

KRYSTYNA WARCHAŁ  
University of Silesia in Katowice  
krystyna.warchal@us.edu.pl  
ORCID: 0000-0002-8422-4911

## BEYOND MERE FACTS: EPISTEMIC PROFILES OF CONCLUSIONS TO ENGLISH- AND POLISH-LANGUAGE LINGUISTICS ARTICLES

**Keywords:** stance, epistemic modality, research articles, conclusions, rhetorical moves

### Abstract

Expressions of epistemic stance in academic discourse reflect not only the authors' commitment to the truth of what is being said, but also their awareness of other members of the discourse community, the current thinking within the discipline, and the established patterns of interaction. Stance-taking is strongly embedded in culture and language, as demonstrated in numerous studies that focus on L2 academic English (e.g. Hinkel 2002; Dontcheva-Navratilova 2018; Wu and Paltridge 2021) and, less often, academic communication in various linguistic contexts (e.g. Perez-Llantada 2010). This paper pursues this latter line of inquiry and proposes a contrastive analysis of epistemic markers in conclusions to English- and Polish-language linguistics articles in an attempt to identify their epistemic profiles. Epistemic profile refers here to a combination of two features: the epistemic modal value (Halliday 1985/1994) which is marked more frequently than others across a text or text fragment, and the concurrence of modality markers with specific rhetorical moves (Swales 1990; Yang and Allison 2003). Thus, it provides information about the value of modalization and the type of content that tends to be modalized. The analysis was based on a two-part corpus of conclusions to 400 linguistics articles, with 200 English-language articles drawn from international databases and 200 Polish-language articles published in recognized national journals. In the first stage, the frequencies of epistemic markers in the two sub-corpora were calculated (Scott 2008) and a statistical analysis was applied to determine whether the differences were significant. In the second stage, 50 concluding sections from each sub-corpus were manually annotated for rhetorical moves to determine whether epistemic markers tended to occur

within specific moves. The findings show statistically significant differences in the frequencies of high- and low-value epistemic markers in the sub-corpora and a tendency for epistemic markers to occur within moves that offer interpretive content.

## 1. Introduction: Epistemic stance in academic discourse

Stance, the “personal feelings and assessments” (Biber 2006: 97), the “judgements, opinions, and commitments” (Hyland 2005: 176) that speakers and writers communicate in addition to the propositional content, did not fit very well with the traditional view of scientific language as a transparent and impersonal tool for communicating knowledge. This traditional perspective developed from the nineteenth-century focus on objects and phenomena rather than a consideration of those who undertook the studies, and continued within the logical positivist spirit of the first half of the twentieth century (Atkinson 1998; Swales 2001). However, a growing recognition that science cannot be divorced from the contexts in which it is practiced and that knowledge is relative to the communities in which it is developed led to a change in thinking about the language of science and, more generally, academic communication, a recognition that underlined its social grounding and interpersonal nature (Berger and Luckmann 1966/1967; Gilbert and Mulkay 1984). This change in perspective introduced the concepts of evaluation (Hunston and Thompson 2000), appraisal (Martin 2000; Martin and White 2005), and stance (Biber and Finegan 1988; Hyland 1999; Conrad and Biber 2000; Biber 2006; Myers and Lampropoulou 2012) into mainstream academic discourse research.

Evaluation is used by Hunston and Thompson (2000: 5) as an umbrella term for expressions that signal the speaker’s attitude or stance towards, opinion or perspective on, and/or feelings regarding whatever is being said in the proposition. In academic discourse, it has been found to play an important role not only in genres whose main function is to evaluate, such as peer review reports (Fortanet 2008) and book reviews (Romer 2005; Diani 2009), but also in textbooks (Freddi 2005), lectures (Bamford 2005), and research articles (Silver 2003; Kim and Crosthwaite 2019), where it helps mark the degree of the author’s commitment to the truth of the proposition, or the degree of desirability of the situation it expresses, as well as to direct the readers’ attention, and predispose them to receive the information in the way intended by the author.

In the model proposed by Martin and White (2005), appraisal is a complex resource for communicating interpersonal meaning, embracing the categories of attitude (expressing judgements, opinions, and emotional reactions), engagement (admitting the voices of others), and graduation (specifying the strength of a position). This framework has proved useful both in analyzing the strategies academic writers employ to satisfy generic and disciplinary expectations (Hood 2010) and in understanding cross-cultural differences in academic writing (Alramadan 2016).

Epistemic stance – an umbrella term for expressions that convey the degree of certainty with respect to the truth of a proposition or indicate the source of the infor-

mation it reports (Conrad and Biber 2000) – has been found to reflect not only academic authors' commitment to the truth of what is being said, but also their awareness of other members of the discourse community, the current thinking within the discipline, and the established patterns of interaction (Hyland 2005; Biber 2006; Vold 2006; Crosthwaite et al. 2017). Swales (1990), for example, points to the role epistemic markers play in highlighting the gap between the present state of knowledge (or the existing consensus as to what this state is) and the new ideas put forward for consideration and acceptance. In a similar vein, Crompton (1997) draws attention to their role in signalling new knowledge claims as opposed to knowledge that is established and accepted by the relevant discourse communities and hence does not need negotiation or approval. As he puts it:

Academic writers need to make a clear distinction between propositions already shared by the discourse community, which have the status of facts, and propositions to be evaluated by the discourse community, which only have the status of claims. Evaluative or tentative language is one of the signs by which claims may be distinguished from facts. (Crompton 1997: 274)

Epistemic markers are thus important tools in the process of negotiation regarding a vision of the world, including what counts as a fact, what is relevant, and what constitutes a contribution to the overall knowledge.

Cross-linguistic and cross-cultural research into academic communication has provided important insights into the rhetorical organization of academic texts in various languages, on the one hand, and English as a L2 in academic and research contexts, on the other (e.g. Burgess and Martín-Martín 2008; Suomela-Salmi and Dervin 2009; Łyda and Warchał 2014; Mur-Dueñas and Šinkūnienė 2018). Among those aspects and features of communication analyzed from a contrastive perspective, stance has been shown to be strongly embedded within culture and language, as demonstrated by the numerous studies that focus on L2 academic English (e.g. Hinkel 2002; Dontcheva-Navratilova 2018; Wu and Paltridge 2021) and, less often, academic communication in various linguistic contexts (e.g. Perez-Llantada 2010). This paper pursues this latter line of inquiry and proposes a contrastive analysis of epistemic modality markers in English- and Polish-language linguistics articles. Building on prior research, which has shown that English articles contain considerably more signals of epistemic evaluation than Polish-language articles (Warchał 2015), it focuses on the final sections and attempts to identify their characteristic epistemic profiles. The reasons behind the choice of conclusions as the text segment selected to investigate epistemic stance include the fact that they often combine a concise summary of the main findings, that is, whatever was established in the article, with critical comparisons with prior research, explanations of possible differences, and recommendations for further research or practice (see Section 2), that is, whatever may follow from the findings but goes beyond the collected data. Moreover, previous research has shown that concluding sections provide interesting material for studying epistemic modality markers both in terms of the modal values (Rezzano 2004) and in terms of cross-linguistic and cross-cultural differences (Warchał 2015).

