter Crompton analyzed some of these definitions (i.e. definitions by Myers, Salager-Meyer, Hyland) and more of them in his article and proposed a definition of his own that "a hedge is an item of language which a speaker uses to explicitly qualify his/her lack of commitment to the truth of a proposition he/she utters" (1997: 281). As such, phrases that can be analyzed as hedges help the writer convey messages that denote detachment from categorical assertions. His definition, though similar to the one formed by Hyland (1995), differs in the fact that he explicitly claims that every hedge denotes writer's suspicion (and not the attitude towards the truth of the utterance) towards the statement he utters.

For the purpose of the study in this paper, both Salager-Meyer's (1994) and Crompton's (1997) definition will be used as they seem to be the most extensive and descriptive of all and thus the most persuasive. After elaborating the findings of the study some conclusions that might affect the initial definitions will be provided.

### ***1.1 Taxonomy of Hedging***

Apart from its definition, the taxonomy of hedging is another issue that creates controversy when it comes to hedging as a linguistic term. Judging by a variety of definitions that relevant scholars proposed, it is not a surprise that they also developed slightly different

taxonomies based on the forms and functions of hedging they considered to be relevant. Most of them, like Salager-Meyer (1994), mixed both formal and functional criteria for developing their taxonomy. However, there were also those who used only formal or only functional criteria, like Hyland (1995), who identified hedging with epistemic modality (Crompton 1997:276).

Nevertheless, the answer to the question about how many functions and forms of hedging exist is not as simple as it might seem. By focusing first on the functions of hedging, we could start with the one arising from the name of the phenomenon itself.

The one contained in the primary meaning of the word is the protective function, to some extent referable to as “detachment” or “distance” function, which has already been explained in the paragraph above (see 1.1). It is closely related to the impossibility of determining certain facts and figures, which can be seen as another function of hedging. When an accurate number is impossible to reach, it demands the usage of hedging, namely approximators, as named by Salager-Meyer (1994) (the adopted taxonomy later in the analysis), in order to be compliant with the laws of science and not to make any incorrect allegations: “Hedging here is an important means of accurately stating uncertain scientific claims with appropriate caution. Scientific writing is a balance of fact and evaluation as the writer tries to present information as fully, accurately and objectively as possible” (Hyland 1995:34). This function can also be referred to as “purposive fuzziness” or vagueness, again as mentioned by Salager-Meyer (1994), when an author is deliberately avoiding stating the exact data for some reason. Apart from those functions there is also the “writer’s modesty” that could sometimes be interchanged with politeness strategy, which was explained in the previous section (see 1.) with regards to Myers’ definition of hedging. Sometimes it is possible for a hedge to have more functions at once, which is mostly the case with compound hedges (see

Salager-Meyer’s taxonomy [1994]).

To determine all forms of hedging is also a difficult task. However, the most common forms were adverbials (such as *mainly, mostly, usually, generally, significantly, frequently*), adjectives (such as *some, most, many*) and verbs (*to suggest, to appear, to seem*), of which also various types of epistemic verbs, both modal and lexical (*may, might, suppose*).



In the following sections the most important taxonomies for this paper (namely, the ones by Salager-Meyer and Crompton) shall be named and explained as they were a ground for this study and played a crucial role in summarizing the results of the analysis.

### ***Salager-Meyer's taxonomy***

In this analysis Salager-Meyer's taxonomy was taken over due to its simplicity and the fact that she embraced both formal and functional criteria to define the categories of hedging. Nevertheless, some difficulty appeared with this categorization, which shall be explained in the course of the paper when analyzing specific examples.

The following taxonomy was taken from Salager-Meyer's article from 1994 called "Hedges and Textual Communicative Function in Medical English Written Discourse" and used for analyzing the dataset.

Here is the initial overview of categories by Salager-Meyer together with her original comments in all categories and parentheses and footnotes (1994: 155):

"1. **Shields**: all modal verbs expressing possibility<sup>5</sup>; semi-auxiliaries like *'to appear'*, *'to seem'* (also called 'plausibility shields' in Prince et al. [1982]); probability adverbs like *'probably'*, *'likely'* and their derivative adjectives; epistemic verbs (that is, verbs which relate to the probability of a proposition or a hypothesis being true) such as *'to suggest'*, *'to speculate'*.

2. **Approximators**: stereotyped 'adaptors' as well as 'rounders' (see Prince et al. 1982) of quantity, degree, frequency and time (e.g. *'approximately'*, *'roughly'*, *'somewhat'*, *'quite'*, *'often'*, *'occasionally'*) which express heed and coyness. According to our working definition of hedges (Salager-Meyer's definition, see 1.1), even though not all approximators serve to make things vague – some are indeed used when exact figures are irrelevant or unavailable or when the state of knowledge does not allow the scientists to be more precise – they were all recorded as 'hedges'.<sup>6</sup> 'Approximators' is the hedging category which most closely reflects what we could call the 'institutionalized' language of science.

3. Expressions such as *'I believe'*, *'to our knowledge'*, *'it is our view that...'* which express the **authors' personal doubt and direct involvement**;

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<sup>5</sup>"Modals expressing capability were not recorded as hedges, e.g. 'No conclusion *can* be drawn,' 'We *could* not detect any clinical parameter,' 'We *may* now turn to review the data so far obtained'" (Salager-Meyer 1994:155).

<sup>6</sup>"Obviously, such expressions as '*more than half (58%)*' were not recorded as hedges because in such cases the parenthesis provides the readers with the exact figure" (Salager-Meyer 1994:155).

