Epistemic lexical verbs
in English-language economics articles
by Polish and Anglophone authors

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Abstract

The study investigates cross-cultural variation in the use of epistemic lexical verbs (ELVs) in English research articles on economics written by Polish and Anglophone scholars. Two corpora of articles published in Polish and international journals are explored to analyze the frequency, prominence, distribution and phraseological behaviour of selected ELVs across the introductory, concluding and main body parts of the collected texts. The results demonstrate that Anglophone writers use more ELVs than their Polish counterparts, though both groups prefer judgement over evidential verbs and most frequently use ELVs in the combined Results and Discussion section. Cross-cultural differences are observed in the choice of the specific ELVs, their frequency rates and the recurrent phraseology in the distinct rhetorical sections. These results may have implications for novice writers aspiring to understand the motivations behind the specific rhetorical choices contributing to the effective announcement of new knowledge claims in English-language economics articles.

Keywords

epistemic lexical verbs, academic written English, cross-cultural variation, economics research articles

Epistemiczne czasowniki leksykalne
w angielskich artykułach naukowych
z zakresu ekonomii napisanych
przez badaczy polskich i anglojęzycznych

Abstrakt

Celem badania jest analiza różnic międzykulturowych w stosowaniu epistemicznych czasowników leksykalnych w angielskich artykułach naukowych z zakresu ekonomii napisanych przez badaczy polskich i anglojęzycznych. W oparciu o dane zaczerpnięte z dwóch korpusów artykułów opublikowanych w recenzowanych czasopismach polskich i zagranicznych przeanalizowano częstotliwość występowania, widoczność w korpusie, dystrybucję i najczęstsze frazy z badanymi czasownikami we wstępnych, podsumowujących i głównych sekcjach analizowanych tekstów. Wyniki pokazują, że autorzy anglojęzyczni używają więcej epistemicznych czasowników leksykalnych niż ich polscy koledzy. Jednocześnie obie grupy autorów częściej wybierają czasowniki wyrażające sądy epistemiczne oraz odnoszące się do materiałów stanowiących poparcie dla przedstawianych twierdzeń i stosują najwięcej epistemicznych czasowników leksykalnych w połączonej sekcji Wyniki badawcze i Dyskusja. Różnice międzykulturowe widoczne są w doborze konkretnych czasowników epistemicznych, częstotliwości ich stosowania oraz powtarzającej się frazeologii w poszczególnych sekcjach retorycznych badanych tekstów. Przedstawione wyniki mogą stanowić wskazówkę dla początkujących badaczy chcących zrozumieć motywacje stojące za określonymi wyborami retorycznymi, przyczyniającymi się do skutecznego ogłaszania nowych twierdzeń dotyczących wiedzy w anglojęzycznych artykułach z zakresu ekonomii.

Słowa kluczowe

epistemiczne czasowniki leksykalne, akademicki język angielski, różnice międzykulturowe, artykuły naukowe z zakresu ekonomii

1. Introduction

Cross-cultural variation constitutes an important area in the study of academic English, which has long been characterized as "not uniform and monolithic", but rather diverse in its means of expression (Hyland 2000: 3). The writing conventions that seem to prevail and are considered desirable, especially if one strives to have their articles published in major international journals, are those that derive from an Anglophone context. As Hryniuk (2017: 3) suggests, "in the context of academic writing [...] 'international' is synonymous with 'English medium'" and the combined use of "English" and "international" in the context of disseminating research findings denotes a "high quality" publication. Consequently, scholars who want to become fully-fledged members of the international academic community should develop an awareness of features unique to English academic language. The global academic discourse of recent decades, however, has become hybridized with the academic conventions specific to the distinct lingua-cultural backgrounds of non-Anglophone researchers, a familiarity with which is equally important.

Unfortunately, as Hryniuk (2018: 269) notes, "few studies comparing Polish and Anglo-American research writing have been carried out". Research into these phenomena has been initiated by Duszak, who compares Polish and English research article introductions (1994) and argumentative essays (1998). Data from her studies suggest that Polish academics are influenced by German scholarly tradition and thus prefer a more restrained and indirect style of writing than Anglophone writers, whose discourse is more assertive and direct. Golebiowski (2007) concludes that Polish authors use fewer markers of organizing relations, which makes their articles more monologic and reader-responsible than those by Anglophone writers. Donesch-Jeżo (2011) shows that medical papers written by Polish academics usually lack clear structure and are increasingly impersonal.

Special attention has been devoted to linguistic articles, which, as Warchał claims, if written by Anglophone authors, are heavily marked by high-value epistemic modal verbs (2010) as well as by doubt, certainty and boosters (2015). Kowalski (2014) adds that in linguistics papers negative other-evaluation is influenced by the authors' cultural background, whereas positive self-evaluation depends on the language used to write the text. In turn, Hryniuk shows increasing similarity in the rhetorical structure of linguistics texts by Polish and Anglophone writers (2017) and claims that the former use hedges (2018) more often than the latter. Unfortunately, no research has been found that directly investigated the use of epistemic lexical verbs (ELVs) in research articles written by these two groups of scholars, not to mention the general paucity of studies focusing on disciplines other than linguistics.