Epistemic profile is used to refer to a combination of two features: the epistemic modal value – high, middle, or low, where the high value lies close to the unmodalized assertion and the low value, to the negation of the propositional meaning (Halliday 1985/1994) – and the concurrence of modality markers with specific rhetorical moves (Swales 1990; Yang and Allison 2003). Thus, it provides information about the value of modalization and the type of content that tends to be modalized. The remainder of this paper is organized as follows: Section 2 outlines the structure and functions of concluding sections in English and Polish texts; Section 3 presents the material analyzed and the procedures applied in this study; and Section 4 describes and discusses the results. The closing section offers some final comments.

## 2. Concluding sections

The terms concluding section and conclusions are used in this paper to refer to the final section or – if no formal division into sections or chapters is introduced – the final part of a published academic text where the authors sum up their study and bring the lines of argumentation together to give a sense of closure and completion. At this point, English-language authors typically summarize the main results, relate them to previous research, underline their significance, and identify their implications. Although, as Arnaudet and Barrett (1984: 88) observe, “there is no one ‘correct’ way to conclude”, there seems to be a consensus that the function of closing sections goes beyond a recapitulation of the findings and includes situating them in the broader context of other results, knowledge gaps, and current social needs (Hewings and Thaine 2012; Swales and Feak 2012; Wallace and Wray 2016).

In Polish, the final paragraphs often restate the most important points developed in the main body of the text. This, according to Zaśko-Zielińska et al. (2008), may take the form of repetition, a summary, tabulation, or a prediction regarding possible future applications of the information presented earlier. Additionally, in her discussion of recent changes in Polish scholarly writing, Żydek-Bednarczuk (2014) points to the increasing presence of commentary that goes beyond a restatement of the findings. The structure of the final section can then move from summarizing the results with a view to answering the research questions, through setting the results in the context of previous research, to suggesting further lines of investigation (Stępień, 2016).

Although when compared to introductions, another relatively short but rhetorically complex section, conclusions have received less attention in the literature, important contributions, inspired by Swales’ (1981) analysis of article introductions, have been made, amongst others, by Hopkins and Dudley-Evans (1988), Swales (1990), Dudley-Evans (1994), and Yang and Allison (2003), who identify major rhetorical moves taken by academic authors to bring the text to a close. Research undertaken from a cross-cultural perspective has also generated interesting observations concerning concluding moves and their realizations in various languages,

as well as in English texts by both native and non-native writers (e.g. Kashiha 2015; Zamani and Ebadia 2016).

In what follows we focus on the markers of epistemic stance in conclusions to English and Polish linguistics articles, with a consideration of their frequency and distribution across the closing moves. With respect to the latter, for the English-language part of the material, we rely on the system of moves developed by Yang and Allison (2003), who identify rhetorical units that tend to recur in applied linguistics research articles from the presentation of the results to the end. The authors analyze the rhetorical structure of discussion, conclusion, and pedagogic implications separately, but emphasize that the differences between them are not always clear-cut, so that conclusions often involve rhetorical units associated with discussion and a discussion often concludes a text (see also Swales and Feak 2012). This functional and rhetorical overlap between the final text sections is reflected in the material analyzed in the present study (see Section 3.2 and Table 3).

### 3. Methodology

#### 3.1. Aims and material analyzed

Through an investigation into the frequency and distribution of epistemic markers (EMs) in conclusions to English- and Polish-language linguistics articles, this paper seeks answers to the following questions:

1. Are there any statistically significant differences between English and Polish conclusions with regard to the frequencies of the high-, middle-, and low-value epistemic markers (HEMs, MEMs, and LEMs, respectively) employed? More specifically, do such differences obtain for all three modal values?
2. Do EMs tend to concur with certain rhetorical moves? Are there any observable differences between English and Polish texts in this respect?
3. Can we speak of a characteristic epistemic profile with regard to conclusions in English and Polish?

The study was based on a two-part corpus of the conclusions to 400 articles published in the years 2001–2006 in peer-reviewed linguistics journals (about 203,000 running words). The English-language sub-corpus (ELC; about 138,000 running words) comprised the conclusions to 200 articles drawn from five international linguistics journals: *Journal of Pragmatics* (JP), *Language and Communication* (LC), *Language Sciences* (LS), *Lingua* (L), and *Linguistics and Philosophy* (LP). The Polish-language sub-corpus (PLC; about 65,000 running words) comprised the conclusions to 200 articles published in the following widely-recognized Polish linguistics journals: *Acta Baltico-Slavica* (ABAS), *Biuletyn Polskiego Towarzystwa Językoznawczego* (BPTJ), *Etnolingwistyka* (EL), *Język a Kultura* (JK), *Onomastica* (ON), *Poradnik Językowy* (PORJ), *Slavia Meridionalis* (SMER), and *Studia z Filologii Polskiej i Słowiańskiej* (SFPS) (Table 1). Texts to be included in the ELC were retrieved electronically; in the case

of the PLC, the majority of texts were scanned manually and converted to text files.<sup>1</sup> Since most of the Polish articles were not explicitly divided into sections, the concluding parts were identified by reading each paper and deciding at which point the final section started on the basis of content and metatextual clues.<sup>2</sup>

Sub-corpus	ELC	PLC
Number of texts	200	200
Size in running words	138,000	65,000

Table 1: The corpus

The difference in the size of the sub-corpora – substantial but less striking if one considers that Polish is a highly inflectional language – was also visible on the level of complete articles: in terms of the number of words, the English articles were on average almost 2.5 times longer than the Polish texts. This difference in length can at least in part be attributed to the limits imposed by Polish journals. In most cases, full length articles cannot exceed 40,000 characters, and in some (including PORJ and JK), the limit is set at 25,000 characters.<sup>3</sup>

### 3.2. Procedure

In the first stage of the study, the sub-corpora were scanned for EMs with *Oxford WordSmith Tools 5.0* (Scott 2008). The list of markers was compiled on the basis of the following sources: Palmer (1979, 1986), Coates (1983), Quirk et al. (1985), Biber and Finegan (1988), Simpson (1993), Westney (1995), Hoyer (1997), Hyland and Milton (1997), Gavins (2005), and Pérez-Llantada (2010) for the ELC and Bralczyk (1978), Rytel (1982), Ligara (1997), Grzegorzczkowska (1998, 2001), Tutak (2003), Żabowska (2006), and Krzyżyk (2008) for the PLC. The items used as search words included modals, quasi-modal verbs, and (in the PLC) epistemic uses of the future tense;<sup>4</sup> modal modifiers; adjectives with clausal complements (with extraposed subjects and following copulas with first-person subjects); nouns with clausal complements (in existential structures and following the verb *have* with first-person subjects); and lexical verbs of mental states and processes (used in passive and impersonal structures and with first-person subjects) (Table 2).<sup>5</sup>

<sup>1</sup> The corpus was compiled in the years 2005–2007 as part of a broader contrastive project. At that time, few Polish texts were available in the digital form. Based on data from the beginning of this century, in a longer perspective, the results could contribute to monitoring changes in the rhetoric of academic Polish.