4. **Emotionally-charged intensifiers** (comment words used to project the authors' reactions) such as '*extremely difficult/interesting*', '*dishearteningly weak*', '*of particular importance*', '*particularly encouraging*', '*unexpectedly*', '*surprisingly*'.

5. Finally, **compound hedges** which comprised 'strings of hedges' (i.e., the juxtaposition of several hedges). Such compound hedges can be double hedges (It *may suggest* that...; it *could be suggested* that...), treble hedges (It *would seem likely* that ..., it *seems reasonable* to assume), quadruple hedges (It *would seem somewhat unlikely* that...), etc.”

First of all, the first two categories, namely shields and approximators, have been proven to be used in most of relevant texts already analyzed by Crompton (1997). They are both widely used and acknowledged terms (Salager-Meyer – shields and approximators [1994], Prince et al. – shields and approximators [qtd. in Crompton 1997], Hyland – shields [ibid.]<sup>7</sup>, Channel – approximators [1994]) in the world of hedging in scientific writing. Apart from that, they are also quite easy to understand and hence easy to recognize. Rarely is there a case of blurry and undefined class membership. Shields are a very wide class of hedges in which various forms fall within, most of them being all forms of epistemic verbs, probability adverbs and adjectives and semi-auxiliaries, as explained by Salager-Meyer (1994) (such as *to suggest, to seem, may, might, probably, is likely to* etc.). Their function is completely different than the one of approximators, which Crompton explained when elaborating the study of Prince et al.:

The function of approximation is either to adapt a term to a non-prototypical situation (e.g. “sort of vertical”) or to indicate that a term is a rounded-off representation of some figure (e.g. “about ten fifty over five fifty”). Shields, by contrast, serve as “a linguistic reflex of a marked commitment on the part of the speaker to the truth of the proposition that s/he is conveying” (p. 94). (1997:273)

As Crompton explains (1997), Prince et al. created a categorization that divided hedges into two very easily distinguishable groups. Due to their specific function of rounding the numbers, approximators are not to be mistaken with any other category (Crompton 1997). Shields, on the other hand, are devices with the help of which the author reflects “the commitment to the truth of the proposition that s/he is conveying” (qtd. in Crompton 1997:273). Prince et al. further identified two more subclasses within the main class of shields, namely “plausibility shields ... and attribution shields” (ibid.), which, according to

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<sup>7</sup>As Crompton (1997) points out, “[Prince et al.’s] characterization of the overall function of shields is clear and economical, and anticipates later descriptions of hedges as expressing epistemic modality”, which Hyland applies in his studies (1997:273).

Crompton, complete this categorization by making it “clear and economical” (1997:273). He further asserts that “[Prince et al.’s definition of shields] anticipates later descriptions of hedges as expressing epistemic modality” (ibid.), as also described and extended by Salager-Meyer in her taxonomy (1994).

The third category – the category of author’s personal doubt and direct involvement can sometimes be in conflict with the category of shields. In expressions such as “to our knowledge” and “it is our view that...” it is clear what should fall within the scope of the third category. However, if the example of the verb “to assume” is taken (i.e. “we assume”) it is necessary to make sure that the context of the whole sentence is taken into account when categorizing the expression. Though Salager-Meyer (1994) has not explicitly given a solution for this situation, in this study the following example (and those following the same logic) was analyzed as belonging to the third category according to her taxonomy:

- (1) “In this study, *we assume* that we will obtain results which are very much in line with previous research findings and the so-called Fluctuation Hypothesis (Ionin 2008)” (SCP 1)<sup>8</sup>.

At the same time an example with the impersonal use of the verb “to assume” was interpreted as a shield:

- (2) „...it was assumed that learners relying on translation during preposition selection” (STP 2)<sup>9</sup>.

The fourth category, emotionally-charged intensifiers, consists of adverbials and adjectives as well as combinations of both to denote the author’s personal feeling regarding the topic. It projects the author’s opinion while at the same time describing the depicted item (e.g. extremely, especially, significantly, quite). What is, however, perhaps disputable, is the accurate categorization of the adjective “quite”. According to Salager-Meyer (1994), “quite” belongs to the class of approximators, which could be argued. Within the context “quite” can have more than one meaning. If we take two examples from the Oxford dictionary, e.g. “it’s quite out of the question” and “he’s quite an attractive man”, we will find that “quite” in these sentences has two opposite meanings, according to which it should be clear that in the first sentence “quite” is not an approximator, but an emotionally-charged

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<sup>8</sup> SCP = scientific paper

<sup>9</sup> STP = student paper

intensifier. Therefore, it is of crucial importance to be aware not only of the function of the specific word but also of the context in which it is being used and to carefully consider the message the writer wants to convey. Still, as “quite” is neither such a preferred approximator nor an emotionally-charged intensifier<sup>10</sup>, and, as the difference is clear within the context, it should not cause too much difficulty for this type of categorization.

The last category by Salager-Meyer, compound hedges, is rather self-explanatory and simple to understand. The name itself indicates that it is a combination of multiple units of hedges. It can be a combination of two or more hedges coming from the same or different categories, such as “*It may suggest that*” or “*It might seem likely that*”. This category is relatively often used in scientific writing as it is sometimes difficult to decide whether it is enough to use only one hedge or if more of them would make a better impression on the reader.