Aiming to fill this gap, this paper explores variation in the use of ELVs in economics research articles written in English by Polish and Anglophone academics. It attempts to account for potential differences by relating them to the writers' distinct national intellectual traditions, which may be in tension with the generally accepted conventions of English-language academic writing. Similarities are also discussed with a view to the scholars' shared disciplinary context.

2. Epistemic lexical verbs in academic discourse

Epistemic lexical verbs enable writers to modify the degree of commitment they give to their knowledge claims in an attempt to persuade other scholars of the relevance of the presented findings, forestall potential criticism and, ultimately, win recognition for their contribution to disciplinary knowledge. These characteristics grant ELVs an important place in the repertoire of rhetorical devices utilized to convey epistemic modality in academic discourse. Writers may encode their assessment of the probability of an expressed proposition, thus communicating either necessity or possibility "that something is or is not the case"

(Palmer 1990: 50), as well as other degrees of commitment to these propositions (Palmer 1986). Tutak (2003) emphasizes that the role of epistemic modality markers is to establish the relation between a particular statement and a specific state of affairs in the real world, the nature of which may be encoded in terms of belief, doubt or certainty. Therefore, epistemic devices should be seen as resources on a cline or continuum, with different levels of epistemic force. For instance, Holmes (1982: 18) distinguishes between boosters, which "express strong conviction" (e.g. *demonstrate*) and downtoners, which "signal […] lack of confidence" (*doubt*). This division is reflected in Hyland's (2005) categories of, respectively, boosters and hedges. Hoye (1997) assigns epistemic markers to three levels of certainty: certainty, probability and possibility; Thompson et al. (2008), to four levels: absolute, high, moderate and low; whereas Rubin (2007), to five levels: absolute, high, moderate, low and uncertainty. In scholarly discourse, these shades of meaning relate to evaluating how confident writers are in reporting their claims and findings, which has made epistemic modality "a highly routinised phenomenon in academic writing, yet rhetorically variable across cultural contexts" (Pérez-Llantada 2010: 25).

Traditional definitions of epistemic modality link the phenomenon with the functional category of evidentiality, which involves expressing "the speaker's evidence", that is, the reasons they have for making a claim about the likelihood of some state of affairs (Aijmer 1980: 11). Evidentiality and epistemic modality seem to be conceptually different, since the former "refers to the reasoning processes that lead to a proposition" and the latter "evaluates the likelihood that this proposition is true", yet they are often seen as overlapping concepts (Cornille 2009: 47). As Plungian (2001: 354) suggests, "an evidential supplement can always be seen in an epistemic marker", which can be noticed in academic writing where phrases such as *we show that* clearly involve reference to the source of information. Such correlation between the two categories has been also suggested by Palmer (1986: 51), who argues that epistemic modality "should include

evidentials such as 'hearsay' or 'report' (the quotative) or the evidence of the senses". Based on this assumption, he made the distinction between evidentials and judgements, which was later developed by Hyland (1998) within the framework of hedging theory and applied to the taxonomy of ELVs.

According to Hyland (1998: 119-120), ELVs "represent the most transparent means of coding the subjectivity of the epistemic source and are generally used to hedge either commitment or assertiveness […] epistemic verbs therefore mark both the mode of knowing and its source". Hence, he proposes the distinction between judgement and evidential verbs (Hyland 1998: 120-129). The former specify the degree of commitment to claims, while the latter express the justification of the evidence required to support these claims. Judgement verbs are further divided into speculative, which mark claims as subjective opinions (e.g. *propose*), and deductive, which present claims as logical conclusions (*infer*). Evidential verbs comprise quotatives, which refer to hearsay or cited information (*claim*); sensory verbs, which refer to the writer's perceptions of senses (*observe*); and rationalising narrators, which match evidence to goals (*seek*). It should be noted that some ELVs fall into more than one category. For example, the verb *indicate* expresses a speculative judgement in *it has been indicated that*, but provides quotative evidence in *Jones (1997) indicated that*. It may also have a non-epistemic reading, as in *the watch indicates time and date*. Therefore, each occurrence of ELVs needs to be interpreted in its context of use and with regard to what the literature on ELVs suggests. Yet, even in the latter case, the analysis of ELVs may involve some bias, since, for instance, Marcinkowski (2018) considers *data/study/analysis/result show(s)* as epistemic but *Figure shows* as non-epistemic, whereas Pérez-Llantada (2010) or De Waard and Pander Maat (2012: 50) classify the latter phrase as epistemic evaluation involving an "explicit mention of […] current paper as source" of knowledge.