<sup>2</sup> For more details on the selection of articles and identification of sections, see Warchał (2015).

<sup>3</sup> English-language journals usually set word limits. A limit of 10,000 words corresponds to approximately 68,000 characters.

<sup>4</sup> The epistemic use of the future tense in Polish closely resembles the English epistemic *will*, e.g. *Ta koszulka będzie już sucha (więc możesz ją ubrać)* and *This t-shirt will be dry now (so you can wear it)*.

<sup>5</sup> Unless otherwise indicated, all translations are my own.

Modal value	English epistemic markers	Polish epistemic markers
	(quasi-)modal verbs and Polish epistemic future tense forms	
high	e.g. <i>can't, must</i>	e.g. <i>musieć</i> 'must', <i>nie móc</i> 'can't'
middle	e.g. <i>should, would</i> (predictability)	e.g. <i>powinien</i> 'should'
low	e.g. <i>may, might</i>	<i>móc</i> 'may'
	modal modifiers	
high	e.g. <i>certainly, surely</i>	e.g. <i>na pewno</i> 'certainly', <i>bez wątpienia</i> 'without doubt'
middle	e.g. <i>probably, arguably</i>	e.g. <i>prawdopodobnie</i> 'probably', <i>zapewne</i> 'presumably'
low	e.g. <i>possibly, perhaps</i>	e.g. <i>(być) może</i> 'perhaps'
	adjectives with a clausal complement	
high	e.g. <i>it is not possible that, I am sure that</i>	e.g. <i>jest pewne, że</i> 'it is certain that'
middle	e.g. <i>it is probable that</i>	e.g. <i>jest prawdopodobne, że</i> 'it is likely that'
low	e.g. <i>it is conceivable that</i>	e.g. <i>jest mało prawdopodobne, że</i> 'it is rather unlikely that'
	nouns with a clausal complement	
high	e.g. <i>there is no doubt that, I have no doubt that</i>	e.g. <i>nie ulega wątpliwości, że</i> 'there is no doubt that'
middle	e.g. <i>there is a likelihood</i>	e.g. <i>mam wrażenie, że</i> 'I have the impression that'
low	e.g. <i>there are doubts whether</i>	e.g. <i>mam wątpliwości, czy</i> 'I have doubts whether'
	verbs of mental states and processes, including <i>seem</i> and <i>appear</i>	
middle	e.g. <i>I believe, it seems that</i>	e.g. <i>należy przypuszczać</i> 'it is reasonable to suppose', <i>sądzę</i> 'I think'
low	e.g. <i>I guess, it can be speculated</i>	e.g. <i>można domniemywać</i> 'one can speculate', <i>podejrzewam</i> 'I suspect'

Table 2: Categories of markers used as search words<sup>a</sup>

<sup>a</sup> A complete list of items used as search words in the first stage of the study can be found in Warchał (2015).

The search results were filtered manually to remove direct quotations and examples and to establish the type of modality conveyed by the marker in the specific context.

In the first part of the study, a statistical analysis was applied to determine whether the observed differences in frequencies of high-, middle-, and low-value EMs attested in the English- and Polish-language concluding sections were statistically significant. Descriptive statistics for the three variables were calculated for the ELC and the PLC, with the Mann-Whitney U test with continuity correction run to establish whether the two sub-corpora differed significantly in epistemic modality choices. The non-parametric Mann-Whitney U test was chosen since the distribution of data was not normal but right-skewed and the samples were independent (Gries 2013). The statistical analysis was performed using STATISTICA software (version 10). A 'p' value of less than 0.05 was regarded as statistically significant.

In the second stage, 100 concluding sections – 50 from each sub-corpus – were annotated for rhetorical moves. The analysis involved those texts with the greatest total number of EMs: 36–5 for the ELC and 11–2 for the PLC. The aim of this part of the study was to establish whether (some values of) EMs tended to concur with certain rhetorical moves and, if so, what these moves were.

In the case of the ELC, the rhetorical analysis was based on the framework proposed by Yang and Allison (2003). During coding, it became clear that the final sections often involved moves that provided extended commentary and additional contextualization, that is, units typical of discussion. This is why the list of concluding moves used for coding (Table 3) was extended to include Background information and Commenting on results, which in Yang and Allison (2003) are treated as discussion moves. Originally developed on the basis of applied linguistics research articles, the system proved effective in the present case, but some modifications had to be introduced to accommodate the more theoretically oriented texts. These included Interpreting results (here: Interpreting/Reflecting on results), Comparing with literature (here: Comparing with/Invoking literature), and Drawing implications (here extended beyond strictly pedagogic contexts).

Moves	Steps
Move 1 Background information	
Move 2 Summarizing the study	
Move 3 Commenting on results	3.1 Interpreting/Reflecting on results
	3.2 Comparing with/Invoking literature
	3.3 Accounting for results
Move 4 Evaluating the study	4.1 Indicating significance/advantage
	4.2 Indicating limitations
	4.3 Evaluating methodology
Move 5 Deductions from the research	5.1 Recommending further research
	5.2 Drawing implications

Table 3: Concluding moves in the ELC (based on Yang and Allison 2003)



As for the PLC, a system of rhetorical moves was developed on the basis of twenty Polish-language concluding sections drawn from the fifty texts included in this part of the study, producing a list presented in Table 4. The analysis was inspired by earlier studies conducted in Anglophone contexts (in particular, by Swales 1990; Dudley-Evans 1994; Yang and Allison 2003), but the rhetorical units were identified on the basis of the material analyzed, so the English-language rhetorical framework was not imposed upon Polish texts. The moves and steps thus identified were then used as codes in the analysis of the remaining 30 sections. Examples 1–5 show the text fragments that realize specific moves.

