Danijela D. Đorđević[*]
University of Belgrade
Faculty of Agriculture

EPISTEMIC MODALITY MARKERS USED AS HEDGES IN RESEARCH ARTICLES

Abstract
Research on hedging in research articles has been increasingly carried out in recent decades. This paper investigates the use of epistemic modality markers as hedges in English and Serbian research articles belonging to different disciplines. The results will show the differences in frequency and types of epistemic modality markers between various scientific disciplines, as well as between the above-mentioned languages. It is hypothesised that epistemic modality markers are used to make statements less categorical and thus decrease the force of a statement, and protect the author from possible disagreements. The research results might have implications for the teaching of English for Specific Purposes, as well as help non-native researchers when writing their articles in English.

Key words: epistemic modality, hedges, academic discourse, English, Serbian.

Introduction

In recent years, there has been an increasing need for writing articles in foreign languages, particularly in English, which has been considered as a *lingua franca* for a while. Therefore, academic workers, apart from producing articles in their mother tongue, need to publish the results of their research

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[*] E-mail: danidjordje@yahoo.com

in international journals, primarily in English. Besides knowing grammar and lexis, they should master pragmatic competence as well. Thus, when it comes to academic discourse, in particular academic writing, the notion of hedging is unavoidable. To some extent, the notions of hedging and epistemic modality are intertwined and are usually referred to in literature as overlapping notions. Hence, this article aims at investigating the use of epistemic modality markers functioning as hedges in English and Serbian research articles, taking into account four different disciplines: agriculture, civil engineering, linguistics and medicine.

The notion of hedge

The notion of *hedge* was introduced by G. Lakoff (1973) in his famous article "Hedges: A Study in Meaning Criteria and the Logic of Fuzzy Concepts", where *hedges* are defined as follows: "for me, some of the most interesting questions are raised by the study of words whose meaning implicitly involves fuzziness – words whose job is to make things fuzzier or less fuzzy. I will refer to such words as 'hedges'" (Lakoff 1973: 471).

Since that time, the notion of *hedge* has attracted the attention of a number of linguists. It was G. Lakoff who originally introduced it in linguistics, but over time this notion has changed and overlapped partly or completely with many other notions from the field of linguistics. The notion of *hedge* has been studied from different perspectives, within various theories and models. Markkanen and Schröder (1997) claim that the notion of *hedge* has changed, especially after having been accepted in the fields of pragmatics and discourse analysis. Therefore, currently *hedge* does not relate only to expressions that modify the category membership of a predicate or noun phrase, but also involves modifying the speaker's commitment to the truth value of the whole proposition (Markkanen & Schröder 1997).

The notions of epistemic modality and evidentiality

Regarding epistemic modality, Lyons (1977: 797) defines epistemic modality as "any utterance in which the speaker explicitly qualifies his commitment to the truth of the proposition expressed by the sentence he

utters, whether this qualification is made explicit in the verbal component, […], or in the prosodic or paralinguistic component, is an epistemically modal, or modalized utterance."

Coates (1983: 18) claims that epistemic modality is connected with a speaker's assumptions or assessments of possibilities, and that in most cases it points to the speaker's confidence or lack of confidence in the truth of a proposition.

Palmer (1986: 2, 51) maintains that "'epistemic' should apply not simply to modal systems that basically involve the notions of possibility and necessity, but to any modal system that indicates the degree of commitment by the speaker to what he says. In particular, it should include evidentials such as 'hearsay' or 'report' (the quotative) or the evidence of the senses" (Palmer 1986: 51).

Furthermore, Nuyts (2001: 21) says that epistemic modality can be defined as follows: "…an estimation of the likelihood that (some aspect of) a certain state of affairs is/has been/will be true (or false) in the context of the possible world under consideration."

What is noteworthy, Hyland (1998: 44) states that hedging is an aspect of epistemic modality which is related to a personal judgement based on lack of knowledge, while Halliday (1994) asserts that modality is a part of the interpersonal semantic system of language that mediates between a writer and a reader, and therefore shows the personal involvement of the writer in the text. In addition, Trbojević-Milošević (2004: 34) states that hedges are expressions that make a speaker safe or hedged in terms of his/her commitment towards the truth of a proposition, in case the 'main' modal word is not sufficient, or that the speaker is afraid that a listener can incorrectly interpret his/her commitment towards the proposition.

As for epistemic modality in Serbian, Piper et al. (Пипер et al. 2005: 636) claim that epistemic modality (serb. *persuazivnost* or *inreferencijalnost*) is defined as a graded qualification of a speakers's confidence in the truth of a proposition, giving examples of modal expressions: serb. *bez sumnje* 'undoubtedly', *svakako* 'certainly', *sigurno* 'certainly', *naravno* 'of course', *verovatno* 'probably', *možda* 'perhaps', *teško da (je)* 'it is hardly that', as well as verbs such as *morati* 'must', *trebati* 'should/ought to', *biti* 'be' (Пипер et al. 2005: 643, 644, 645).