3. Data and methodology

The study is based on two corpora of English-language economics research articles (RAs) published between 2018–2020. The Anglophone corpus (ANG) comprises 40 RAs (360,341 words) by Anglophone authors, whose native-like command of English was confirmed by checking their nationality and/or affiliation to a British or American institution. These texts appeared in four high impact international journals: *Journal of Accounting and Economics, Journal of Economics and Business, Journal of Monetary Economics,* and *The Economic Journal.* The Polish corpus (POL) comprises 40 RAs (164,323 words) by Polish[1] authors selected from four Poland-based journals indexed by ERIH Plus, Index Copernicus and/or CEJSH: *Contemporary Economics*, *Ekonomia XXI Wieku*, *Optimum: Economic Studies*, and *Studia Ekonomiczne: Zeszyty Naukowe AE w Katowicach.*

Prior to inclusion in the corpora, the articles were stripped of abstracts, footers, longer in-text citations, bibliographies, complex mathematical formulas and equations, tables and figures, and then converted to plain-text format. Subsequently, they were segmented into four rhetorical sections: Introduction, Methods, Results and Discussion, Conclusion, which were clearly identifiable by their headings. Each rhetorical section serves a distinct discourse function, which is likely to influence the authors' selection of ELVs. Results and Discussion were coded together, as they usually overlapped, which is not atypical, since "the division between these two sections is not rigid" and thus the Results section sometimes "serves some of the roles of Discussion section" (Brett 1994: 51, 56).

WordSmith Tools 6.0 (Scott 2012) was used to determine (1) the frequency, (2) the prominence, (3) the distribution across RAs sections, and (4) the phraseological behaviour of 30 distinct

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[1] It should be noted that some of the articles might have not been originally written in English but rather translated by a third party from Polish. Yet, this was not explicitly stated in any of the texts.

ELVs in the selected corpora of academic written English. The target items were selected based on Hyland's (1998: 119-129) taxonomy of ELVs, with an additional consultation of Pérez-Llantada (2010: 26), who studied ELVs in biomedical articles by Anglophone and Spanish scholars, and Dontcheva-Navratilova (2018: 158), who focused on linguistics and economics papers by Anglophone and Czech academics. After excluding certain infrequent verbs (i.e. *prompt*, *suspect*, *presume*, *speculate*, *deduce*), the following ELVs were subjected to analysis:

(a) Judgement verbs:
  – speculative: *argue*, *assume*, *believe*, *consider*, *expect*, *imply*, *indicate*, *predict*, *propose*, *suggest*,
  – deductive: *calculate*, *conclude*, *demonstrate*, *estimate*, *infer*, *suppose*;
(b) Evidential verbs:
  – quotative: *argue*, *claim*, *indicate*, *note*, *propose*, *report*, *show*, *suggest*,
  – sensory: *appear*, *notice*, *observe*, *seem*,
  – narrators: *seek*, *attempt*.

To enable comparison of the results, both across the corpora and with previously reported data, raw frequencies were normalized by 10,000 words and submitted to a chi-square test to evaluate the significance of potential differences (reported at p<0.05 level). All statistics were calculated using Jeffreys' Amazing Statistics Program (JASP). A manual study of concordance lines for the search ELVs was performed to check their epistemic meaning and phraseological behaviour.

4. Results and discussion

4.1. Overall frequency

4,865 target items were identified in the investigated corpora. As Table 1 illustrates, the total frequency of ELVs is significantly higher in the ANG than in the POL (p<.001), indicating that the

Anglophone writers used more ELVs than the Polish writers. This finding is consistent with previous studies (e.g. Dontcheva-Navratilova 2018) and suggests that Polish academics are closer to the German-based intellectual culture, that is, reader-responsible and contemplative rather than marked by clarity of exposition (Duszak 1994). Another reason may be that non-native writers may find it problematic to express "commitment and detachment to their propositions" and fail to "hedge statements adequately" (Hyland 1995: 39).

The rate of ELVs in the corpora is comparable to the 74.6 reported for English-language economics RAs in Varttala (2001: 126) and to that reported in Dontcheva-Navratilova (2018: 159), both for the Anglophone (66.6) and non-Anglophone texts (55.3). Also, it is higher than the rates observed for such hard science disciplines as biochemistry (39.9) reported in Hyland (1998: 126) or technology (39.0) and medicine (49.9) reported in Varttala (2001: 126). León (2006: 219) argues that this is not unexpected, since ELV frequencies "are lowest in the physical sciences, slightly higher in biological science, considerably higher in the humanities and highest in the social sciences". This high incidence of ELVs in economics articles could be attributed to the nature of the discipline, which rests on somewhat tentative theoretical foundations compared with the rigorous empiricism of the hard sciences (Varttala 2001). Therefore, its authors need to involve themselves in the art of argumentation so as to direct their readers towards the intended interpretations of economic processes. ELVs prove very helpful in this regard, since they "allow writers to express propositions with greater precision in areas often characterized by reformulation and reinterpretation" (Hyland 1995: 34).