Moves	Steps
Move 1	Background information
Move 2	Summarizing main findings
Move 3	2.1 Summarizing main findings
	2.2 Adding data
Move 3	3.1 Interpreting/Reflecting on results
	3.2 Contextualization in literature
Move 4	4.1 Indicating significance/advantage
	4.2 Limiting/Commenting on the scope
Move 5	5.1 Methodological remarks
	5.2 Recommending further research/ Indicating other areas of study
	5.3 Drawing implications/ Forming predictions

Table 4: Concluding moves in PLC

- (1) Z genetycznego punktu widzenia Lauda stanowi niezwykle ciekawy obszar do badań etnokulturowych i językowych.  
'From a genetic point of view, Liauda is an extremely interesting area for ethocultural and linguistic research.' (PLC; ABAS2005-2; 1 Background information)
- (2) Na podstawie przeglądu stanowisk przedstawionych w wydawnictwach poprawnościowych i dotychczasowej praktyki leksykograficznej można stwierdzić, że powszechnie akceptuje się w dopełniaczu liczby mnogiej rzeczowników na -arnia postać z końcówką fleksyjną -i.  
'Based on an overview of the opinions presented in the normative sources and the lexicographic practice so far, it is possible to state that the inflectional ending -i is commonly accepted in the genitive case plural of nouns in -arnia.' (PLC; PORJ2003-13; 2.1 Summarizing main findings)
- (3) Pamiętać jednak trzeba, że w chwili ich powstawania tworzono dopiero podstawy dla zdecydowanie późniejszych, bo sięgających XX wieku, prawdziwie już naukowych, badań zjawisk fonetycznych, zaś trudności z opisywaniem zarówno spółgłosek, jak i samogłosek mieli właściwie wszyscy dziewiętnastowieczni gramatycy (...).  
'However, one should bear in mind that at the time when they emerged, the foundations were only being laid for the much later, twentieth-century, truly scientific phonetic investigations; and that virtually all the nineteenth-century grammarians had

problems with the description of both vowels and consonants (...)' (PLC; SFPS2005-4; 3.1 Interpreting/Reflecting on results)

- (4) Ten krótki szkic nie pretenduje do pokazania pełnej historii relacji JOS polskich leksemów *mac*, *maciora/samica*. Ma tylko unaocznic zasadność tego typu badań.  
 'This short outline does not aspire to provide a complete history of the relation between the linguistic pictures of the world with regard to the Polish lexemes *mac*, *maciora/samica* [mother, sow/female]. It is simply to demonstrate the importance of this type of research.' (PLC; JK2003-1; 4.2 Limiting/ Commenting on the scope)
- (5) Tego rodzaju problemy interpretacyjne pokazują, że polszczyzny północnokresowej nie można badać w oderwaniu od metod socjolingwistycznych. Najlepiej sprawdza się tu podejście interdyscyplinarne.  
 'Interpretation problems of this type show that the northern borderlands of the Polish language cannot be studied without sociolinguistic methods.' (PLC; ABAS2005-5; 5.1 Methodological remarks)

The two sets of concluding sections coded for rhetorical moves were then analyzed in terms of the distribution of EMs across the rhetorical units. This part of the study was carried out with the help of QDA Miner 6.

It is important to note that the aim of this part of the study was not a comparative analysis of the rhetorical structure of the concluding sections in English and Polish research articles, a problem that may deserve a separate study. The objective was more modest: establishing whether epistemic markers tended to concur with certain rhetorical moves in the two sets of texts. The results obtained may shed some light on the differences and similarities in the rhetorical structure of the analyzed text sections in English and Polish, but this comparison was not our main goal.

#### 4. Results and discussion

In this section, we will first focus on the frequencies of high-, middle-, and low-value EMs in the English and Polish concluding sections. Next, we will consider the distribution of EMs across concluding moves.

As can be seen in Table 5, in general, epistemic markers occurred much more frequently in the ELC than in the PLC, as exemplified by 697 instances in the conclusions of the English-language linguistics articles as opposed to 216 in the Polish-language texts. In English, low-value modality was the most frequently marked modality type (53% of the markers were classified as LEMs), with high-value (24% of the markers) and middle-value modality (23% of the markers) being far less common. In Polish, the most frequently marked type of modality was middle-value modality (43% of the markers), followed by low-value modality (39%). High-value was the least frequently marked type of modality in the Polish data (18%).

A closer look at the modal values reveals that it is the high-value and low-value EMs that are responsible for the numerical difference between the two sets of texts: both high- and low-value epistemic modality was expressed almost 4.4 times more frequently in the ELC than in the PLC. The difference remains considerable when

the occurrence of the markers is calculated per ten thousand words. The situation is different in the case of the MEMs, which were only 1.9 times more common in the ELC than in the PLC, a difference which is nullified when the occurrences are calculated per ten thousand words.

Sub-corpus	HEM	MEM	LEM	Total
ELC	171 (12.4)	158 (11.4)	368 (26.7)	697 (50.5)
PLC	39 (6.0)	93 (14.3)	84 (12.9)	216 (33.2)

Table 5: EMs in the concluding sections in the ELC and the PLC<sup>6</sup>

The results were further analyzed statistically, with the frequencies of high-, middle- and low-value EMs being calculated for each of the ELC and PLC files and presented as histograms (Figure 1). The main descriptive statistics are presented in Table 6.

Variable	N	Mean	Median	Mode	Number of occurrences of mode	Min	Max	Q1	Q3	Standard deviation
HEM-ELC	200	0.86	0	0	125	0	16	0	1	1.88
MEM-ELC	200	0.79	0	0	123	0	8	0	1	1.36
LEM-ELC	200	1.84	1	0	84	0	20	0	3	2.96
HEM-PLC	200	0.20	0	0	171	0	3	0	0	0.54
MEM-PLC	200	0.47	0	0	139	0	8	0	1	0.93
LEM-PLC	200	0.42	0	0	148	0	5	0	1	0.86

Table 6: Distribution of HEMs, MEMs, and LEMs in the ELC and the PLC

An analysis of the distribution of EMs shows that the mode is equal to 0 for all the modal values in both the English- and Polish-language sub-corpora (Table 6). The dispersion is greater in the ELC than in the PLC, with the highest measure observed for low-value markers. HEMs were attested in 75 texts in the ELC, where the greatest number of occurrences per sample was 16. In the PLC, HEMs occurred in 29 texts, with the maximum number of occurrences per sample being 3. MEMs were attested in 77 files in the ELC and in 61 texts in the PLC, with the maximum number of occurrences per text being 8 in both sub-corpora. As for LEMs, they were found in 116 texts in the ELC (the maximum count per text: 20) and in 52 texts in the PLC (the maximum count per text: 5). The distribution of EMs in the ELC and PLC files is shown in more detail in Figure 1.

<sup>6</sup> HEM – high-value epistemic markers; MEM – middle-value epistemic markers; LEM – low-value epistemic markers. The numbers are absolute frequencies. Figures in parentheses are normalized to 10,000 words.