When it comes to evidentiality, de Haan (1999) claims that the notions of epistemic modality and evidentiality can be distinguished since they differ in terms of their semantics – evidentials confirm the nature of evidence

for information in a given sentence, whereas epistemic modals evaluate the speaker's commitment towards the given proposition. Therefore, evidentiality and epistemic modality encode two different things – the source of information and the attitude towards information.

Similarly, Aikhenvald (2004: 3) considers evidentiality as a grammatical category whose primary meaning is a source of information, claiming that the categories of epistemic modality and evidentiality are completely separate.

In addition, Nuyts (2005: 11) assumes that evidentiality and epistemic modality are separate, however, related categories, and he uses the term *attitudinal* instead of *modal*.

Similarly, Cornillie (2009) highlights that "evidentiality refers to the reasoning processes that lead to a proposition and epistemic modality evaluates the likelihood that this proposition is true" (Cornillie 2009: 46–47).

On the other hand, Palmer (1986) first claimed that one category belongs to the other. Later, however, Palmer (2001) argued that these two categories are separate, but that there is an overlapping area as well.

In addition, Plungian (2001: 354) states that there is a domain where evidentiality and epistemic modality overlap, and it is a part of epistemic modality where probability is assessed. While an evidential complement can always be seen in an epistemic marker, the other way round is not possible – not all evidential markers are modal, since it is not necessary that they imply an epistemic judgement (Plungian, 2001: 354).

It is interesting to note that the definition of *imperceptive modality* (serb. *imperceptivna modalnost*), that is, *imperceptivity*, stated by Piper et al. (2005: 645) in a large part overlaps with the definitions of evidentiality already mentioned. They state that *imperceptive modality* represents such a form of modality in which the content of the statement is qualified regarding the fact that the speaker is not a source of information he/she states, so that this modality is similar to epistemic modality.

In this paper, evidentiality will be considered as a part of a continuum, together with epistemic modality, so these two categories will be regarded as categories that underlie each other, without drawing any sharp boundaries between them.

Theoretical framework

Bearing in mind the definitions of hedges, epistemic modality and evidentiality, the research was started by taking into account Hyland's (1996: 478) functional definition: "A hedge is therefore 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." Furthermore, the similar working definition adopted in this research is the one primarily stated by Lyons (1977) and later accepted by Crompton (1997: 281): "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", emphasizing that this definition applies only to propositions which represent the main speech act in academic writing. Therefore, the aim of this paper was to investigate epistemic modality markers used to show the writer's lack of commitment towards the proposition, thus decreasing the strength of the given proposition.

What is also important for this paper is the investigation in epistemic modality markers from the perspective of Systemic Functional Grammar (SFG) (Halliday 2004: 618). According to SFG, modality construes the region of uncertainty that lies between yes and no (Halliday 2004: 147). It is mentioned that in philosophical semantics probability is referred to as 'epistemic modality' (Halliday 2004: 618). In the SFG context, modality realizes a part of the interpersonal metafunction, and thus the appropriate use of modality is critical to successful communication between the speaker/writer and the listener/reader (Yang et al. 2015: 3). In SFG, the system of modality types comprises modalization or 'indicative' type related to probability and usuality, and modulation or 'imperative' type referring to obligation and inclination. Regarding SFG, two variables of epistemic modality are taken into account: orientation, which refers to the distinction between subjective and objective modality, and between the explicit and implicit variants and value that is attached to modal judgement: high, median or low (Halliday 2004: 619–620).

According to Thompson (1996 cited in Yang et al. 2015: 3), each epistemic modal expression has two parameters: the value indicating the degree of certainty and the addresser's commitment, and the orientation, which points to the linguistics forms of expressing modality and the addresser's modal responsibility. Regarding the value, it ranges from low (possible), median (probable) to high (certain) (Halliday 2004: 620). As for the orientation, Halliday (2004: 620) provides the following examples:

Explicit subjective: I think (in my opinion) Mary knows

Implicit subjective: Mary'll know

Explicit objective: It's likely that Mary knows (Mary is likely to)

Implicit objective: Mary probably knows (in all probability)

Therefore, regarding the values of epistemic modal markers, only low and median values will be taken into account, as they decrease the strength of a proposition, unlike high value epistemic modality markers, which increase the strength of a proposition, that is, act as boosters.

Methodology

This paper tends to investigate the frequencies of different epistemic modality markers (epistemic auxiliary verbs, epistemic lexical verbs, epistemic adjectives, epistemic adverbs and epistemic nouns) used as hedges in English and Serbian research articles across four different disciplines (agriculture, civil engineering, linguistics and medicine), as well as the frequencies of values (low and median) and orientations (explicit subjective, implicit subjective, explicit objective and implicit objective) of these epistemic modality markers.