### ***Crompton’s taxonomy***

Peter Crompton proposes a somewhat different taxonomy based on his own research and previous research by others on hedging (1997:284):

- “1. Sentences with copulas other than *be*.
2. Sentences with modals used epistemically.
3. Sentences with clauses relating to the probability of the subsequent proposition being true.
4. Sentences containing sentence adverbials which relate to the probability of the proposition being true.
5. Sentences containing reported propositions where the author(s) can be taken to be responsible for any tentativeness in the verbal group, or non-use of factive reporting verbs such as ‘show’, ‘demonstrate’, ‘prove’. These fall into two sub-types:
  - a. where authors explicitly designate themselves as responsible for the proposition being reported;

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<sup>10</sup>In this study it was not used at all in scientific papers, whereas in student papers it was marked only twice in the same article, as an emotionally-charged intensifier: “...this article provides only a short insight into the very wide and *quite* complex topic of false friends...” (Badić et al. 2015:24), “...but the survey has shown that pairs of words partially different in meaning also represented *quite* a challenge to all participants” (Badić et al. 2015:18)

b. where authors use an impersonal subject but the agent is intended to be understood as themselves.

6. Sentences containing a reported proposition that a hypothesized entity X exists and the author(s) can be taken to be responsible for making the hypothesis.”

In order to simplify and explain what he meant, Crompton (1997:284) provided examples for each of his categories right after listing them:

- “1. The moon *appears to be* made of cheese.
2. The moon *might be* made cheese.
3. *It is likely that* the moon is made of cheese.
4. The moon is *probably* made of cheese.
- 5a. *I suggest that* the moon is made of cheese.
- 5b. It is therefore *suggested that* the moon is made of cheese.
6. These findings *suggest* a cheese moon.<sup>11</sup>”

At first sight Crompton’s categorization seems very persuasive and complete; however, the fact that he limits hedging only to the conditions above mentioned and excludes the possibility of naming certain devices as hedges (which we believe do belong to that category, such as approximators and emotionally-charged intensifiers, as defined by Salager-Meyer [1994]), could be disputable.

Defining categories based solely on their form is impossible. Hedges are encountered in different forms and a lot of them can also have some other function, i.e. they are not exclusively hedges (e.g. we cannot say that all adverbials of frequency are hedges because not all of them denote an unspecific amount of time), which is indicative of the complexity of the topic in question. Therefore, it can be claimed that hedging is context-dependent and should be interpreted according to the pragmatic situation it is used in, as Salager-Meyer already explained with regards to the category of shields and approximators (see footnote 5 and 6).

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<sup>11</sup>All examples were taken from Crompton's article “Hedging in Academic Writing: Some Theoretical Problems” from 1997.

## ***2. The Study***

### ***2.1 Methodology***

Our dataset for this paper were two types of papers: a) scientific papers and b) student papers. In the sections that follow we will refer to them as to SCP (scientific papers) and STP (student papers). The scientific articles were taken from one of the Proceedings from the CALS conference, while the student papers were taken from the online journal “Patchwork” written and edited by students from the Faculty of Humanities and Social Sciences in Zagreb.

The collection of proceedings from the CALS conference contained twenty scientific articles, each of them similar in form and topic, though three of them in German, therefore, irrelevant for this analysis. As for the student papers, they had to be sought in all four existing editions of the magazine due to the lack of the ones similar in form to the scientific articles, hence the reason only four and not five student papers were analyzed.

The taxonomy we relied on at first was Salager-Meyer’s (1994) with five categories of hedges, the last one being compound hedges. Despite the fact that it was the most appropriate for this paper, unfortunately it did not comprise all the elements that seemed relevant for hedging, which is why some changes in the analysis part will be proposed.

### ***2.2 The Aim***

The aim of the study is twofold: to find evidence that hedging is more frequent in scientific than in student papers, and to show that there is also a wider range of different types of hedges in scientific than in student papers. The working assumption is that experienced researchers are a lot more proficient in hedging than students are because students usually adhere to a limited number of different hedges. Their eloquence is unfortunately probably limited by inexperience in academic writing.

What is important to point out are some numbers in order to have a background for further discussion. The basic assumption is that the number of hedging devices is higher in the scientific than in the student papers. However, it is also presumed that it depends on the section it appears in. E.g., it is to expect that in the methodology of a specific paper there will be little or no hedging at all, since the methodology section should be a precise explanation of the way of conducting a study. In the part where the aim is explained, on the other hand, it is expected that a bigger number of hedging devices will appear as it is already there possible to

anticipate the outcome. However, it is assumed that the part with the most frequent hedging of both scientific and student papers will be “results and discussion” due to its predefined structure to speculate and dispute about the results.

When it comes to comparison of scientific and student papers in general, it could be said that scientific articles also use hedging more due to the fact they are more knowledgeable in general. If it is assumed that they are more knowledgeable and versatile than the students, it can be claimed that they have more aspects to discuss when arguing about the outcomes of a certain study. Furthermore, it is also presumed that scientists have a more developed sense for the way of interaction with the reader, meaning that they choose hedging devices more appropriately and carefully than students. They probably take the reaction of the reader more into consideration while conveying their thoughts since they are aware that the academic community is the one who approves them.

### ***3. Results and Discussion***

The results of the analysis were to some extent expected. However, certain issues that have already been mentioned above when discussing the definition and taxonomy of hedging were encountered. Though this analysis was based on definition and taxonomy by Salager-Meyer (1994), it was insufficient to cover all means that might perhaps be denoted as hedges. Therefore, Peter Crompton’s definition was used as well in order to complete the picture. After having analyzed several texts it was discovered that both authors had their inconsistencies, hence, a proposition is that a combination of both would be a way to define a more comprehensive definition and taxonomy of hedges.