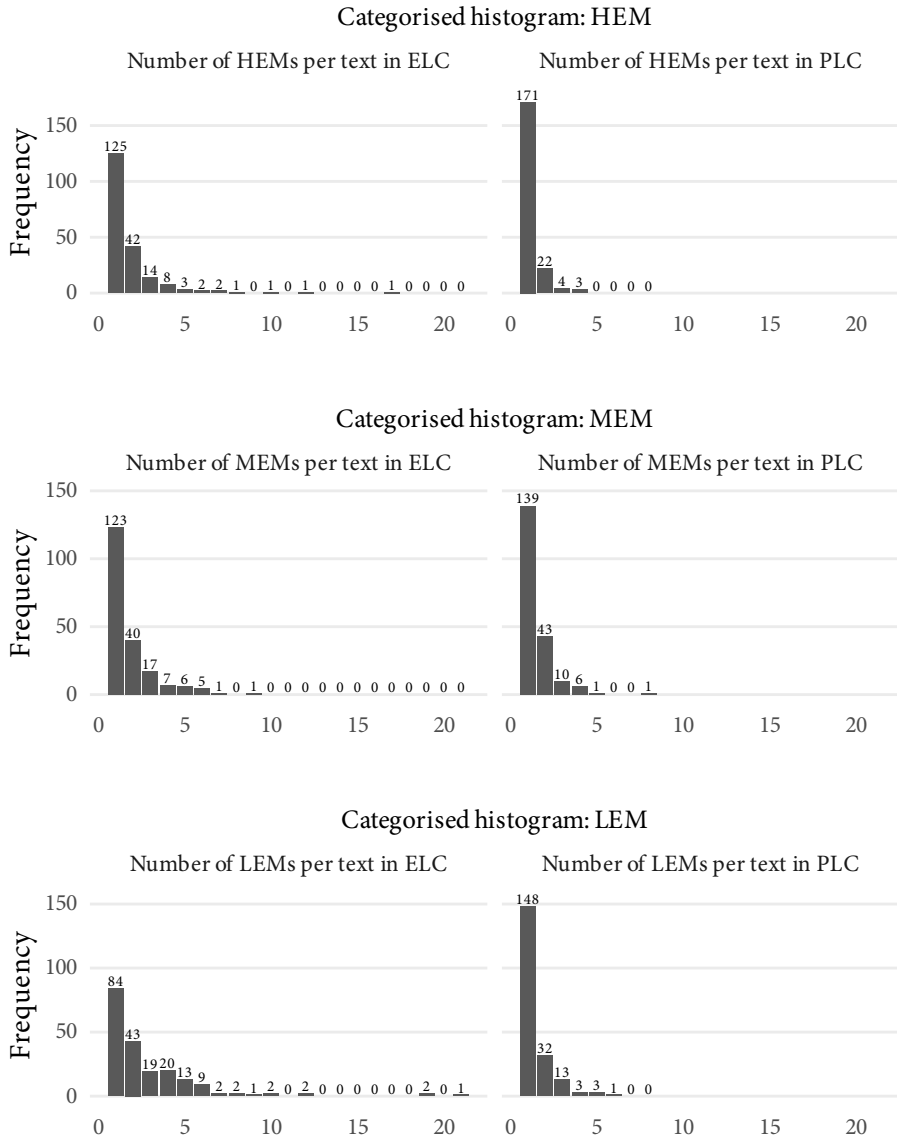


Figure 1: Frequencies of HEMs, MEMs, and LEMs in the ELC and the PLC

As can be seen in Figure 1, while all the histograms are extremely right-skewed, their waveforms are noticeably different for HEMs and LEMs: in both cases, the tails are longer and the peak values much higher in the ELC than in the PLC. The differences in the shape of the histograms for MEMs are much less pronounced. On this basis, one can formulate a hypothesis that there are statistically significant differences in the distribution of high- and low-value EMs in the English and Polish concluding sections.

To confirm this hypothesis, the Mann-Whitney U test was applied. The results show that there is a significant difference in the distribution of high- and low-value EMs in the English and Polish texts, that is, between HEM-ELC and HEM-PLC ( $Z=4.19, p=0.0000$ ) and between LEM-ELC and LEM-PLC ( $Z=6.46, p=0.0000$ ). For HEMs and LEMs, the number of occurrences per sample was statistically significantly higher in the ELC than in the Polish data. No statistically significant differences were discovered in the distribution of MEMs in the sub-corpora. The results of the Mann-Whitney U test are presented in Figure 2.

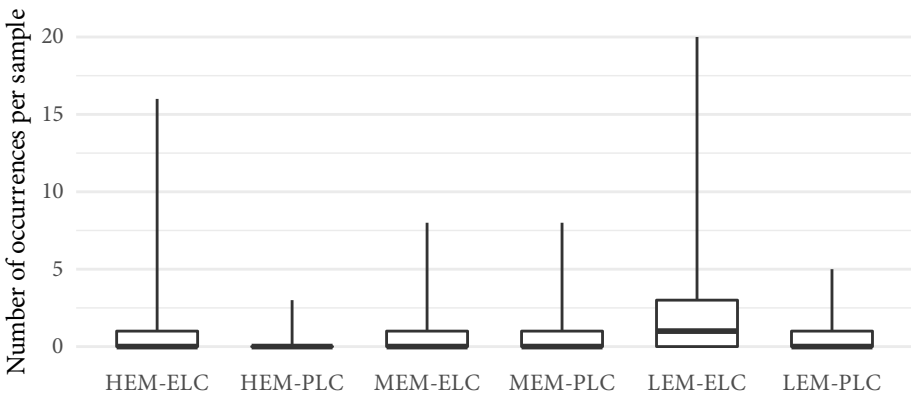


Figure 2: Distribution of HEMs, MEMs, and LEMs in the ELC and the PLC: Results of Mann-Whitney U test

The results show that when concluding their papers, the English-language authors tend to rely to a greater extent on EMs than Polish authors, and that the observed differences specifically concern low and high modal values. Low modal values were found to predominate in the conclusions to the English-language articles, a finding that corresponds with the results obtained by Rezzano (2004), while middle- and high-value modality was marked with a similar, lower frequency (the latter somewhat more frequent than the former). The Polish authors proved to be much more frugal with EMs. Middle-value modality, the least common type in the ELC, was more frequently marked in the conclusions to the Polish-language articles than the other modal values, with low-value modality being the next most common. HEMs were extremely rare in the Polish texts. The observed differences

in the marking of epistemic stance may indicate a higher degree of authorial presence in the conclusions to the English-language articles – with the authors finding it necessary to explicitly signal the level of commitment to the statements they make – and the need to engage in a dialogue with the academic community by highlighting compelling arguments, considering possibly conflicting perspectives, suggesting links with other research, and/or offering tentative explanations that require further study, a motivation that may underlie the preference for low-value epistemic markers. By contrast, the Polish authors appear to avoid explicit markers of certainty and show more restraint with low-value markers. If they modalize their statements, they prefer to use middle-value markers, thus conveying reasonable likelihood rather than full commitment or mere (and perhaps subject to dispute) possibility.