We started our research by searching through journals from four different disciplines, then excerpting the epistemic modality markers functioning as hedges and writing them down into a separate document. The corpus consists of eight smaller corpora – a corpus of English research articles from the fields of agriculture (FCR[1] i CP), civil engineering (BaE and CaBM), linguistics (JoP and Ling) and medicine (BMCM and NEJoM) and a corpus of Serbian research articles from the fields of agriculture (RiP and PiF), civil engineering (GMiK, IiVK), linguistics (JF i ZMS) and medicine (SAzCL and VP). Research articles in English were chosen from the publications of the journals that possess impact factors. Research articles in Serbian were taken from the publications of journals listed as M24 and M51 according to the categorization of journals of the Ministry of Science and Tehnological Development of the Republic of Serbia. The corpus for this research consists of thirty-two articles, approximately 189,680 words, of which about 120,768 words were recorded in English

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[1] Abbreviations of the titles of journals are provided in Appendix 1 at the end of the paper.

corpora and around 68,912 words in Serbian corpora. For the purpose of comparing the results, the frequencies will be counted per 1,000 words, that is, normalized/relative frequencies will be given.

Results and discussion

Firstly, we would like to illustrate different types of epistemic modality markers that are used as hedges in English and Serbian research articles across four disciplines. The types are as follows: epistemic auxiliary verbs, epistemic lexical verbs, epistemic adjective, epistemic adverbs and epistemic nouns.

(1)   In the case of ambient cured resins, the elevated temperature *may* result in a much needed post-cure although possibly at the expense of increased residual stresses associated with the different thermal expansion properties of the fibers and the matrix. (CaBM1) (epistemic auxiliary verb)

(2)   However, such a distinction *appears* to be impossible to make based on either the immediate linguistic context or the wider discourse context in the corpora. (JoP1) (epistemic lexical verb)

(3)   It is also *likely* that concentration solutions for systems with surface sorption or other wide ranging timescales would be faster using this approach. (BaE1) (epistemic adjective)

(4)   Spatial uses, such as (10) and (11), feature in all the taxonomies, and are *perhaps* the most intuitive of the categories. (Ling2) (epistemic adverb)

(5)   This deterioration may be an *indication* that these environments exposed the specimens to temperatures greater than their glass transition temperature, Tg (Table 2). (CaBM1) (epistemic noun)

(6)   Na osnovu dobijenih rezultata *može* se zaključiti da je Pravilnik 87/ 2011 rigorozniji u proceni stepena opasnosti. (IiVK2) (epistemic auxiliary verb)
'Based on the results obtained, it *may/can* be concluded that…'

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(7) Standard *pretpostavlja* da su oba parametra (indeks žilavosti i faktor rezidualne čvrstoće) nezavisna od dimenzija probnog tela, kao i od drugih promenljivih veličina (npr. raspona oslonaca). (GMiK1) (epistemic lexical verb)
'The standard *presumes* that…'

(8) Један од *могућих* разлога за настанак ове лажне негативности могао би бити у нивоу циркулишућег ГМ, који је код неких болесника испод прага који тест може регистровати. (SAzCL1) (epistemic adjective)
'One of the *possible* reasons for…'

(9) Ова лажна позитивност *вероватно* је последица тога што се гљиве рода Penicillium користе у процесу производње ових антибиотских лекова, а познато је и да ове гљиве приликом раста ослобађају ГМ. (SAzCL2) (epistemic adverb)
'This false positivity is *probably* the result of…'

(10) Posuda pod pritiskom mora da bude projektovana tako da izdrži maksimalni pritisak za koji postoji *verovatnoća* da će se dostići tokom radnog veka posude, /15/. (IiVK1) (epistemic noun)
'…for which there is a *probability* that…'
As we can see from Graph 1, epistemic auxiliary verbs were predominant in both English (6.07 per 1,000 words) and Serbian (4.05 per 1,000 words) research articles.

Graph 1. Different epistemic modality markers in English and Serbian research articles
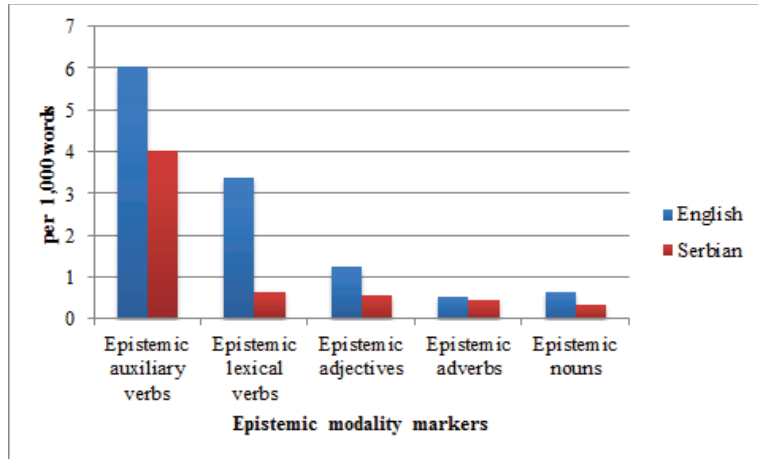
The lowest frequency was recorded for epistemic nouns in Serbian research articles (0.36 per 1.000 words). It is worth mentioning that the frequencies of all epistemic markers in English articles are higher than in Serbian articles.

Furthermore, if we look at Graph 2, we can see various frequencies of these epistemic markers across four different disciplines.