Table 1
Overall frequency of ELV types in the corpora

Corpus		ANG		POL		Statistical test		
Type of ELV		no	n/ 10,000	no	n/ 10,000	x^2(1)	P value p<0.05	Size effect d
Judgement		2,155	58.8	628	38.2	98.298	<.001	0.38
	Speculative	1,535	42.6	454	27.6	46.132	<.001	0.30
	Deductive	620	17.2	174	10.6	32.175	<.001	0.41
Evidential		1,587	44.0	495	30.1	54.552	<.001	0.32
	Quotative	1,290	35.8	258	15.7	153.496	<.001	0.66
	Sensory	264	7.3	212	12.9	38.008	<.001	0.58
	Narrators	33	0.9	25	1.5	3.216	.073*	0.48
Total		3,742	103.8	1,123	68.3	151.838	<.001	0.35

Regarding the variety in the frequencies of different ELV types, judgement is definitely preferred over evidence by both Anglophone (58.8 vs 44.0, x^2(1)=86.217, p<.001, d=0.30) and Polish (38.2 vs 30.1, x^2(1)=15.752, p<.001, d=0.23) academics. Yet, the two types of ELVs are used significantly more frequently by the former than by the latter group of scholars (judgement: 58.8 vs 38.2, evidence: 44.0 vs 30.1). The tendency of economics authors towards being judgemental may be explained by the fact that economics as a science is dubitative about its pro-positions, the feasibility of which is often limited by "the impossibility of controlled experiments" (Klamer 1990: 136). Therefore, the transmission of disciplinary knowledge involves more ambiguities and equivocal, rather than categorical, claims. However, considering that the average difference between the raw frequencies of judgement and evidential verbs is larger in the Anglophone (diff.: 14.8) than in the Polish (diff.: 8.1) texts, native writers of English could have developed greater awareness of this discipline-specific rhetorical convention than their non-native counterparts.

There are also significant cross-cultural differences in the frequencies of the different subtypes of judgement and evidential verbs. In the category of judgement, speculative judgements

are chosen over deductive by both Anglophone (42.6 vs 17.2, x^2(1)=388.503, p<.001, d=0.93) and Polish writers (27.6 vs 10.6, 124.841, p<.001, d=0.99). Yet, the frequency of speculative and deductive verbs is significantly higher in the ANG (p<.001). The preference for speculative judgements may be due to the fact that economics researchers more often "express conjectures about a subject without firm evidence" than deductive "inferences from observable data" (Vass Ward 2015: 120). The writers' awareness that the information they are presenting is an opinion rather than a fact is, however, greater among the Anglophone scholars, as the average difference between the raw frequencies of speculative and deductive verbs is larger in the ANG (diff.: 25.4) than in the POL (diff.: 17.0).

In the category of evidence, quotative verbs are chosen over sensory by Anglophone (35.8 vs 7.3, x^2(1)=677.398, p<.001, d=1.75) and Polish writers (15.7 vs 12.9, x^2(1)=4.502, p=.034, d=0.19), and narrators are the least popular. Still, only the frequency of quotative verbs is significantly higher in the ANG (p<.001), whereas in the POL sensory verbs are more frequent (p<.001) as are narrators, though statistical significance was not reached by the latter difference (p=.073). The preponderance of quotative verbs in the Anglophone articles suggests that their authors show deep concern for specifying and acknowledging previous findings, which are likely to add weight to their own data. In turn, the higher frequency of sensory verbs in the Polish articles may indicate an inclination towards presenting information based on the author's senses, whereas the tendency towards using narrators may reflect the desire to "express modesty in undertaking the study and caution in anticipating its degree of success" (Hyland 1998: 125).

4.2. Most frequent ELVs

Table 2 shows the most frequent ELVs in the ANG and POL corpora, highlighting those with the relative frequency of n/10,000 > 1.0. Many of the listed verbs are also reported as prominent

in other studies focusing on economics articles. Regarding the Anglophone texts, judgemental *suggest, imply, predict, indicate, expect* and *estimate* as well as evidential *seem, appear, show, report* and *suggest* are mentioned among the top frequency items by Dontcheva-Navratilova (2018) and/or Varttala (2001). Similarly, in line with Dontcheva-Navratilova's (2018) findings is the increased frequency of *indicate, consider, calculate, assume, conclude, show, observe, seem* and *estimate* in economics papers by Czech scholars writing in English.

It is interesting to note that the economics authors examined in the study employed a wide variety of frequent ELVs: 18 in the ANG and 14 in the POL of the 30 items investigated. This finding is consistent with that of Varttala (2001), who also reported the use of a great diversity of ELVs in her economics corpus. A possible explanation for this might be the highly rhetorical nature of economics discourse, which largely "involves the art of argument" that assists writers in overcoming imprecision, dealing with theoretical uncertainties and making their claims more persuasive (Klamer 1990: 152).

