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"AT THE END OF THIS STUDY, SEE THE FOLLOWING DISCUSSION": ENDOPHORIC MARKERS IN ESTONIAN, LATVIAN, AND LITHUANIAN RESEARCH ARTICLES

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Abstract. This study focuses on the metadiscourse category of endophoric markers in Estonian, Latvian, and Lithuanian linguistics research articles. The aim is to investigate whether language, writing tradition, or disciplinary conventions play a more significant role in the variation of these metadiscourse markers across the three languages. Furthermore, the study seeks to determine whether the use of endophoric markers might reflect distinct writing traditions in the Baltic states. For the study, we collected corpora from the key linguistics journals in Estonian, Latvian, and Lithuanian. Comparison of different types of endophoric markers, including reviewing and previewing markers, visuals, and references to the whole text, reveals a number of language- and discipline-specific differences in the distributional properties and functions of these metadiscourse markers. This cross-linguistic variation of endophorics might be attributed to different writing styles or writing traditions in the Baltic states.*

Keywords: metadiscourse, academic texts, Estonian, Latvian, Lithuanian

1. Introduction

The field of (academic) writing research has rapidly developed over the recent decades. While the discipline started as a mostly English-centred study, the research interests now span a more varied range of languages. Furthermore, besides explaining the cognitive and social processes underlying the production of written artefacts, and the learning and teaching aspects of writing, research is paying more and more attention to the characteristics of written texts themselves. One central notion

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that has been used to describe the organisation and content of academic texts is metadiscourse (henceforth MD), which relates to different linguistic expressions that mark how the writer and the reader perceive, or are expected to perceive, the propositional content of the text (Vande Kopple 1985, Mauranen 1993, Hyland 2005). Writers tend to address the needs of a reader, and guide and engage the reader through the discourse, by using various types of MD markers.

Probably the most widely used approach to MD was introduced by Hyland (2005), who has developed the interpersonal model of MD (see also Hyland, Tse 2004, Hyland, Jiang 2022). Within this model, Hyland distinguishes the interactive and interactional dimensions of MD. The interactive dimension relates to organising the discourse and anticipating the readers' knowledge, and includes five categories: transitions, frame markers, endophoric markers, evidentials, and code glosses. The interactional dimension, which contains the categories of hedges, boosters, attitude markers, self-mentions, and engagement markers, represents the writer's attitudes and engagement in relation to the expressed arguments, and involves the reader in the argument (Hyland, Tse 2004). For example, the phrase *Smith (2020) states that* is an instance of the category evidential from the interactive dimension, which refers to some information from another text, and relates to the reader's or writer's knowledge base. Another example, the phrase *it is possible that*, expresses the author's hesitation about the presented argument, and can therefore be categorised as hedge.

MD markers in academic texts have been widely addressed across languages, often by comparing them to English, for example in Norwegian and French (Fløttum et al. 2006), Spanish (Mur-Dueñas 2010, 2011), Chinese (e.g., Mu et al. 2015), Lithuanian (e.g., Šinkūnienė 2018, 2019), Italian (Donadio, Passariello 2022), etc. However, the most frequently analysed languages are 'big' languages, with English, Persian, Chinese, and Spanish as the most analysed ones (Hyland 2017). Furthermore, the focus has often been on the Anglo-American writing tradition, and on the ways speakers of other languages write in English (e.g., Ädel 2006, Hong, Cao 2014).