Graph 2. Frequencies of different epistemic markers in English and Serbian research articles across four disciplines
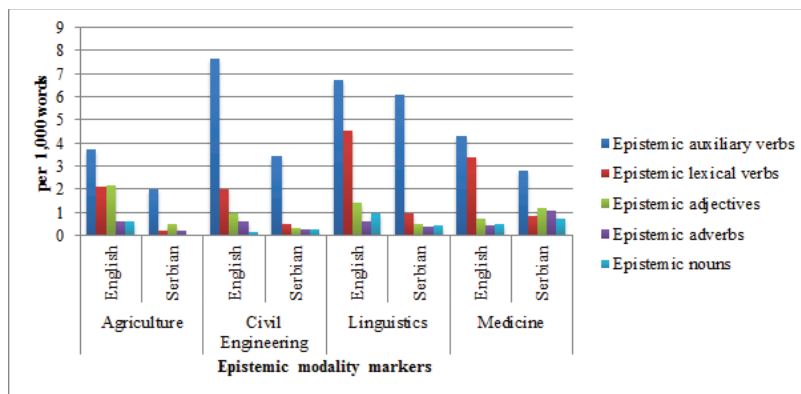
Regarding epistemic auxiliary verbs in English research articles, we can see that their frequency was highest in research articles from the field of civil engineering (7.68 per 1,000 words), and then in research articles from the field of linguistics (6.74 per 1,000 words). Their lowest frequency was in research articles from the field of agriculture (3.71 per 1,000 words). As for epistemic lexical verbs in English, they were most frequent in linguistics research articles (4.53 per 1,000 words), whereas they were least frequent in research articles from the field of civil engineering (1.99 per 1,000 words). Regarding epistemic adjectives in English, their frequency was highest in agricultural research articles (2.14 per 1,000 words), and the lowest frequency was observed in research articles from the field of medicine (0.72 per 1,000 words). Epistemic modal adverbs were most frequent in linguistics research articles (0.63 per 1,000 words), and their frequency was lowest in research articles from the field of medicine (0.42 per 1,000 words). Epistemic modal nouns were most frequently found in linguistics research articles (0.97 per 1,000 words), whereas the lowest frequency was noted in case of research articles from the field of civil engineering (0.12 per 1,000 words).

On the other hand, concerning Serbian research articles, epistemic auxiliary verbs were most frequent in linguistics research articles (6.08 per 1,000 words) and least frequent in agricultural research articles (1.98 per 1,000 words). As for epistemic lexical verbs, their frequency was greatest in linguistics research articles (0.93 per 1,000 words), and the lowest in agricultural research articles (0.21 per 1,000 words). When it comes to epistemic modal adjectives, their frequency was greatest in medical research articles (1.16 per 1,000 words) and lowest in research articles from the field of civil engineering (0.34 per 1,000 words). Again, the frequency of epistemic modal adverbs was greatest in medical research articles (1.08 per 1,000 words) and lowest in agricultural research articles (0.21 per 1,000 words). The frequency of epistemic modal nouns was highest in medical research articles (0.70 per 1,000 words) and lowest in agricultural research articles, more precisely there were no instances of epistemic nouns.

Epistemic auxiliary verbs are predominantly used in English research articles from the field of civil engineering (7.68 per 1,000 words), whereas they are least used in Serbian articles from the field of agriculture (1.98 per 1,000 words). However, their frequency in other disciplines, both in English and Serbian, should not be neglected, as they represent the most used type of epistemic modality markers in our corpus. As for epistemic

lexical verbs, they prevail in English research articles from the field of linguistics (4.53 per 1,000 words). Their lowest frequency is noted in the case of Serbian research articles from the field of agriculture (0.21 per 1,000 words). Epistemic adjectives predominate in English research articles from the field of agriculture (2.14 per 1,000 words) whereas they are least frequent in Serbian research articles from the field of civil engineering (0.34 per 1,000 words). Regarding epistemic adverbs, they are most frequent in Serbian research articles from the field of medicine (1.08 per 1,000 words) while they are least frequent in Serbian research articles from the field of agriculture (0.21 per 1,000 words). Epistemic nouns are most frequent in English research articles from the field of linguistics (0.97 per 1,000 words), whereas there were no epistemic nouns in Serbian research articles from the field of agriculture.

Different values of epistemic modality markers in English and Serbian research articles

At this point, we will give some examples for different values (low and median) of epistemic modality markers used as hedges in English and Serbian research articles across four different disciplines.

37) The lower unit weight and SG of the RCA *may be* a result of entrapped and entrained air within the mortar coatings and mortar chunks. (CaBM2) (low value)

38) This *suggests that* the rule of thumb cannot be simply applied to curved glazings as suggested above. (BaE2) (low value)

39) The apparent decrease in crop N content between stem extension and flowering in this experiment was *possibly* due to a combination of N loss in shed leaves and very dry soil conditions during stem extension which restricted N uptake. (FCR1) (low value)

40) С обзиром на немаркираност субјекта у погледу активности, управо ово *се може* сматрати његовим примарним обележјем. (ZMS1) (low value)
    '…*may/can* be regarded as…'

41) Горенаведено нам *сугерише* да су у датим реченицама у колизији синтаксичка и семантичка валентност управног глагола, из чега следи закључак да не постоје никакве формалне препреке да се субјекат сматра експонентом логичког предиката, тј. фактивним субјектом, те да примарно додатак именује семантички субјекат, чиме стиче статус агентивне допуне. (ZMS2) (low value)
'The abovementioned *suggests* that…'