Having established that there are significant differences in the number of high- and low-value EMs used in the English and Polish concluding sections, and that no such differences are confirmed for MEMs, we will now look into the placement of the markers in the texts to determine whether they tend to concur with specific rhetorical moves.

With respect to the English data, almost two-thirds of the EMs occurred within Move 3 Commenting on results, with 41% attested in 3.1 Interpreting/Reflecting on results and 22% in 3.2 Comparing with/Invoking literature. As can be seen in Table 7, other moves drew considerably fewer markers: Move 5 Deductions from the research, 16%; Move 4 Evaluating the study, 10%; Move 2 Summarizing the study, 9%; and Move 1 Background information, 1%.

When one looks at specific modal values, all three groups of markers were most frequently attested in 3.1. Interpreting... (Ex. 6–8), followed by 3.2 Comparing... (Ex. 9–11), but the difference between the two steps was much more conspicuous for HEMs and LEMs, which proved to be more than twice as frequent in 3.1 than in 3.2, than for middle-value markers (32% of MEMs occurred within 3.1 and 25% within 3.2). It is also worth noting that HEMs were relatively frequently used in Move 2 Summarizing... (Ex. 12; 14%, as contrasted with 8% and 9% of MEMs and LEMs respectively), while MEMs and LEMs, in 5.2 Drawing implications (Ex. 13–14; 14% and 10%, respectively, as contrasted with 4% of HEMs).

- (6) Given that no operator can have scope-like semantic effects outside those expressions c-commanded by it, it immediately follows that a complex demonstrative **must** [HEM] be logically independent from other expressions in the sentence. (ELC; LP2001-6; 3.1 Interpreting/ Reflecting on results)
- (7) A potential source of internal difficulty (...) is whether there are in fact some distinctions (...) The most crucial such distinction to my mind is **probably** [MEM] the demarcation criterion, the separation of philosophical uses of language from ordinary ones. (ELC; LS2004-3; 3.1 Interpreting/ Reflecting on results)
- (8) A third option which **may** [LEM] provide a more elegant solution is to allow ML constituents to appear in EL islands. This would add a fourth constituent type to the three already possible under the MLF model (...). (ELC; LC2002-1; 3.1 Interpreting/ Reflecting on results)

Moves	Steps	No of sections with the move/step (N=50)	Epistemic markers (N=477)	HEMs (N=113)	MEMs (N=110)	LEMs (N=254)
1 Background information		22 (44%)	6 (1%)	0	3 (3%)	3 (1%)
2 Summarizing the study		36 (72%)	42 (9%)	16 (14%)	9 (8%)	17 (7%)
3 Commenting on results	3.1 Interpreting/Reflecting on results	46 (92%)	197 (41%)	53 (47%)	35 (32%)	109 (43%)
	3.2 Comparing with / Invoking literature	44 (88%)	105 (22%)	26 (23%)	28 (25%)	51 (20%)
	3.3 Accounting for results	2 (4%)	5 (1%)	0	1 (1%)	4 (2%)
4 Evaluating the study	4.1 Indicating significance/advantage	28 (56%)	31 (6%)	8 (7%)	6 (5%)	17 (7%)
	4.2 Indicating limitations	10 (20%)	7 (2%)	2 (2%)	2 (2%)	3 (1%)
	4.3 Evaluating methodology	5 (10%)	7 (2%)	2 (2%)	3 (3%)	2
5 Deductions from the research	5.1 Recommending further research	15 (30%)	32 (7%)	1 (1%)	8 (7%)	23 (9%)
	5.2 Drawing implications	29 (58%)	45 (9%)	5 (4%)	15 (14%)	25 (10%)

Table 7: EMs and concluding moves in the ELC

- (9) The sheer range and complexity of Solan's (1993) examples of indeterminate and ambiguous legal rules **certainly** [HEM] reinforces this point. (ELC; LC2004-2; 3.2 Comparing with/ Invoking literature)
- (10) For both Coulter and for the cognitivists he criticises, ordinary members not only cannot know that on which they report but also, in their reportings, they are lamentably (and accountably) in error. They are cast, **it would seem** [MEM], as either grammatical or psychological dopes. (ELC; JP2003-6; 3.2 Comparing with/ Invoking literature)
- (11) In addition, the negative politeness strategies in these voice mail messages **may** [LEM] be a function of their status as one-sided social actions (Alvarez-Caccamo and Knoblauch 1992: 474): When there is no face-to-face interaction, there is no possibility of negotiating the success or failure of the communication (Liddicoat 1994: 307) (...). (ELC; JP2003-4; 3.2 Comparing with/ Invoking literature)
- (12) In the kind of case considered in this project, an examination dialogue begins with some text of discourse in natural language. It could be a paragraph of text containing an argument, for example. The paragraph **will** [HEM] normally have been written by an author who can be identified (...). (ELC; JP2006-3; 2 Summarizing the study)
- (13) If present trends continue, **there is reasonable likelihood** [MEM] that written marks of punctuation will either decrease in number ("light" punctuation) or openly mark the cadences of informal speech (reflecting the author's "inner voice"). (ELC; LS2001-2; 5.2 Drawing implications)
- (14) Results of the present study, as well as other external evidence, suggest that variability should **perhaps** [LEM] be taken more seriously. (ELC; L2001-4; 5.2 Drawing implications)
- (15) Some optative complements **definitely** [HEM] are hypothetical; yet the -R environment of mandative and optative predicates is a lexically conditioned property. (ELC; LS2006-1; 2 Summarizing the study)

These results show that EMs in the English-language conclusions tend to occur in text segments that go beyond highlighting the facts established in the study or providing additional factual information about its context. Epistemic modalization was most frequent in rhetorical units where the authors reflected on the meaning of their findings, looked for possible connections with studies conducted by other authors, and, in the case of middle- and low-value markers, noted the possible implications of the findings for further research, professional practice, or communities. Text segments which tend to focus on facts – background information, a summary of the results, and indicating the relative novelty of the approach and its limitations – were found to draw fewer markers. High-value markers attested in Move 2 Summarizing..., relatively more common than the other modal values, may serve to indicate the commonness or recurrence of a situation or phenomenon (treated as expected or "normal", as in Ex. 12) or to emphasize a finding, especially if its generalizability or applicability is limited by other results (as in Ex. 15). Their function then would seem to be slightly different than that of HEMs in other text segments.

With regard to the Polish data, an important limiting factor that must be taken into consideration when interpreting the results is the low number of EMs attested in the material. Because of the disproportion between the Polish and English data, the comparison can only be treated as an approximate illustration of tendencies in



epistemic modalization. As can be seen in Table 8, in the PLC, over 50% of the epistemic markers occurred within Move 3 Commenting on results: 39% in 3.1 Interpreting/ Reflecting on results, a proportion similar to that noted for the ELC, and 13% in 3.2 Contextualization in literature. Slightly over a quarter of all the epistemic markers were found within Move 2, with 24% attested in 2.1 Summarizing main findings and 2% in 2.2 Adding data. This observation stands in contrast to the ELC data, where only 9% of the markers occurred within Move 2. Another 18% of the epistemic markers in the PLC were found in Move 5 Deductions from the research. As in the case of the ELC, very few instances of modalization were noted in Move 4 Evaluating the study and Move 1 Background information.