Regarding variation in the expression of judgement, Anglophone writers use a wider array of frequent speculative verbs than their non-native counterparts (8 vs 7). Particularly frequent are *suggest* (14.3 vs 1.6, $x^2(1)$=176.363, p<.001, *d*=1.38), *expect* (6.5 vs 1.2, $x^2(1)$= $X^2(1)$=63.38, p<.001, *d*=1.15), *imply* (3.4 vs 1.3, $x^2(1)$= 16.486, p<.001, *d*=0.71) and *predict* (2.7 vs 1.2, $x^2(1)$=11.351, p<.001, *d*=0.65). Polish researchers show a definite preference for *indicate* (8.9 vs 4.9, $x^2(1)$= 28.573, p<.001, *d*=0.62) and *assume* (3.5 vs 2.4, $x^2(1)$= 4.459, p=.035, *d*=0.35). Dontcheva-Navratilova (2018: 160) attributes the frequent use of *suggest* by Anglophone authors to the willingness with which they refer to previous research, which she considers as the manifestation of the dialogic character of their discourse that allows differing viewpoints. In the group of deductive verbs, Anglophone authors rely mainly on *estimate* (10.0 vs 1.1, $x^2(1)$= 124.443, p<.001, *d*=1.39), which corroborates the findings of Fløttum et al. (2006) and Dontcheva-Navratilova (2018). Polish

authors prefer *calculate* (4.9 vs 3.2, $x^2(1)$=8.993, p=.003, *d*=0.43), *conclude* and *demonstrate*, though, in the case of the latter two verbs, the differences were not statistically significant. The increased frequencies of *estimate* and *calculate* in the investigated texts may result from the nature of disciplinary knowledge in economics, in the case of which "the validity of the claim […] is typically set forth with a basis in the output of a mathematical model" that often involves estimations, calculations and the like (Dahl 2009: 384). Cross-cultural differences are particularly substantial for three speculative verbs: *argue* and *believe*, which are prominent in the ANG (1.4 each), as well as *consider*, which is prominent in the POL (7.7). Dontcheva-Navratilova (2018: 160) explains that the increased popularity of *argue* among Anglophone authors might be due to the fact that the verb "conveys a stronger feeling of authorial presence", which correlates with the more direct Anglo-American style of writing (Duszak 1994).

**Table 2**

Most frequent ELVs in the corpora (n/10,000>1.0)

Type of ELV	ENG	POL
Judgement	suggest (14.3) estimate (10.0) expect (6.5) indicate (4.9) imply (3.4) calculate (3.2) predict (2.7) assume (2.4) conclude (1.8) argue (1.4) believe (1.4) demonstrate (1.3)	indicate (8.9) consider (7.7) calculate (4.9) assume (3.5) conclude (2.3) demonstrate (1.8) suggest (1.6) imply (1.3) expect (1.2) predict (1.2) estimate (1.1)
Evidential	show (20.8) report (12.4) observe (4.0) appear (1.6) seem (1.4) suggest (1.1)	show (13.0) observe (8.0) seem (2.9)

Significant differences are also found in the expression of evidence, with Anglophone writers employing six, and Polish writers only three, different frequent verbs in this category, only one of which is quotative. The limited presence of frequent quotative verbs in the Polish texts may suggest their authors' limited "openness to multiple voices", which, as Kowalski (2013: 4) claims, is a feature of the Anglo-Saxon style of writing. Cross-cultural differences are especially noticeable for the quotative verbs *report* and *suggest* as well as for the sensory verb *appear*, all of which are prominent in the ANG. Similarly, the quotative *show*, the most frequent evidential verb in both corpora, is definitely more popular among Anglophone writers (20.8 vs 13.0, x^2(1)=36.349, p<.001, *d*=0.39), whereas Polish writers have an inclination for the sensory verbs *observe* (8.0 vs 4.0, x^2(1)=32.673, p<.001, *d*=0.73) and *seem* (2.9 vs 1.4, x^2(1)=11.849, p<.001, *d*=0.74). The increased frequency of *show* in economics discourse, also reported in Fløttum et al. (2006), may be partly explained by the potential it offers to refer to "real-world activities", helping researchers to represent "knowledge as proceeding from impersonal lab activities rather than from" their own interpretations, which is a feature that economics shares with the hard sciences (Hyland 2008: 554). Another interesting finding is that the verbs *appear* and *seem* were both prominent in the Anglophone texts, but only the latter was frequent in the Polish texts. As Varttala (2001: 124) explains, although the two verbs can be used interchangeably, they are stylistically different, since *appear* is considered more formal than *seem*. Anglophone authors seem to be aware that the nature of economics tends to involve a degree of flexibility and informality in its mode of expression and thus it allows them to use less formal devices. The question, however, remains whether Polish authors are actually aware of this stylistic convention or if they choose *seem*, because they do not know that their first choice in academic discourse should rather be *appear*. Another issue that emerged from the data was the infrequent use of evidential verbs categorized as narrators, though in the POL there were 17 tokens of *attempt attested*,

which corresponds to the normalized frequency of 1.03. Narrators "create a context which removes responsibility from the researcher for the degree of success achieved in meeting" the goals of the research (Hyland 1998: 125), which correlates with an inherent feature of Polish academic culture, namely, academic modesty that discourages self-promotion and assertiveness (Donesch-Jeżo 2011).