With this study we highlight the importance of smaller academic languages and less studied writing traditions.[1] We address the importance of extending the study of 'universal' text features to less studied smaller languages. To do so, we focus on three areally and historically close, but typologically and culturally diverse languages of Baltic countries: Estonian (Est), Latvian (Lat), and Lithuanian (Lit). Importantly, while the usage patterns of MD markers in Lit[2] are better understood (e.g., Šinkūnienė 2016, 2017, 2019, Ruskan, Maslauskienė 2023), the workings of MD in Est and Lat have not been closely examined.[3]

Due to the space restrictions, we have chosen to concentrate on one specific category of interactive MD markers here, namely endophoric markers. In the MD model, endophoric markers are understood as metatextual elements that refer to parts of the text, and whose function is to facilitate the reader's comprehension of authorial argumentation (Hyland 2005, Fløttum et al. 2006, Burneikaitė 2009,

[1] For a more detailed discussion of the notion of writing tradition, see Leijen et al. (Forthcoming).

[2] The overall system of MD features in Lithuanian research articles has been provided in Ruskan, Maslauskienė (2023).

[3] For Estonian, though, the concept of MD has been used in Reinsalu's (2017) analysis of citizens' complaint letters to a city government. The overall system of MD features in Estonian research articles has been introduced in Hint et al. (Forthcoming).

Mur-Dueñas 2011). In Est, Lat, and Lit, endophoric markers as a category of MD markers have not been systematically analysed. However, serving as crucial tools for authors to structure arguments and guide readers, endophorics are essential for comprehending language- and culture-specific conventions in academic texts. Their understanding promotes linguistic diversity in academia and preserves distinct language-specific patterns.

This study sets out to determine whether the use of endophoric markers in research articles (RAs) throws light on writing traditions in the three Baltic states, specifically exploring the distribution and use of these markers in the field of linguistics across three languages. The aim is to explore whether language and/or writing tradition factors, or rather, disciplinary conventions, play a more significant role in the choice of endophoric markers. Given that endophoric markers as a category have gained less attention in MD studies, this research also seeks to offer new insights into the analysis of the MD model by thoroughly explaining the structure and resources of endophoric markers in RAs.

2. Approaches to endophoric markers in the literature

Throughout the MD research, researchers have concentrated on various conceptions of MD, and have focused on different aspects of the phenomenon (e.g., Hyland 2005 vs. Mauranen 1993). Therefore, we also see different approaches to classifying endophoric markers. In Hyland's (2005: 103) classification, endophoric markers are said to "refer readers to sections, illustrations, arguments and so on" and his examples suggest a four-way classification of endophorics: 1) markers of examples, 2) markers of text visuals (graphs, tables, figures), 3) reviewing markers that refer to already presented information, and 4) previewing markers referring to the text yet to come.

A similar classification is offered by Mur-Dueñas (2011: 3070), who categorises endophoric markers into "anaphoric or cataphoric references to other parts of the RA". That is, anaphoric references are to be understood as reviewing markers and cataphoric references as previewing markers. Mur-Dueñas also includes visual elements in her work as a separate category. Importantly, although references to such elements can be either pre- or reviewing, visuals are analysed independently of this distinction.

A more structural classification of endophorics is given by Burneikaitė (2009) in a study about endophorics in MA theses written by native English speakers vs. Lithuanian learners of English. Burneikaitė categorises endophorics according to linearity (linear vs. non-linear) or scope (thesis level, chapter/section level, sentence level, vague markers). Endophoric markers that refer to parts of the text are classified as linear, whereas those referring to visuals are regarded as non-linear. The scope of endophorics differs according to the level they refer to (whole text, chapter, sentence, vague). Importantly, Burneikaitė (2009) stresses the necessity of analysing the markers in the context of their referential sphere, and shows the tight connection that referential properties have with MD studies.

In yet another approach, Fløttum et al. (2006) refer to endophorics as 'metatextual' elements, such as *article*, *paper*, *(sub)section*, *above*, *now*, *below*, which, except for *article* and *paper*, "help navigate the text". They provide almost a closed set of metatextual items, and – in contrast to Hyland (2005) or Burneikaitė (2009) – exclude

such elements as *chapter*, *part*, *figure*, *table*, *example*. Furthermore, although there is a unanimous agreement that endophorics make a link to previous or subsequent parts of the text, only Fløttum et al. (2006) and Burneikaitė (2009) consider references to the whole text as instances of endophoric markers as well.