42) Sem toga, gojazniji i inače imaju nesto viši krvni pritisak, što *možda* odražava efekat gojaznosti *per se*, a ne i neizostavno bolju srčanu funkciju. (VP1) (low value)
'... which *maybe* reflects the effect of …'

43) Finally, the perception of where the boundary between the daylight and the non-daylit area lies is *likely* to have a strong subjective element, so that different individuals will likelymake very different assessments. (BaE2) (median value)

44) Results *indicate* that while conventional indirectness appears to be the favoured method (and constant) across both corpora, there are differences in the directness of request head acts: there were more direct requests amongst the British e-mails and more implicit requests (via particularised implicatures) in the Australian data (Table 2).[15] (JoP2) (median value)

45) Two-stage revision is traditionally regarded as being more effective in treating infection, which *probably* explains the preponderance of two-stage revisions. (BMCM2) (median value)

46) Mogući razlog je, između ostalog, što je u našoj studiji kod živih bolesnika prosečna vrednost kreatinina bila granične vrednosti, *verovatno* zbog toga što su oni većinski imali akutno pogoršanje već postojeće HSI. (VP1) (median value)
'…, *probably* because they …'

47) Posuda pod pritiskom mora da bude projektovana tako da izdrži maksimalni pritisak za koji postoji *verovatnoća* da će se dostići tokom radnog veka posude, /15/. (IiVK1) (median value)
'… there is a *probability* that ….'

As for the value of epistemic modality markers, we can see (Graph 3) that low value predominates in both English (6.38 per 1,000 words / 5.71 per 1,000 words) and in Serbian (5.09 per 1,000 words / 1.03 per 1,000 words) research articles.

Graph 3. Value of epistemic modality markers in English and Serbian research articles
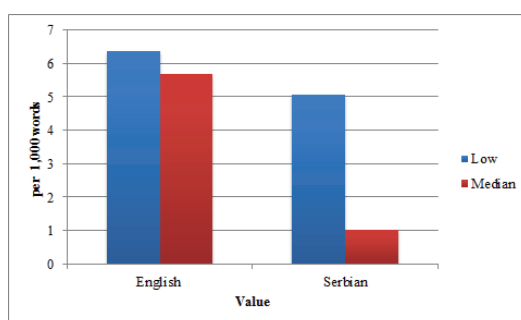
When it comes to the value of epistemic modality markers across different disciplines, we can note different frequencies (Graph 4). Taking into account the low value in English research articles, we can note that its frequency was greatest in research articles from the field of civil engineering (7.41 per 1,000 words) and lowest in research articles from the field of medicine (4.75 per 1,000 words). Considering median value in English research articles, it can be seen that the greatest frequency is found in linguistics research articles (7.46 per 1,000 words) and the lowest in research articles from the field of civil engineering (3.98 per 1,000 words).

Graph 4. Value of epistemic modality markers in English and Serbian research articles across four disciplines
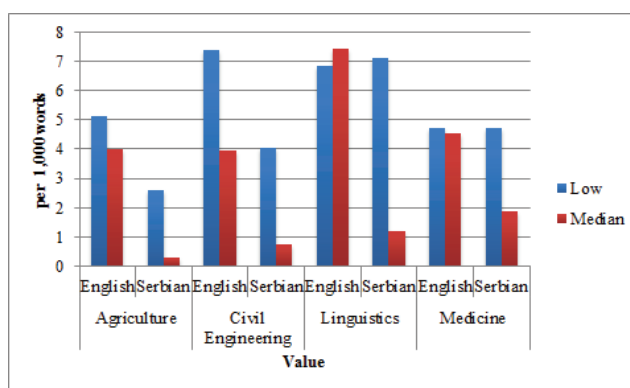
Regarding the low value in Serbian research articles, the greatest frequency was recorded in linguistics research articles (7.15 per 1,000 words) and the lowest frequency was noted in agricultural research articles (2.62 per 1,000 words). As for median value in Serbian research articles, it was most frequent in medical research articles (1.86 per 1,000 words), and least frequent in agricultural research articles (0.28 per 1,000 words).

The low value was most frequent in English research articles from the field of civil engineering (7.41 per 1,000 words) whereas this value was least frequent in Serbian research articles from the field of agriculture (2.62 per 1,000 words). It is interesting to note that low value was more frequent in Serbian (7.15 per 1,000 words) than in English (6.85 per 1,000 words) research articles from the field of linguistics. As for median value, it was most frequent in English research articles from the field of linguistics (7.46 per 1,000 words). Regarding both low and median values, it is argued that they help writers not be categorical, but more tentative and cautious when presenting their propositions/claims (Yang et al. 2015: 6). Similarly, it is claimed that "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" (Martín-Martín 2008:133).
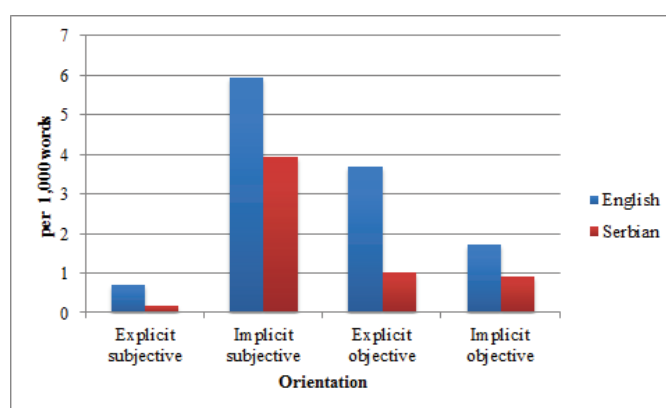
Regarding the orientation (explicit subjective, implicit subjective, explicit objective and implicit objective) of epistemic modality markers in English and Serbian research articles across different disciplines, we will illustrate them using the following examples:

51) While I agree with the judgement of this example, I *think* that it is an exceptional case. (Ling1) (explicit subjective)

52) This *may* represent an overestimate, however, because we cannot be certain that all of these reinfections occurred within 2 years or that all second exchange operations were performed as a consequence of reinfection. (BMCM2) (implicit subjective)

53) This decline in density *suggests* that repeated applications of malathion are toxic to immature or adult spiders, and that late-season populations can not be sustained by re-colonization or in-field reproduction. (CP2) (explicit objective)

54) The scarcity of well-tested models that deal with tillage *likely* explains why few studies considered tillage practices. (FCR2) (implicit objective)

55) У овом раду немамо намеру да представимо исцрпан и свеобухватан, посебно не нов инвентар семантичких јединица, тј. семантичких улога или функција већ *настојимо* да укажемо на правилности и одступања у функционалној, или прецизније, синтаксичкој дистрибуцији централних семантичких улога у српском језику. (ZMS2) (explicit subjective)
'...we *seek* to point to...'

56) Значење овог везника у највећем броју случајева *се може утврдити* у оквиру саме сложене реченице. (JF1) (implicit subjective)
'...*may/can* be determined within the same complex sentence.'

57) Горенаведено нам *сугерише* да су у датим реченицама у колизији синтаксичка и семантичка валентност управног глагола, из чега следи закључак да не постоје никакве формалне препреке да се субјекат сматра експонентом логичког предиката, тј. фактивним субјектом, те да примарно додатак именује семантички субјекат, чиме стиче статус агентивне допуне. (ZMS2) (explicit objective)
'The abovementioned *suggests* that...'

58) Ова лажна позитивност *вероватно* је последица тога што се гљиве рода Penicillium користе у процесу производње ових антибиотских лекова, а познато је и да ове гљиве приликом раста ослобађају ГМ. (SAzCL2) (implicit objective)
'This false positivity is *probably* the result of…'

As for the orientation of epistemic modality markers, we can see from Graph 5 that implicit subjective orientation was the most frequent one in English (5.95 per 1,000 words), as well as in Serbian (3.96 per 1,000 words) research articles. The least frequent was explicit subjective orientation in English (0.7 per 1,000 words) and in Serbian (0.2 per 1,000 words) research articles.

Graph 5. Orientation of epistemic modality markers in English and Serbian research articles

When it comes to the orientation of epistemic modality markers in English and Serbian research articles across different disciplines, we can notice various frequencies (Graph 6).

Regarding English research articles, we see that explicit subjective orientation was most frequent in linguistics research articles (1.30 per 1,000 words) and least frequent in agricultural research articles (0.05 per 1,000 words). Concerning implicit subjective orientation, it can be noted that it was most frequent in research articles from the field of civil engineering (7.45 per 1,000 words) and least frequent in agricultural research articles (3.62 per 1,000 words). Explicit objective orientation was most frequently

found in linguistics research articles (4.51 per 1,000 words), and least frequent in research articles from the field of civil engineering (2.42 per 1,000 words). The frequency of implicit objective orientation was greatest in agricultural research articles (2.27 per 1,000 words) and lowest in medical research articles (0.90 per 1,000 words).

As for Serbian research articles, the frequency of explicit subjective orientation was greatest in linguistics research articles (0.44 per 1,000 words), whereas no examples of explicit subjective orientation were recorded in research articles from the fields of agriculture and medicine. Implicit subjective orientation was mostly used in linguistics research articles (5.85 per 1,000 words), while its frequency was lowest in agricultural research articles (1.98 per 1,000 words). Concerning explicit objective orientation, it was most used in medical research articles (1.93 per 1,000 words), and least used in agricultural research articles (0.21 per 1,000 words). Implicit objective orientation was most frequent in medical research articles (1.86 per 1,000 words) and least frequent in articles from the field of civil engineering (0.54 per 1,000 words).