4.3. Frequencies of ELVs across the rhetorical sections

As shown in Figure 1, in both corpora the presence of ELVs scores the highest in the combined Results and Discussion section, followed by Introduction, then Methods and finally Conclusion, which scores the lowest frequencies of ELVs. The preponderance of ELVs in Discussions (Pérez-Llantada 2010) or Results (Dontcheva-Navratilova 2018), or in the combined Results and Discussion (Hyland 1998) has also been reported in other studies. This could be attributed to the functions that these parts of the RA serve. In the Results section, writers report their findings, which are subsequently interpreted in the Discussion section. Since researchers should avoid over-generalizations and absolute statements, they use ELVs to ensure that their evaluation of new knowledge claims is presented with due precision. Significant cross-cultural differences are, however, found in the rates of ELVs in the distinct rhetorical sections, with Conclusion being the only section where the rate of ELVs is higher in the Polish texts (8.1 vs 5.4, $x^2(1)=12.858$, p<.001, d=0.40). A possible explanation for this might be that Polish writers have a tendency towards digressiveness and elaboration, and therefore their Conclusions may not simply summarize the main results but may also involve the repetition of previously expressed propositions. The Anglophone texts score higher rates of ELVs in Introductions (28.6 vs 22.9, $x^2(1)=13.448$, p<.001, d=0.19), Methods (22.5 vs 8.3, $x^2(1)=124.456$, p<.001, d=0.77), and the combined Results and Discussion section (47.4 vs 28.9, $x^2(1)=91.764$, p<.001, d=0.41).
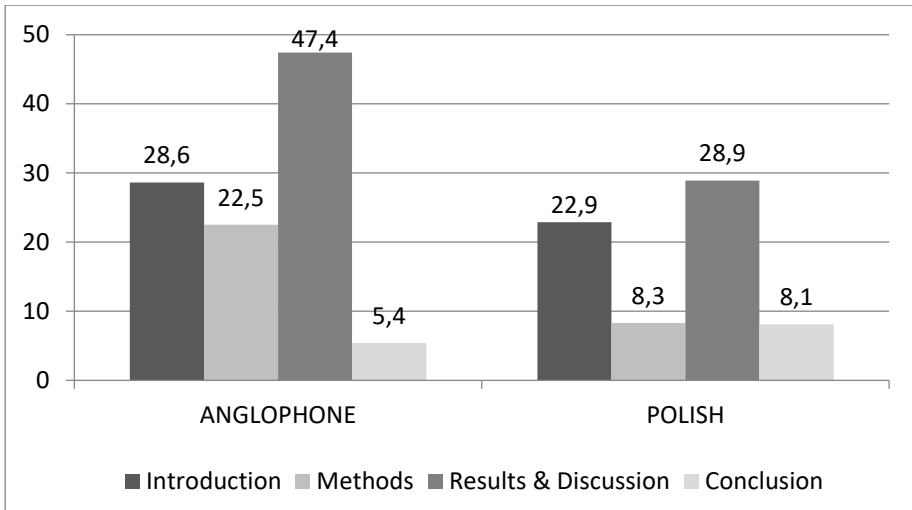
Figure 1
Distribution of ELVs across rhetorical sections

Another difference is that in the Polish articles, ELVs occur with comparably low frequencies in Methods and Conclusions and with comparably high frequencies in Introductions and the combined Results and Discussion. In the Anglophone articles, the frequencies of ELVs are comparable and relatively high in the first two sections, peak sharply in the combined Results and Discussion, and are the lowest in Conclusion.

Table 3 presents the results obtained from the analysis of the interplay between judgement and evidence in the distinct rhetorical sections. The average difference between the raw frequencies of the two ELV types indicates that Polish writers maintain more balance between judgement and evidentiality in the Introduction (diff. – POL: 2.9 vs ANG: 4.8), Methods (diff. – POL: 2.7 vs ANG: 3.5), combined Results and Discussion (diff. – POL: 2.5 vs ANG: 6.1) as well as Conclusion (diff. – POL: 0.1 vs ANG: 1.2). Nevertheless, the closing section of economics papers is the most balanced one in terms of judgement versus evidence frequencies in both corpora.

Another interesting finding is that the range of judgement frequencies is more significant in the Anglophone (from a low of

3.3 in Conclusions to a high of 26.7 in combined Results and Discussion) than in the Polish (from a low of 4.1 in Conclusions to a high of 15.7 in combined Results and Discussion) texts, and it exceeds the range of evidence in both corpora. Similarly, the range of evidence frequencies is wider in the Anglophone (from a low of 2.1 in Conclusions to a high of 20.6 in combined Results and Discussion) than in the Polish (from a low of 2.8 in Methods to a high of 13.2 in combined Results and Discussion) texts. It thus seems that Anglophone writers consider the decisions concerned with providing more judgement or more evidence in the specific research article sections to be important mechanisms underlying effective communication in economics papers. The relative neglect of this rhetorical convention on the part of Polish writers may be due to their limited knowledge of disciplinary variation in academic persuasion, which is rarely highlighted in academic English courses (Dontcheva-Navratilova 2018).