The results that follow first describe the outcome of the analysis of scientific articles and then the ones arising from the analysis of the student papers, starting from hedging in specific sections of the paper to hedging devices divided by categories by Salager-Meyer (1994). By analyzing the articles according to her classification (see 1.1 Salager-Meyer’s Taxonomy [1994]), certain phenomena regarding hedging in specific sections of a paper was discovered. For the purposes of easier depiction of results, the articles were divided into four main sections: “introduction”, “methodology”, “results and discussion” and “conclusion”, as these are usually the most commonly adopted sections in academic papers. Though some of them had up to six sections, they were divided into these four main sections in order to simplify the overview of each article.

### ***3.1 Characteristics of Scientific Writing in Proceedings from the CALS Conference***

As already mentioned, the writing of experienced researchers is far more demanding and elaborate than that of students. The reason for that probably lies in the scope of their studies and their maturity. Not only do they use their resources more prudently, but they also use more different devices to show their eloquence.

The first part of the results will show the frequency of hedging in specific sections, whereas the second part will show the distribution of hedging devices by categories. As it can be seen in tables 1 and 2, the lowest number of hedging devices in scientific papers is 30 and the highest 62.

#### **Hedging in Specific Sections**

Generally speaking, when it comes to certain sections of an article, the results show that there is significant use of hedging in the introductory section and the results and discussion section if we take a look at articles separately (see Table 1).

Table 1 - Hedging in specific sections in SCP's (number of hedges recorded)

<b>Sections</b>	<b>SCP 1</b>	<b>SCP 2</b>	<b>SCP 3</b>	<b>SCP 4</b>	<b>SCP 5</b>
<b>Introduction</b>	21	18	8	21	2
<b>Methodology</b>	1	13	15	17	0
<b>Results and Discussion</b>	11	25	21	6	24
<b>Conclusion</b>	6	6	7	3	4
<b>Total</b>	<b>39</b>	<b>62</b>	<b>51</b>	<b>47</b>	<b>30</b>

To be more precise, in three out of five scientific articles the overall percentage of hedges in the “results and discussion” section was higher than in the other sections (40%, 41% and 80% respectively). In the rest of them “introduction” was the section with the highest percentage of hedging devices (54% and 62% respectively).

It is presumed that the explanation for such results in the “introduction” and the “results and discussion” part of the articles is that the introduction and the results and discussion are usually the sections where researchers speculate most. In the introduction, on the one hand, one commonly poses questions and/or makes new assumptions based on other studies. As Salager-Meyer points out, “[f]rom a rhetorical standpoint, Introductions (which Swales called ‘encapsulated problem-solution texts’) motivate the study, justify the reason for the



investigation (West 1980: 486) and make claims about statements from other research” (1994:160). The introduction can sometimes “point to a controversial research area, an important but unresolved issue, and present ... evidence which questions existing theory, or calls into question some problems with the accepted knowledge” (Salager-Meyer 1994:160). When discussing the results, on the other hand, researchers defend their claims by avoiding categorical assertions in order to stay cautious and not to make any inaccurate statements, as already explained previously (see 1.) in the paper. They necessarily “summarize[s] results, state[s] conclusions and suggestions with reference to previous research and/or to the current work, and set[s] further questions sometimes with possible explanations, references and future developments and applications in the field of study” (Salager-Meyer 1994: 167). Such results are not a surprise if it is taken into account that the other two sections are the parts where specific methods of a research are to be named and explained, meaning pure stating of facts; and the part where already discussed results are to be outlined without much hesitation.

### Hedging by Categories

Taking a look from another angle, that is, from the perspective of the most used hedging categories, the results are also not surprising. Of the five categories defined by Salager-Meyer (1994), the first one – “shields” is the one most commonly used (see Table 2).

Table 2 - Hedging by categories in SCP's (number of hedges recorded)

Categories	SCP 1	SCP 2	SCP 3	SCP 4	SCP 5
<b>Shields</b>	12	22	17	17	11
<b>Approximators</b>	9	14	17	10	13
<b>Exp. of personal doubt</b>	6	1	4	1	0
<b>Em.-ch. intensifiers</b>	8	13	10	16	6
<b>Compound hedges</b>	4	12	3	3	0
<b>Total</b>	<b>39</b>	<b>62</b>	<b>51</b>	<b>47</b>	<b>30</b>

Of the five articles analyzed, only in one of them “shields” is not a leading category and in one of them the result is even between shields and approximators. Approximators are at the heels of shields, taking the second place in total ranking among hedging devices. In three articles they are right behind shields and in one they share the first place, as already mentioned. Emotionally-charged intensifiers have taken the second place in only one article (where approximators are third), whereas in the others they are taking the third place. The least commonly used categories are the expressions of personal doubt and the compound

hedges. In the last article there are zero used from both categories and in the rest of them the result is even. (see Table 2)

While performing the analysis it appeared at some point that Crompton's classification (see 1.1) might have brought clearer results; however, his definition did not comprise all hedging devices that seemed important. His definition discarded any possibility of classifying approximators as hedges, which seemed to be of great importance. As demonstrated above, they make one of the two most commonly used categories of hedges defined by Salager-Meyer (1994), and after careful analysis and consideration we decided to leave them as a separate category. Rounding numbers can have a very good reason for that. One of them is that sometimes the researchers do not want to mention the exact data for a certain reason, thus they have to find a solution (they believe is) nearest to the truth. It is mostly their own estimation, but in some situations the data can be indicated by certain phenomena. Still, it is merely a speculation yet unconfirmed. In these cases those words were classified as hedges taking the meaning of the whole sentence into account as well. In sentences in which some, for example, is used only in order not to have to repeat the results that are demonstrated in a table referring to, it was not recorded as a hedge, just like Salager-Meyer (1994) has explained in her taxonomy definition. Despite that, her taxonomy continued to be guidance for the analysis due to practical reasons and some propositions will be added in the last section where both examples from scientific articles and student papers will be comparatively analyzed.