In earlier research, the use of MD markers, particularly endophoric markers, has sometimes been explained in terms of reader- vs. writer-responsible styles (Fløttum et al. 2006, Mur-Dueñas 2011). The concept of reader vs. writer responsibility has been introduced to represent the level of involvement or effort needed by both the reader and writer in the textual communication process (e.g., Hinds 1987, Magennis 1997). Writer-responsible texts are characterised as clear, well-organised, with transparent transition statements, and action-orientation, whereas reader-responsible texts are said to be ambiguous, exhibit telegraphic statements, loosely connected ideas, and tend to be subject-oriented (Hinds 1987, McCool 2009, MacKenzie 2015). The dichotomy of reader- vs. writer-responsible style resonates well with MD framework, where it is generally agreed that one key aspect of MD is to manifest writer-reader interaction (e.g., Hyland, Tse 2004). In this regard, the higher frequencies of endophoric markers in text have been seen as indicators of the degree of overt reader/writer interaction (Dahl 2004, Fløttum et al. 2006: 213), as well as a reader-responsible culture (Mur-Dueñas 2011: 3072).

In addition to cross-cultural differences, cross-disciplinary variation has also been suggested in connection with the use of endophoric markers. According to Hyland (2005: 157), endophoric markers are most strongly related to hard disciplines, which rely on the use of tables, figures and graphs, and thus must often refer to referents presented nearby in visual elements. This, as Hyland (2005: 157) states, "makes endophorics central to scientific argument, indicating how the writer sees connections between text elements and the argument and readers". In addition, the conventional text structure used within a discipline affects how much a text relies on interactive MD markers. For example, medicine which strongly adheres to the IMRaD structure[4], exhibits lower use of interactive MD markers, whereas economics and linguistics, as disciplines with less regulated text structure, have to connect their arguments more strongly with various interactive MD markers, including endophorics (Dahl 2004, see also Hyland 2005: 142).

3. Data and method

For the present study, we used a self-compiled corpus of research articles in Est, Lat, and Lit (Table 1). The articles, spanning a decade from 2011 to 2021, represent the discipline of linguistics. For each language, we browsed three linguistics journals, except for the Lat corpus, where we had to use four journals due to the limited number of matching articles. We only included articles that were single-authored and written by native speakers. We ensured that not more than one text from the same author was selected to the corpus. We analysed all the texts in their full length but removed all text-parts irrelevant for the MD analysis, that is, abstracts, tables, figures, lists of references, extended quotations, shorter quotations, and language examples.

[4] The IMRaD structure is a common way of organising research texts, which contains four main sections: Introduction, Methods, Results, and Discussion.

Table 1. Description of self-compiled corpora in Estonian, Latvian, and Lithuanian

Sub-corpus	Journals	Total no. of articles (articles from each journal)	Corpus size in words
Estonian	*Eesti Rakenduslingvistika Ühingu aastaraamat* ('Estonian Papers in Applied Linguistics')	21 (7)	89,224
	Emakeele Seltsi aastaraamat ('Yearbook of the Mother Tongue Society')		
	Keel ja Kirjandus ('Language and Literature')		
Latvian	*Baltu Filoloģija* ('Baltic Philology')	30 (5 or 10, depending on the journal)	108,225
	Linguistica Lettica		
	Valoda, nozīme un forma ('Language: Meaning and Form')		
	Vārds un tā pētīšanas aspekti ('The Word: Aspects of Research')		
Lithuanian	*Kalbotyra* ('Linguistics')	30 (10)	135,134
	Lietuvių kalba ('The Lithuanian Language')		
	Taikomoji Kalbotyra ('Applied Linguistics')		

The texts were then close-read, and all MD markers used in the text were included in the study. That is, we did not follow any predetermined list of possible MD markers, but the markers were detected from the texts. Following Hyland's (2005) interpersonal model of MD, we annotated the full paradigm of MD markers. We double-checked approximately 5% of the annotated lines between two native speaker annotators to ensure the consistency between the annotators.[5] Each marker found in the corpus was annotated for several variables, but this study primarily reports on two: 1) type within a category, and 2) text section. Our specific focus here is on the use of endophoric markers.