What stands out in Table 3 is the preference for judgement over evidentiality in all RA sections in both corpora. This constitutes a marked trend in Introductions, both in the ANG (16.7 vs 11.9, x^2(1)=28.722, p<.001, d=0.33) and POL (12.9 vs 10.0, x^2(1)=6.128, p=.013, d=0.25), and in Methods, both in the ANG (13.0 vs 9.5, x^2(1)=20.519, p<.001, d=0.32) and POL (5.5 vs 2.8, x^2(1)=14.781, p<.001, d=0.69). In the combined Results and Discussion section, this trend is statistically significant only in the ANG (26.8 vs 20.6, x^2(1)=28.612, p<.001, d=0.26), which is also the case in Conclusions (3.3 vs 2.1, x^2(1)=10.907, p<.001, d=0.48). Statistically significant cross-cultural differences are also observed in the frequencies of judgement and evidential verbs, which are significantly higher in the Anglophone Introductions (though statistical significance was not reached for evidential verbs: p=.060), Methods and the combined Results and Discussion. Conversely, in Conclusions the frequencies of both ELV types are higher in the Polish texts (though statistical significance was not reached for judgement verbs: p=.211), which, as explained above, may be due to the more digressive and elaborate style of Polish writers.

Table 3
Frequency of judgement and evidential verbs
across rhetorical sections

Corpus		ANG		POL		Statistical test		
RA section	Type of ELV	no	n/ 10,000	no	n/ 10,000	$x^2(1)$	P value $p<0.05$	Size effect d
Intro	Judgement	601	16.7	212	12.9	10.134	.001	0.22
	Evidential	429	11.9	164	10.0	3.528	.060*	0.15
Meth.	Judgement	470	13.0	91	5.5	58.708	<.001	0.60
	Evidential	341	9.5	46	2.8	67.011	<.001	0.91
Res & Disc	Judgement	964	26.8	258	15.7	58.596	<.001	0.44
	Evidential	743	20.6	217	13.2	33.444	<.001	0.38
Concl.	Judgement	120	3.3	67	4.1	1.564	.211*	0.18
	Evidential	74	2.1	66	4.0	15.563	<.001	0.70

What is not shown in Table 3, but was observed during the analysis, is the regularity with which in all examined RA sections both groups of writers chose speculative over deductive judgements as well as quotative over sensory verbs, and both of these two over narrators. The preference for speculative judgements might be related to those features of economics discourse which the discipline shares with the humanities, such as interpretive and discursive approaches to new knowledge claims, which cannot be always taken for granted because of the shortage of empirical data. In turn, the frequent use of quotative verbs may be linked with the fact that in the social sciences "analysing and synthesizing information from multiple sources is important",

as it adds weight to the introspective observations of the writer (Hyland 2008: 550).

4.4. **Phraseological behaviour of the most frequent ELVs**

The section presents the recurrent phraseological contexts with embedded frequent ELVs which were identified in the distinct RAs sections of the ANG and POL texts.

In Introductions, Anglophone writers establish their research territory with *suggest(s) that* preceded by research-related abstract rhetors (e.g. *results, findings, evidence, studies, analyses, estimates, research*). Polish authors prefer *studies indicate that*, which was not attested in the ANG, where *indicate* usually occurs in *results indicate that*. In the POL, aspects of previous studies are presented through the passive phrase *(is/can be/are) considered (as/to be)* (e.g. *In accordance with the classical classification suggested by E. Rosset (1959, 1971) population is considered as young when [...]*). Both groups of writers introduce earlier research using *imply(ies) that* (e.g. *the small scale of these programs implies that, the study implies that*) and *demonstrate(s)/ed that* (e.g. *studies demonstrated that*). Anglophone writers state the purpose and nature of research through the passive phrase *is/are estimated* (e.g. *menu costs are estimated using a multiproduct firm model*), the infinitive *to estimate* followed by noun phrases specifying the factor that will be judged (e.g. *the degree of, the direct impact, the probability, the total number, the costs*) and the self-mention phrases *we (might also/would) expect (that)* and *I expect (that/to find)* (e.g. *I expect to find a relation between*). Similar meanings are conveyed through *are/is/was calculated* and *I/we calculate*, both of which were found in the ANG and POL corpora. Both groups of writers also rely on the verb *assume. Prior studies assume that* and *a theoretical model which assumes that* in the ANG as well as *the theory assumes that* in the POL which convey judgements of own or others' research. Additionally, Anglo-phone writers state their hypothesis through the self-mention phrase

I/we argue/predict that (e.g. *In this paper, I argue that we can provide*).

Evidential *show(s) that* is used to establish a research territory by referring to other scholars and their studies. Thus, it is preceded either by specific surnames (e.g. *Luce and Suppes (1965) show that*) or by abstract rhetors (e.g. *research, analysis, studies, result(s)*). *Is/was/has been/can be observed* is used to introduce outcomes of previous studies (e.g. *there can be observed several new trends in consumer behaviour*). In turn, *I/we observe (that)* assists Anglophone authors in sharing their findings and in the occupying the niche (e.g. *in our data, we observe that transfers*). In both corpora, own and previous research is cautiously validated through *seem(s) to (be/verb)*, which in the ANG has an alternative form that comprises the verb *appear*. Anglophone authors also willingly use the quotative phrases *[author(s)] suggest(ed/ing/s) (that), [authors] report* and *as reported by [author(s)]*.