As for the modal values, the greatest number of MEMs, the most frequently marked value in the Polish-language conclusions, were found in 3.1 Interpreting... (Ex. 16), representing 41% of the markers. MEMs were also attested (20% of the markers) in 3.2 Contextualization... (Ex. 17), with 18% in 2.1 Summarizing... (Ex. 18). Examples of low-value modality, the second most frequently marked type in Polish, were also the most numerous in 3.1 Interpreting... (43%, Ex. 19), but in contrast to MEMs, the next unit in the order of frequency was 2.1 Summarizing..., with 29% of the markers being LEMs (Ex. 20), followed by 5.3 Drawing additional implications with 11% (Ex. 21). High-value modality was very rare in the Polish-language conclusions. The same number of HEMs occurred in 3.1 Interpreting... and 2.1 Summarizing... (25% in each unit), followed by 3.2 Contextualization... (18%) and 5.3 Drawing implications... (14%).

- (16) **Myszę** [MEM], że taką ‘wewnętrzną’ perspektywę narzuca nam po prostu obecność podmiotów osobowych.  
‘I think such an internal perspective is simply imposed by the presence of personal subjects.’ (PLC; BPTJ2001-2; 3.1 Interpreting/Reflecting on results)
- (17) **Zapewne** [MEM] ma rację H. Kapelaś, że termin ten, ale pierwotnie **chyba** [MEM] tylko w odniesieniu do Matki Boskiej, miał coś z transcendencji, wszechobecności.  
‘H. Kapelaś is **probably** right that this term involved a certain transcendence and omnipresence, but **apparently** only when used with regard to the Virgin Mary.’ (PLC; EL2001-8; 3.2 Contextualization in literature)
- (18) Co do genezy, o czym traktowała pierwsza, historyczno-źródłowa, część artykułu jest to szlachta autochtoniczna, **najprawdopodobniej** [MEM] etnicznie auksztocka.  
‘As for the origins, discussed in the first historical bibliographic part of the article, it is the indigenous nobility, **in all likelihood** the Aukštait.’ (PLC; ABAS2005-2; 2.1 Summarizing main findings)
- (19) Nie bez znaczenia **mogło** [LEM] być również sąsiedztwo ordynacji opinogórskiej – rodowych dóbr Krasińskich, których dziedzicem był poeta.  
‘The vicinity of the ordinance of Opiniogóra, the manor of the Krasiński family, which the poet inherited, **may** not have been insignificant either.’ (PLC; ON2002-7; 3.1 Interpreting/Reflecting on results)
- (20) O kompozycji i zawartości treściowej tekstu z parentezą decydował autor, nieraz – jak wskazują konteksty – pod wpływem różnych czynników pragmatycznych, np. szybko zmieniająca się sytuacja **mogła** [LEM] wpływać pośrednio na ostateczny kształt tekstu wypowiedzi.

Moves	Steps	No of sections with the move/step (N=50)	Epistemic markers (N=164)	HEMs (N=28)	MEMs (N=71)	LEMs (N=65)
1	Background information	12 (24%)	2 (1%)	1	1	0
2	Summarizing main findings	35 (70%)	39 (24%)	7 (25%)	13 (18%)	19 (29%)
	2.1 Summarizing main findings					
	2.2 Adding data	8 (16%)	3 (2%)	0	2 (3%)	1
3	Commenting on results	34 (68%)	64 (39%)	7 (25%)	29 (41%)	28 (43%)
	3.1 Interpreting/Reflecting on results					
	3.2 Contextualization in literature	28 (56%)	22 (13%)	5 (18%)	14 (20%)	3 (5%)
4	Evaluating the study	7 (14%)	1 (1%)	1	0	0
	4.1 Indicating significance/advantage					
	4.2 Limiting/Commenting on the scope	11 (22%)	3 (2%)	0	1	2 (3%)
5	Deductions from the research	9 (18%)	6 (4%)	2 (7%)	2 (3%)	2 (3%)
	5.1 Methodological remarks					
	5.2 Recommending further research/ Indicating other areas of study	9 (18%)	9 (5%)	1	5 (7%)	3 (5%)
	5.3 Drawing implications / Forming predictions	15 (30%)	15 (9%)	4 (14%)	4 (6%)	7 (11%)

Table 8: EMs and concluding moves in PLC

‘The contexts indicate that the author often decided on the composition and content of a text with a parenthetical based on various pragmatic factors; e.g., a quickly changing situation **may** have indirectly influenced the ultimate form of the utterance.’ (PLC; PORJ2006-9; 2.1 Summarizing main findings)

- (21) Natomiast w związku z rozbieżnościami dotyczącymi częstości oraz zakresu użycia form o zakończeniu -arń **być może** [LEM] należałoby dla wszystkich leksemów na -arnia uznać je za wariant rzadszy, ale ciągle poprawny.

‘With regard to the discrepancies in the frequency and range of use of the forms -arń, **perhaps** as with all the lexemes ending in -arnia, they should be considered as a rarer but still correct variant.’ (PLC; PORJ2003-13; 5.3 Drawing implications/Forming predictions)

- (22) Omawiana cecha łączy tereny kowieńskie z pozostałym obszarem północno-wschodnim. Jednak w porównaniu ze stanem obserwowanym w źródłach wileńskich w polszczyźnie kowieńskiej wahania l/ł odznaczają się **niewątpliwie** [HEM] większą frekwencją (...).

‘The discussed feature is shared by the Kaunas region and the rest of the north-eastern area. Still, compared to the situation observed in the Vilnius data, the l/ł alternations in Kaunas Polish are **undoubtedly** more frequent.’ (PLC; ABAS2005-3; 3.1 Interpreting/Reflecting on results)

- (23) Badania przeprowadzone na tekstach proroczych i przepowiedni wykazały, że agresja i życzliwość nie są obce przekazom (...) Ta cecha z  **pewnością** [HEM] jest związana z judeochrześcijańskim pochodzeniem wszystkich omawianych tekstów.

‘An analysis of the texts of prophesies and fortune-telling has shown that neither aggression nor kindness are absent from them (...) This feature is **certainly** connected with the Judeo-Christian origins of all the discussed texts.’ (PLC; JK2005-12; 2.1 Summarizing main findings)

- (24) (...) pozwalają na potwierdzenie tezy van Dijka (...), iż dyskurs jako struktura wyższego rzędu to nie tyle izolowana struktura tekstowa lub dialogowa, ale złożone zjawisko komunikacyjne, obejmujące obok struktury tekstowej i dialogowej kontekst społeczny (a wraz z nim **bez wątpienia** [HEM] uczestników komunikacji (...)).