Graph 6. Orientation of epistemic modality markers in English and Serbian research articles across four disciplines
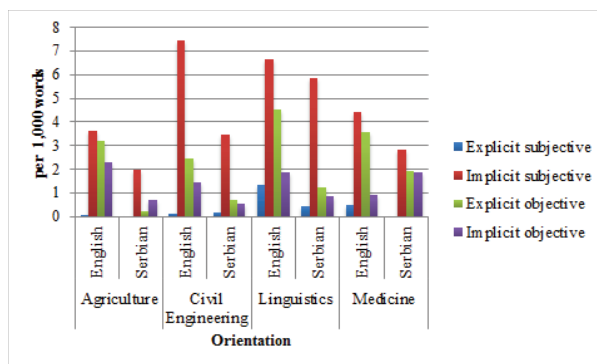

Therefore, regarding both languages, explicit subjective orientation was most frequent in English linguistics research articles (1.30 per 1,000 words) and least frequent, that is, not present at all in Serbian research articles from the fields of agriculture and medicine. As for implicit subjective orientation, the greatest frequency was noted in English research articles from the field of civil engineering (7.45 per 1,000 words) and the lowest in Serbian research

articles from the field of agriculture (1.98 per 1,000 words). Explicit objective orientation was most frequent in English linguistics research articles (4.51 per 1,000 words) and least frequent in Serbian agricultural research articles (0.21 per 1,000 words). Implicit objective orientation was most used in English agricultural research articles (2.27 per 1,000 words) and least used in Serbian research articles from the field of civil engineering (0.54 per 1,000 words). Since it is stated that the subjective source of modality is only present in the explicit subjective orientation modality (Yang et al. 2015: 6), the results suggest that RA writers across all four disciplines actually tend to avoid presenting their research results in an explicitly subjective way. Rather, they use the modality of implicitly subjective orientation, which "'steers the readers' focus to the objective state of the proposition" (Yang et al. 2015: 6). The usage of objective orientation indicates that RA writers tend to move the readers' focus to findings by distancing themselves from the text (Yang et al. 2015: 7).
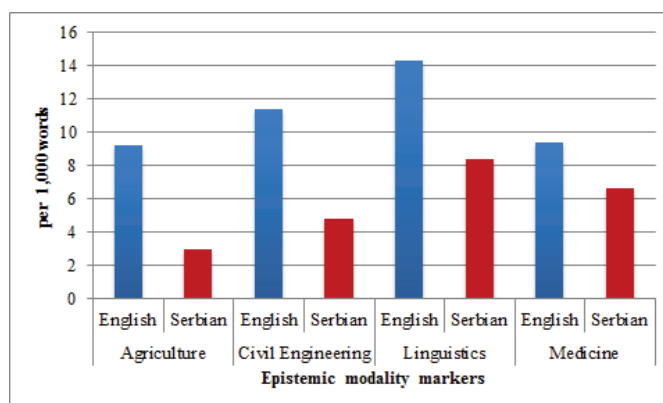
Overall, Graph 7 indicates that the use of epistemic modality markers as hedges in English and Serbian research articles is different. Namely, epistemic modality markers were more frequent in English (12.08 per 1,000 words) than in Serbian (6.12 per 1,000 words) research articles. It may imply that English RA writers tend to use more epistemic marker hedges when presenting their research results and thus decrease the strength of their claims.

Graph 7. Epistemic modality markers used as hedges in English and Serbian research articles
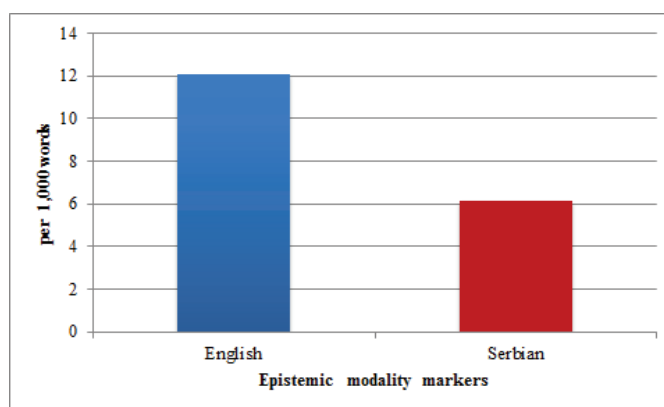
As for the frequency of epistemic modality markers in English and Serbian research articles across different disciplines, we can see various frequencies (Graph 8). The greatest frequency was noted in English research articles from the field of linguistics (14.31 per 1,000 words), followed by the frequency in research articles from the field of civil engineering, medicine and agriculture. The situation concerning the greatest and lowest frequency was the same in case of Serbian research articles. As for Serbian research articles, the frequency of epistemic modality markers were highest in linguistics research articles (8.37 per 1,000 words) followed, unlike in English, by the frequencies recorded in research articles from the fields of medicine, then civil engineering and agriculture. Therefore, the frequency of epistemic modality hedges was highest in English linguistics research articles, and lowest in Serbian agricultural articles.

Graph 8. Epistemic modality markers used as hedges in English and research articles across four disciplines

The different frequency of using epistemic modality hedges may be influenced by the different nature of research, material, methods and (un)availability of instruments. Furthermore, in order to protect themselves from possible disagreements, RA writers tend to use different linguistic devices to present their results and build an appropriate relationship with plausible audience/readers.