In Methods, Anglophone writers describe their procedures and tools through the self-mention phrases *I/we (also) estimate* (e.g. *We also estimate financial constraints using the size and age (SA) index*) and *I/we expect* (e.g. *We expect a negative reaction to this rule*), as well as through *imply(ies) that* preceded by such abstract rhetors as *equation(s), example, tax rate, coefficient*. Explanations as to how the study was conducted are also willingly expressed through the self-mention phrase *I/we assume that* (e.g. *we assume that amenities are additive*). Polish authors prefer to passivise the justifications of their methodological decisions: *(is/are//can/may/should be) considered* and *(is/was/are/were) calculated* (e.g. *the following variables should be considered as having an inhibiting effect, the descriptive statistics were calculated for a Bayesian model*).

Regarding the expression of evidence, both groups of writers show a clear preference for the verb *show*, which is used metadiscursively to refer to visual information. In the ANG, the most frequent phrases are *Figure/Table/Panel/equation show(s)/ have shown (that)* and *as shown in* followed by abstract rhetors. In

the POL, the most prominent are *are shown in Table* and *Table shows that*. In turn, *results/analysis/studies show that* serves to provide background information about the study, similarly as *[author(s)] show(s) that*, which was attested only in the ANG texts, where the mentioned phrases are also formed with the verb *report*. In both corpora, writers rely on *is/are observed*, though only Anglophone writers describe the details of their study through the self-mention phrase *I/we observe* (e.g. *we observe no differences on our key outcomes*).

In the combined Results and Discussion sections, Anglophone writers tend to precede ELVs with first person pronouns, whereas Polish writers use their passive forms. The most prominent judgement ELVs used to report and interpret findings include the verbs *calculate, conclude, demonstrate* and *indicate*, all of which occur in co-texts similar to the ones discussed above (e.g. *RMSE is calculated for all pricing models, we can conclude that our primary results are, results demonstrate that, coefficient indicates that*). The latter comment is also relevant for *consider* in the POL as well as *estimate* and *expect* in the ANG. The same can be said about the expression of evidence, which strongly relies on the verbs *show* (e.g. *results/study show(s) that, are shown in figure/table, as shown in column/appendix, Bansal and Yaron (2004) show that*), *observe* (e.g. *we observe that these transfers, [...], increase in response to the treatment*) and *seem* (e.g. *share repurchases seem to be less substitutable*). Additionally, Anglophone writers willingly use the verbs *report* (e.g. *we report the coefficient C, Dou (2017) reports a decrease of 0.47 seats*) and *appear* (e.g. *the effect appears to be economically significant*).

In Conclusions, the typical co-texts of frequent ELVs are comparable to those found in the other rhetorical sections. To summarize and explain the significance of the main research findings, Polish writers mainly rely on the verbs *consider* (e.g. *the research is considered to be a pilot study*) and *indicate* (e.g. *the obtained results indicate that there are quite significant differences in*), whereas Anglophone writers prefer *suggest* (e.g. *my*

analysis suggests the need for more research). In both corpora, frequent evidential verbs are *show* (e.g. *this study shows that voter outreach efforts do not need to be*) and *observe* (e.g. *the effect we observe in our study*), though Polish authors also use *seem* (e.g. *it seems that, seem to (verb/be)*).

It emerges from the analysis that Anglophone authors explicitly indicate personal commitment to their claims, which is manifested by the increasing frequency with which they precede ELVs by self-mention. This finding corroborates previous research into the use of ELVs by native speakers of English (e.g. Dontcheva-Navratilova 2018, Pérez-Llantada 2010). As Duszak (1997: 14) explains, "direct, assertive, and explicit verbal styles" are typical of Western cultures and therefore traces of those individualistic tendencies are also found their writing. The same, however, cannot be said about Polish authors who prefer passive forms which allow them to distance themselves from their propositions.

5. Conclusions

This article has explored cross-cultural variation in the frequency, prominence, distribution and phraseological behaviour of selected epistemic lexical verbs in different sections of English-language economics research articles by Polish and Anglophone scholars. The results demonstrate that Anglophone writers use significantly more ELVs than Polish writers do, although both groups prefer judgement over evidence and most frequently use ELVs in the combined Results and Discussion section. Also, both groups show a preference for speculative and quotative verb types and employ a wide variety of frequent ELVs. Seemingly, these convergent rhetorical choices result from the nature of the disciplinary knowledge development practices in economics, yet they are more evident in the Anglophone articles. Important cross-cultural differences are, however, observed as regards the verbs preferred, their frequency rates and recurrent phraseology across the research article sections. The latter is

particularly manifest in the consistency with which Anglophone authors combine ELVs with self-mention and Polish authors choose passive forms.

Overall, cultural affiliation definitely affects the use of ELVs in academic written English, which may be attributed to the writers' dissimilar national intellectual styles and possibly also to insufficient pragmatic competence in English of non-Anglophone scholars. Therefore, to assist junior academics in improving the presentation of new knowledge claims to their disciplinary community, further studies on ELVs could look at the variation in their syntactic properties or in the distribution of active and passive forms.

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