## **Shields**

If we take a look at each category of hedges and start with the shields, the analysis has shown that the most commonly used hedges stem from the group of epistemic modal verbs, such as might and could, epistemic lexical verbs, such as to suggest, and copula verbs other than be, such as to seem and to appear. This result is not surprising if we note that epistemic verbs are by definition there to express a writer's opinion about the topic they are referring to. As Radford has noticed, "grammar is not just concerned with the principles which determine the formation of words, phrases and sentences, but also with the principles which tell us how to interpret (=assign meaning to) words, phrases and sentences" (qtd. in Blakemore 2002:14). Thus, the notion of grammar in the epistemic verbs implies hesitation in the writer's utterance. If we say that something might or could be true, it does not necessarily have to be, like in the following examples:

- (3) “This could perhaps be attributed to the influence of L1” (SCP 1),
- (4) “This might be related to the fact that...” (SCP 1), or
- (5) “It could be argued that the obtained results do not necessarily show a connection between... (SCP 2)”.

If we interpret any of these “shielded” utterances as complete truth, we might be wrong. Hence, shields serve as a protection to the author saving them from declaring unproven allegations as facts.

### **Approximators**

Approximators have a similar function when it comes to making dubious allegations. They moderate the assertive statements as well as shields, but serve to round the numbers and other expressions, like previously explained. The most commonly used representatives of approximators are adverbials of frequency, such as often, mostly, frequently, commonly and usually, and their adjectival derivatives, common and usual, and determiners most, many and some. Here are some examples of approximators within sentences:

- (6) “This hypothesis is questionable, since interlanguage has its own features, seen through its simplification ..., or language transfer ... , where we *mostly* deal with positive and negative language transfer” (SCP 1).
- (7) “There is some unsupported evidence that Croatians, especially children, learn *some common* Spanish phrases *frequently* repeated in omnipresent subtitled soap operas of Latin American provenance” (SCP 2).

### **Expressions of Personal Doubt and Direct Involvement**

Expressions of personal doubt and direct involvement are not as common as the first two groups. In none of the scientific articles has their share exceeded 15% (see Table 2). That percentage could suggest that the category is not well defined or is poorly explained and should be redefined and amended with other characteristics. However, it could also imply the predominance of shields and approximators, which is why other categories cannot come to light. Other conclusion could be related to the overall taxonomy and category division that could be regarded as faulty and in need for change. Nevertheless, though scarce, here are some examples of expressions of personal doubt and direct involvement from the articles analyzed:

- (8) “In this study, we assume that we will obtain results which are very much in line with previous research findings and the so-called Fluctuation Hypothesis (Ionin 2008)” (SCP 1).
- (9) “Therefore, we believe that presenting the informants with a larger context would not have any significant bearing on our statistical results” (SCP 3).

### **Emotionally-Charged Intensifiers**

Emotionally-charged intensifiers are in a better position in comparison to the third category; their percentage rises up to 34% (see Table 2), which is more than double the former result. In this group the mostly used representative is the adverbial *significantly* and its adjectival derivative as well as adverbials like *especially*, *particularly* and *extremely*. They probably make a relevant part of *hedges* due to the impact they make on the reader, who is a key person that needs to ratify what the author has written. An intensifier can influence the whole proposition and the impression of the thoughts transferred through the author’s careful selection of words. The reason they are considered hedges could, in our opinion, be explained by the fact that none of those intensifiers implies a specific amount or number. The expression itself is very vague; however, it intensifies the initial statement with a substantial amount of the feeling of confidence and veracity, just like in the following examples:

- (10) “The importance of the psychological factor in the foreign-language learning process becomes *particularly* evident when...” (SCP 4),
- (11) “The majority started learning French around or after puberty, which is *significantly* reflected in their pronunciation” (SCP 4),
- (12) “This kind of student reaction brings us back to the importance of age for success in learning a foreign language, *especially* with regard to its phonetic component” (SCP 4).

It could be argued that this category is redundant and unnecessary, but the final vagueness stays untouched when the intensifier is used within the hedged expression.

### **Compound Hedges**

The last category – compound hedges – seems not to be as frequent as the fourth. However, it has been recorded that the highest percentage is somewhat higher than the one for

the third category (see Table 2). Here there are various expressions and none of them was used twice, e.g.:

(13) “This result *could suggest* that... (SCP 2)

(14) “It *may be presumed* that ...” (SCP 4).

That discovery could imply that this category indeed is redundant and that each part of a compound hedge could be analyzed as a single category, as suggested by Crompton (1997:284).

### 3.2. Characteristics of Student Papers in the journal Patchwork

The methodology for analyzing the four student papers was the same as the one for scientific articles. The taxonomy used is Salager-Meyer’s, with which we had some difficulty here as well. Nevertheless, some cases were left, unclassified because we believed they should comprise a new category.

Just like in the previous section (see 3.1), the first part of the results will show how frequently students use hedging in specific sections, whereas the second part will show the distribution of hedging devices by categories. Tables 3 and 4 show that the lowest number of hedging devices in student papers is 29, whereas the highest one is 43, which is not too far from the scientific papers (see Table 1 and 2).

#### Hedging in Specific Sections

The results for student papers showed an unspecified pattern. They displayed that students use hedging more while discussing the outcome of their study, while the introduction is not as hedged a section (see Table 3).