Conclusion

It can be argued that the use of epistemic modality markers as hedges implies that RA writers tend to make their claims in a reserved, tentative and cautious way. Our research on epistemic modality markers used as hedges in English and Serbian research articles across four different disciplines has revealed that the frequency of these markers varies in the two languages across four disciplines. It is higher in English research articles across all disciplines, which may imply that English RA writers are likely to make their claims more tentatively. Furthermore, the results imply that RA writers from the field of linguistics tend to use epistemic modality hedges more frequently than the researchers of other disciplines, which can be explained by the nature of research and (un)availability of different instruments, materials and methods. As for the different values of epistemic modality markers, low value has prevailed over median in both languages, implying the writers' tendency to make less certain claims. When it comes to the orientation of epistemic modality markers, the most frequent in both languages and across four disciplines was implicit subjective orientation, which implies that writers are not willing to put themselves in the focus of the readers' attention, but to objectivise their statements.

Some of these findings might well be implemented in instructing non-native, in this case, Serbian RA writers, as well as students when writing research articles in English. The importance of hedging is crucial in academic writing, and great attention should be paid to the proper use of epistemic modality markers as hedges in this discourse. Therefore, this may help Serbian academic workers make appropriate claims for their results and thus publish their research articles in internationally renowned journals.

References

Aikhenvald Y., A. (2004). *Evidentiality*. New York: Oxford University Press.

Coates, J. (1983). *The Semantics of the Modal Auxiliaries*. London and Canberra: Croom Helm Ltd.

Cornillie, B. (2009). Evidentiality and epistemic modality. *Functions of Language*, *16*(1), 44–62.

Crompton, P. (1997). Hedging in academic writing: Some theoretical problems. *English for Specific Purposes*, *16*(4), 271–287.

de Haan, F. (1999). Evidentiality and Epistemic Modality: Setting Boundaries. *Southwest Journal of Linguistics*, *18*, 83–101.

Halliday, M. A. K. (1994). *Introduction to Functional Grammar* (Second.). Edward Arnold (Publishers) Limited.

Halliday, M. A. K. (2004). *Introduction To Functional Grammar* (Third Edit.). London: Hodder Arnold.

Hyland, K. (1996). Nurturing hedges in the ESP curriculum. *System*, *24*(4), 477–490.

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

Lakoff, G. (1973). Hedges: A study in meaning criteria and the logic of fuzzy concepts. *Journal of Philosophical Logic*, *2*(4), 458–508.

Lyons, J. (1977). *Semantics* (Vol. 2). Cambridge, London, New York, Melbourne: Cambridge University Press.

Markkanen, R., & Schröder, H. (1997). *Hedging and Discourse: Approaches to the Analysis of a Pragmatic Phenomenon in Academic Texts*. (Raija Markkanen And Hartmut Schröder, Ed.)*Research in text theory Untersuchungen zur Texttheorie*. Walter de Gruyter.

Martín-Martín, P. (2008). The Mitigation of Scientific Claims in Research Papers: A Comparative Study. *International Journal of English Studies*, *8*(2), 133–152.

Nuyts, J. (2001). *Epistemic Modality, Language, and Conceptualization*. John Benjamins Publishing Company.

Nuyts, J. (2005). Modality: Overview and linguistic issues. In W. Frawley (Ed.), *The Expression of Modality* (pp. 1–26). Berlin, New York: Mouton de Gruyter.

Palmer, F. (2001). *Mood and Modality* (Second Edi.). Cambridge: Cambridge University Press.

Palmer, F. R. (1986). *Mood and Modality*. Cambridge: Cambridge University Press.

Plungian, V. (2001). The place of evidentiality within the universal grammatical space. *Journal of Pragmatics*, *33*(3), 349–357.

Thompson, G. (1996). *Introducing Functional Grammar*. London: Arnold Edward.

Trbojević-Milošević, I. (2004). *Modalnost, sud, iskaz: epistemička modalnost u engleskom i srpskom jeziku*. Beograd: Filološki fakultet, Beograd, Čigoja štampa.

Yang, A., Zheng, S., & Ge, G. (2015). Epistemic modality in English-medium medical research articles: A systemic functional perspective. *English for Specific Purposes, 38*, 1–10.

Пипер et al. (2005). *Синтакса савременог српског језика: проста реченица.* Београд: Институт sa српски језик САНУ – Београдска књига – Матица српска.

Appendix 1

Abbreviations of the titles of journals used for the research are as follows:

English language:

Agriculture:
CP – *Crop Protection*
FCR – *Field Crops Research*

Civil engineering:
BaE – *Building and Environment*
CaBM – *Construction and Building Materials*

Linguistics:
JoP – *Journal of Pragmatics*
Ling – *Lingua*

Medicine:
BMCM – *BMC Medicine*
NEJoM – *New England Journal of Medicine*

Serbian language:

Agriculture:
PiF – *Pesticidi i fitomedicina*
RiP – *Ratarstvo i povrtarstvo*

Civil engineering:
GMiK – *Građevinski materijali i konstrukcije*
IiVK – *Integritet i vek konstrukcija*

Linguistics:
JF – Јужнословенски филолог
ZMS – Зборник Матице српске за филологију и лингвистику

Medicine:
SAzCL – Српски архив за целокупно лекарство
VP 1 – *Vojnosanitetski pregled*