‘confirm van Dijk’s assertion (...) that discourse as a higher-order structure is not an isolated form of text or dialogue, but a complex communicative phenomenon that, apart from the text and dialogue, embraces the social context (including, **without doubt**, the participants).’ (PLC; BPTJ2002-6; 3.2 Contextualization in literature)

- (25) Niedopuszczalne i nienaukowe jest jednak pomijanie i ignorowanie językowej dyskryminacji kobiet, gdyż (...) udając, że problem nie istnieje, z  **pewnością** [HEM] nie będziemy w stanie doprowadzić do jego (...) „nieegzystencji” i „waporyzacji”

‘However, it is unacceptable and non-scientific to leave out or ignore the linguistic discrimination of women because (...) by pretending that the problem does not exist, we will **certainly** not lead to its “nonexistence” or “vaporization”.’ (PLC; SFPS2004-4; 5.3 Drawing implications/Forming predictions)

These results show that in the Polish-language concluding sections, EMs tend to occur more frequently in the rhetorical unit that provides interpretation of the data than in the other text segments. However, the share of markers that were attested in the segments that summarize the findings gives a somewhat different picture than that obtained for the English data. Although EMs occurred most often in Move 3 (and specifically in 3.1 Interpreting...), the next most frequent epistemic

marking was located in 2.1, which focused specifically on the findings of the study. As for the other units, LEMs were noticeably less often attested in 3.2 Contextualization... than the other markers, and MEMs were less common in 5.3 Drawing implications... than HEMs and LEMs. The findings may suggest that the use of epistemic markers in the Polish-language concluding sections, limited as it is, reflects to a greater extent the personal predilection of the authors rather than the need to separate that which – in the author's view – has the status of fact and that which counts as interpretation, proposal, or prediction. It may also suggest that in the Polish-language conclusions, the segments whose main role is to summarize the main findings include elements of interpretive content more often than in the English texts, where the necessity to delineate knowledge proposals from established knowledge is clearly emphasized (Swales 1990; Crompton 1997).

## 5. Concluding remarks

This paper analyzed the frequency and distribution of EMs across rhetorical units in conclusions to English- and Polish-language linguistics articles. The results show that the marking of epistemic stance is more frequent in the conclusions to the English-language articles than in the Polish texts, but that this difference is due specifically to high- and low-value markers. By contrast, middle-value modality was found to be marked rather more frequently in Polish than in English. With reference to the first research question, the results of the statistical analysis demonstrate that there are statistically significant differences between the English- and Polish-language conclusions with regard to the frequency of high- and low-value epistemic marking; the difference recorded for middle-value marking is not statistically significant.

An analysis of the distribution of EMs across rhetorical moves indicates that both the English- and the Polish-language authors use EMs more frequently in the text segment(s) where they interpret or reflect on the data than elsewhere: 41% and 39% of all EMs in the English- and Polish-language material respectively occurred within this rhetorical unit. However, the situation appears to be different when one considers the rest of the concluding section. In English, the rhetorical unit with the second greatest number of EMs was that in which the authors invoked other studies, compared their own results to those of others, and offered explanations for possible differences; as much as 22% of the epistemic marking occurred within this rhetorical unit. In Polish, in turn, the rhetorical unit with the second greatest epistemic marking was summarizing the main findings, with as many as 24% of the EMs attested. By contrast, in the English data, the corresponding rhetorical unit was found to contain only 9% of the markers. Thus, with regard to the second research question, it may be said that both in English and in Polish, EMs tend to occur most frequently in the rhetorical unit that offers an interpretation of the results, but that their distribution across the other units differs between the English and Polish data. The English authors tend to use EMs when they draw comparisons with other studies: consider competing perspectives, look for similarities, and/or invoke arguments offered by

others. By contrast, the Polish authors tend to use EMs when they summarize their own findings, a practice that is rarely attested in the English data.

Finally, the results provide a positive answer to the third research question. The epistemic profile of the conclusions to the English-language articles is clearly dominated by low-value markers, representing 53% of the data. Middle and high modal values were marked with a similar frequency (23% and 24%, respectively), with the latter marginally outnumbering the former. These findings are in line with the results obtained by Rezzano (2004), who analyzed a corpus of 90 discussion-conclusion sections of English-language articles published in a selected journal. Her analysis demonstrated that low-value modality accounted for about 55% of the data, followed by HEMs with approximately 25%. Moreover, we have seen that EMs in the English-language conclusions tend to concur with the rhetorical moves that carry an interpretive content: reflect on the findings, offer comparisons with the findings of others, and draw implications. Thus, they seem to be found in the segments that move beyond facts, engaging the reader in the negotiation of new knowledge and proposing links between the presented research and the world. It is also worth noting that high-value modality, while much less frequently marked than low-value modality, often adds force to an interpretation, possibly highlighting the difference between the conclusions that seem to have a stronger or weaker position in the data. The resulting tension between high- and low-value modality adds to the epistemic amplitude of the English concluding sections.

The epistemic profile of the conclusions to the Polish-language articles is dominated by middle and low modal values, with the former slightly outnumbering the latter, with 43% and 39% of the data, respectively. The very small number of HEMs in the material would suggest that the Polish authors rarely feel the need to emphasize the difference between the conclusions that seem to have a stronger or weaker standing in the results. Although the greatest number of EMs coincides with the rhetorical unit that offers an interpretation of the findings, they do not appear to consistently emphasize the distinction between the units that focus on facts and those that move beyond them. In fact, a considerable proportion of the markers was found to occur within the rhetorical unit that provides a summary of the findings.

Overall, the results suggest that EMs in English-language conclusions are important tools for drawing a line between the facts of the study and whatever moves beyond these facts, a central distinction in English academic writing (Swales 1990; Crompton 1997). Compared to the Polish data, fewer conclusions were found to lack them altogether, and they tend to consistently appear in rhetorical units that provide interpretation, reflective comments, comparisons with other findings, and/or implications. While all modal values conform to this pattern, there seems to be a certain degree of specialization, with HEMs found rather more frequently than the other values in the unit that offers a recapitulation of the main findings, and with middle and low values occurring more frequently than expressions of certainty in the units that present deductions from the research. In Polish, EMs seem to have an extremely limited use, with more than half of the texts included in the corpus lacking them altogether. This suggests that compared to English, they must play a lesser role in formu-

lating final conclusions. Also, their role in separating the interpretive content from the facts of the study is less obvious than in the case of the English-language texts. These differences seem to suggest a different level of importance with regard to the distinction between facts and non-facts in these two cultural and linguistic contexts, a different emphasis on involving the reader in the negotiation of new knowledge, and different expectations concerning the writer's explicit evaluation of the relative strength of conclusions, predictions, and implications.

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