Table 3 - Hedging in specific sections in STP's (number of hedges recorded)

Sections	STP 1	STP 2	STP 3	STP 4
<b>Introduction</b>	11	1	2	7
<b>Methodology</b>	2	0	2	11
<b>Results and Discussion</b>	23	20	13	15
<b>Conclusion</b>	7	8	15	2
<b>Total</b>	<b>43</b>	<b>29</b>	<b>32</b>	<b>35</b>

Three of four articles analyzed had the highest percentage of hedging in the “results and discussion” section. Other sections were very diverse and hence very difficult to put in order. In the only article where “results and discussion” (and not the “introduction”, as in the previous articles) was the second most hedged section “conclusion” took the leading role. (see Table 3)

Though there is no clear order regarding the hedging devices in specific sections of the student papers, the “results and discussion” part is again taking the first place, confirming the result from the previous section analysis (describing the hedging devices in the sections of the scientific papers, see 3.1). The reason is probably the same – the high amount of speculation while discussing the results of a certain study.

### Hedging by Categories

When it comes to hedging categories used in each article, the results are similar to those for scientific articles. Shields and approximators are sharing the first place in the final order, whereas emotionally-charged intensifiers are taking the second place, leaving the expressions of personal doubt and compound hedges behind them (see Table 4).

Table 4 - Hedging by categories in STP's (number of hedges recorded)

Categories	STP 1	STP 2	STP 3	STP 4
<b>Shields</b>	14	10	19	10
<b>Approximators</b>	15	8	6	16
<b>Exp. of personal doubt</b>	1	0	2	5
<b>Em.-ch. intensifiers</b>	12	10	1	4
<b>Compound hedges</b>	1	1	2	0
<b>Total</b>	<b>43</b>	<b>29</b>	<b>30</b>	<b>35</b>

It could be speculated about the reason for such outcome; however, there is no right or wrong answer. In our opinion and from our own experience students are not always well-acquainted with certain resources of writing. It can also be noted that each of them has their own style of writing and some of them tend to use more approximators, while the others prefer using shields whenever they have the opportunity. However, what all of them have in common is adhering to a limited number of hedges, what could also be interpreted as staying on the safe side.

### Shields

If we take a look at each category separately and the most commonly used hedges from each, we will encounter here as well to some extent similar results as the one for scientific articles. To start with the shields, the most used hedging devices are verbs expressing epistemic modality, both modal and lexical verbs, of which *might*, *may*, *could* and *to suggest* are the most usual representatives, just like in scientific articles. Apart from that very commonly used are also adjectives *possible* and *probable* as well as their adverbial derivatives. In accordance with the previous explanation, the reason for that outcome is probably the protective function of this category. It could also be interpreted as a politeness strategy, but based on the context it can only be speculated what the author's true intention was. The following examples from the papers demonstrate the point:

- (15) "Furthermore, this *may* imply that only 38.67% of the participants (who opted for *ljekarnik*) are aware of the specific differences between these two variants of English" (STP 1).
- (16) "Looking at our results, we concluded that *it is possible* for the NFS to put on a French accent successfully" (STP 4).
- (17) "...it is visible that they rely heavily on instinct or what *might* be considered implicit knowledge..." (STP 3).

### **Approximators**

The most common approximators here are also adverbials of frequency, like *often* and *commonly* as well as their adjectival derivatives, determiners such as *some*, *many* and *several*, and an adjective *various*. Their functional contribution plays a significant role in student papers as a lot of them are based on numbers and most parts of their introductory and discussion sections are concerned with speculation about those, e.g.:

- (18) "...*many* other terms have been used to denote this linguistic phenomenon ..."  
(STP 1),
- (19) "...we observed some differences in the recognition process..., which would imply that *some* of the participants were able to disguise themselves *to some extent*" (STP 4).

## Expressions of Personal Doubt and Direct Involvement

As expressions of personal doubt and direct involvement do not exceed 14% in the total outcome for each paper, the reason for that result could also be compared to the one related to scientific articles. We believe that it either proves that the taxonomy should be re-evaluated and redesigned or that the supremacy of other categories completely outshines this one. It simply does not play such an important role when expressing personal doubts due to the wide spectrum of shields and approximators, which constitute the foundation of hedges. Still, here are a couple of examples that illustrate the expressions of personal doubt and direct involvement:

- (20) “However, *we concluded* they were more successful when they had the opportunity to prepare beforehand...” (STP 4),
- (21) “*We assume* that the above-average speaker of Croatian was probably not aware...” (STP 1).

## Emotionally-Charged Intensifiers

In the fourth category the highest percentage is 34%, while the lowest is 9%, which indicates it as a bit more important hedging category than the previous one. *Very, especially, particularly, quite* and *significant(ly)* are the most often encountered representatives, as in the following examples:

- (22) “This is important for SLA because it shows that university students are still *very* motivated for learning English...” (STP 2), or
- (23) “This is *especially* important for the SLA because a much smaller amount of male learners decides to study English in the first place” (STP 2).

## Compound Hedges

The fifth category – compound hedges – plays a lot less significant role in the student papers than in the scientific articles. Most of the students prefer only the simple hedging devices. We believe that the reason for that is that students simply do not have the habit to refrain as much as scientists from certain statements. This phenomenon could be regarded to some extent as a reflection of maturity in scientific writing. In our opinion they have not developed their hedging skills to the same level of proficiency as researchers. Thus, they



might not be as well-versed as their slightly more experienced colleagues. However, here is an example of how students did it:

- (24) “*It would also be possible* to do a longitudinal study and see if participants’ pronunciation...” (STP 4).

### ***3.3 Contrastive Analysis of Scientific Writing and Student Papers on Examples***

The overall number of hedges recorded in student papers is between 29 and 43 while scientific articles range from 30 to 62 (see Tables 1, 2, 3 and 4). If we take into consideration that the average length of the scientific papers is between fourteen and twenty-four pages without appendices and of the student papers between ten and sixteen respectively, we could also ascribe it to the amount of words for such results. However, the percentages demonstrated throughout the text show that the contrast is not as apparent as it might seem before further analysis.

In this research there were certain expressions that might be regarded as *hedges* for which it was difficult to determine the category they would belong to according to Salager-Meyer’s taxonomy. In order for the results to stay as accurate and as consistent as possible, those expressions were excluded from her categorization and the previously listed results, which is why they will be discussed here.

Salager-Meyer’s taxonomy was a good starting point for categorizing hedging devices; however, certain matters of concern appeared. Starting from the first category, it was sometimes unclear what exactly and if some expressions would fall within that category. An example would be when there is an epistemic verb that expresses the author’s personal involvement or doubts at the same time, which could be classified as both a shield and an expression of author’s direct involvement, e.g. *We suggest that...* or *We speculate that...* In Salager-Meyer’s taxonomy both epistemic verbs *to suggest* and *to speculate* are considered shields; however, it is unclear if in a situation like this where there is an obvious evidence of author’s personal doubt the phrase should be classified as the first or the third category. The problem would be solved if the initial premise was to take the whole sentences into account and not just certain phrases and their sections, which Crompton did. His classification into sentences with certain characteristics would have worked in this situation and the category

they would fall within would be sentences under the category 5.a. (see Crompton's taxonomy [1997]).

What could also be argued to be a hedge, but was not a part of any of the classifications above mentioned, is a clause referring to a certain entity that suggests the hypothesis, but the author is not responsible for making it, e.g. *According to this quotation...*; *As X suggests...*; *According to a study...* and similar expressions. However, when reporting a proposition by another author, the scholars are merely reporting the suggestion that another author already brought up, which is why it cannot be considered as hedging. Crompton advocates this idea that the scientist took over another author's idea and is not hedging in his reporting, but merely quoting the other one. In order to clarify what is meant, here are several examples from the articles analyzed. The devices that could have been analyzed as hedges, but do not fall into that category due to the previously explained reasons, are italicized:

- (25) "*As Cepon (2006) put forward*, the main medium of Western cultural transmission seems to be the English language" (SCP 2).
- (26) "*As Koolstra et al. (2002) suggest* after discussing the pros and cons of dubbing and subtitling..." (ibid.).
- (27) "*Those theories argue* that possible selves are visions of one's self in the future ...*The L2 Motivational Self System suggests* that there are three primary sources of the motivation to learn a L2..." (STP 2).

However, phrases similar to these in their form, but different in the content can be found in the last category of Crompton's proposed taxonomy, where "[s]entences containing a reported proposition that a hypothesized entity X exists and the author(s) can be taken to be responsible for making the hypothesis" (1997). This category includes expressions such as these findings suggest, according to these findings and similar, where it is obvious that the author has been involved in making certain conclusions, like in the following example from a student paper:

- (28) "These results suggest that learners actively use translation as a decision-making tool during preposition selection..." (STP 3).

We were not sure whether to classify those phrases referring to other entities as shields, but we decided to leave them out of that classification since we believed they should form a separate group of hedging devices based on the premise that they have somewhat more

specific characteristics than the rest of the shields. In the light of these considerations we would suggest that the following example we have read in one of the scientific articles:

(29) “...our findings lead us to the conclusion that...”(SCP 3)

be taken as a member of this category, as well as the clause that is italicized in the next example taken from a student paper:

(30) “Looking at our results, we concluded that it is possible for the NFS to put on a French accent successfully” (STP 4),

since both of them indicate an inclusion of another entity, here referred to as “findings” and “results”, but the authors are still responsible for making a hypothesis.

Limiting a proposition to specific conditions could also be regarded as a kind of hedge. Examples of such expressions would be: *under the hypothesis...*, *under these conditions/terms*, *in the light of these considerations...*, *in this paper* etc. It could be compared to some extent to if-clauses, but we would like to stress that we do not regard if-clauses as hedges. They are, in our opinion, not an expression of tentativeness or fuzziness in that sense. They are rather an essential part of a pure hypothetical proposition in which there is no clear indication “of the writer displaying a lack of confidence in his proposition” (Crompton 1997:278). Thus, following the same logic, it could also be argued for the formerly mentioned expressions that they present a sort of hypothetical situation, which would imply that they should not be regarded as hedges. However, there could be a certain percentage of if-clauses which indeed do express a certain amount of the lack of confidence in the proposition. If we argue that one of those two groups, either if-clauses or the formerly mentioned conditional expressions, are hedges, we should stay consistent in our claims and consider the other group as hedges as well. Hyland (1996) has studied those clauses and expressions and classified them as such, but, as we agree with Crompton (1997) that none of them actually show the insecurity of the author while uttering it, we would not classify them as hedges. Though they are widely used by both of our target groups – scientists and students (a bit more by scientists as we have recorded), the arguments for considering them hedges do not seem strong enough.

Furthermore, if we take a critical look at all categories defined by Salager-Meyer (1994), we can conclude that not all of them are defined well enough to be able to clearly classify every hedge we encounter and would like to argue about. Crompton, on the other hand, has

used a more precise definition and the result is hence more consistent. However, as already mentioned, he would never consider certain devices as hedges due to formerly explained reasons, one of them being his limitation to sentences as units that can be hedged. The difference with Salager-Meyer is that one can very quickly step away from the initial premise and broaden her definition by restricting it to specific cases while at the same time staying within boundaries of her postulates. A perfect illustration would be challenging the definition of shields by questioning every aspect of their usage, like in the following example:

- (31) “Therefore, pre-puberty is considered to be the optimal time to begin the foreign-language learning process...(SCP 4).”

Here it could be argued that the phrase *is considered to be* does not have the function of a hedge at first sight; however, it does not have to be. If we take into consideration the meaning of the whole sentence and its context, we could argue that the presumption behind it is that most people believe that pre-puberty is the optimal age to begin the foreign-language learning process. Reformulated that way, the initial sentence is suddenly hedged according to Salager-Meyer’s classification. Nevertheless, if we regard each potential hedge from that aspect, we might encounter other complications, like how to categorize all of them since the notion of the term would suddenly and very quickly outgrow the initial number of instances. One possibility would be to place them in the category of the hedges of which they bear the meaning, but then we would have to note somehow to which of them we are referring since sometimes one sentence can be interpreted multiple ways. The other possibility would be to clarify which types of hedges would fall within this category of “hidden” hedges and then to put them all in it. Still, this possibility needs further research, which is why it will not be discussed into detail in terms of this paper.

Similar observations could be made about the following examples, the first two of them from a scientific article and the last one from the student paper. This time the expressions that should be regarded as hedges at first sight might be argued that after thorough study seem not to fall within that scope:

- (32) “Another unanimous observation concerns the Croatian participant’s consistency in the English pronunciation type, which *can definitely be classified* as ‘American’ (JosipovićSmojver et al. 2014:95).”

- (33) “The same kind of observation *can be made* about two other segmental non-core features identified once each in our ELF user’s pronunciation (ibid. 2014:95).”
- (34) “They are pairs that *must have originated* from the same source, but have then followed completely different paths in their respective language (Badić et al. 2015:18).”

In the first two examples there is an indication that the modal verb is not used as a hedge. In the first sentence it is the usage of an adverbial *definitely*, which intensifies the allegedly hedged expression, leading us to conclusion that it influences the final meaning of it. In this case we would argue that the modal verb does denote a hedge, as well as in the other two sentences. All of them imply a certain amount of uncertainty and tentativeness that leaves that last piece of space for speculation about the unproven facts.

As for approximators, it was the easiest task to determine them in both scientific articles and student papers from my perspective, since they are by definition “rounders”. Any unspecific expression denoting a vague and ambiguous result would be regarded as one. Prototypical examples would be adverbials of frequency, rounding prepositions and similar non-numerical quantifiers (*much, many, kind of* etc.) as proposed by Channel (1994).

The most difficult task was to determine the numbers of the third category, the one concerned with author’s personal doubt or direct involvement. The issue was that sometimes it was unclear whether the expression should be classified as a shield or personal doubt or direct involvement. As above discussed, Crompton solved the concern by adding the fifth category and dividing it into two sub-groups, for which we have found perfect illustrations in “Patchwork”. In both of them the expressions regarded as hedges are italicized for the purposes of better visibility:

- (35) “*The assumption is* that learners rely on translation when choosing prepositions...” (STP 3).
- (36) “*It was assumed* that the majority of answers would be “it feels right” or “it sounds right” ...” (ibid.).”

The fourth group was almost equally used in both scientific articles and student papers, just like shields and approximators, in favour of which we could argue that the reason is its establishment in the scientific language. Emotionally-charged intensifiers, as proposed by Salager-Meyer, play a significant role in reflecting the author’s reactions and attitude towards

certain aspects. Prototypical instances have been found in the examples above (see examples [10], [11], [12], [22] and [23]).

The last category defined by Salager-Meyer and also discussed in Crompton's theory, but not defining it as a separate instance, has not been a particular matter of concern since it is made out of the categories that have been previously discussed. What has not surprised me is the fact that it has been used more by scientists than students. As already mentioned, we believe that the reason for that is the versatility of scientists and their proficiency level, which, although developed, is not enough established among students.

Since the topics of both scientific articles and student papers were connected to multilingualism and foreign languages in general, it might be argued that scientists' proficiency is already conditioned by the fact that they are subject-matter experts. Still, we believe that students displayed an enviable amount of mastery despite their general lack of experience.

## *Conclusion*

What we have discovered in this research is that students, though perhaps not as eloquent as scientists, do show a certain amount of expertise. The notion of hedging is a matter of participating in the community that lives and develops the culture of a very specific genre of writing, academic writing. The more a person is included in the community, the more they will be capable of improving their language and expanding their scientific vocabulary that necessarily includes hedges.

It has been demonstrated on usage-based examples that hedging is context and pragmatics-bound. Without that bond it would be impossible to differentiate between certain notions and discuss their status. Though this paper was supposed to focus on the differences between scientific and student papers and their characteristics in regards to hedging, it was impossible to refrain from making general observations regarding the proposed definitions of hedges and their respective taxonomies. Still, we believe that the purpose has been accomplished with a lot of help from examples. As seen throughout the thesis, the contrast between scientific and student articles is noticeable due to numerous factors, but the engagement of students is not negligible. Even though still inexperienced, some of them showed an enviable level of proficiency in academic writing. However, hedging is often overlooked in teaching English as a foreign language, which, in our opinion, is a pity. Teachers should find a way to pay more attention to the skill of academic writing and give their students a chance to develop their skills.

Although we tried to be as concise as possible in order to achieve a sample result, this study might have been limited by the size of the sample. Since it was conducted on a small sample, it is a shortcoming for this analysis. A larger sample would probably have brought clearer results.

However, the conclusion that can be drawn without a doubt based on these assumptions is that hedging is a topic that definitely needs further research. Perhaps this thesis could be a starting point for another study, continuing in a different direction since there are still many unsolved issues to be disentangled.

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