Combining several earlier approaches of research on endophoric markers (see section 2) we identified four different subcategories of markers, depending on which part of the text the expression refers to: 1) previewing markers, 2) reviewing markers, 3) markers referring to the whole text, and 4) markers referring to various visual elements in the text. As 'previewing markers', we annotated expressions that refer to text yet to come (e.g., *see next section*). 'Reviewing markers' are expressions that refer back to the preceding text (e.g., *see definition above*). Expressions that refer to the text as a complete unit are annotated as 'whole text' markers (e.g., *in this study*). All expressions that refer to visual elements (graphs, tables, figures, etc.) and language examples in the text are collected under the tag 'visuals' (e.g., *in Figure 3*).

The **text section** variable was annotated based on the IMRaD structure of a RA (e.g., Wu 2011, Sollaci, Pereira 2004). However, in most cases, the RAs in our corpus did not adhere to a clear IMRaD structure. Often, there were separate sections for the introduction and the literature review, while the results and discussion sections were occasionally combined into a single section, serving both functions. Therefore, and regardless of the actual section headings in the RAs, we used unified

[5] For a more detailed description of the annotation process, see Hint et al. (Forthcoming).

labels of 'introduction', 'literature review', 'method', 'results and discussion', and 'conclusion'. If a section did not seem to fit into any of these categories (e.g., footnotes, acknowledgements), it was annotated as 'other'. The analysed variables and their values are summarised in Table 2.

Table 2. Annotated variables and their values

Variable	Explanation	Values
Type within a category	A more specific type of the MD marker within one specific category	For endophoric markers: • previewing (e.g., *in the next section*) • reviewing (e.g., *as mentioned above*) • whole text (e.g., *this study*) • visuals • language examples (e.g., *as shown in Example 3*) • markers of visual (text) elements (e.g., *in Figure 2*)
Section	In which section of the RA the marker is used	• introduction • literature review • method • results and discussion • conclusion • other

Data analysis was conducted in two steps. First, for a quantitative overview, we normalised the raw frequencies of endophoric markers in the corpora per 10,000 words and calculated the ratio of endophoric markers within the whole set of MD devices in each language. Second, we present a qualitative overview of the endophoric markers used in RAs, explaining their forms, specific functions, and distribution across different sections of texts in various languages.

4. Results

4.1. Endophoric marker frequencies in Estonian, Latvian, and Lithuanian

Overall, the usage frequencies of endophoric markers in the three languages indicate their highest occurrence in Est articles, followed by Lit, and their lowest frequency in Lat (Table 3).

Table 3. Distribution of endophoric markers in Estonian, Latvian, and Lithuanian

Type	Est			Lat			Lit		
	Raw fr	%	Fr/10,000	Raw fr	%	Fr/10,000	Raw fr	%	Fr/10,000
Visuals: examples	491	47.5	55.0	12	3.5	1.1	232	29.4	17.2
Visuals: other	192	18.6	21.5	226	66.7	20.9	214	27.2	15.8
Reviewing	49	4.7	5.5	41	12.1	3.8	182	23.1	13.5
Previewing	106	10.3	11.9	41	12.1	3.8	106	13.5	7.8
Whole text	196	19.0	22.0	19	5.6	1.8	54	6.9	4.0
Total endophoric markers	1,034	100.0	115.9	339	100.0	31.3	788	100.0	58.3
Total MD markers	7,616		853.6	7,017		648.4	8,433		624.0

In the **Estonian** dataset, endophoric markers formed 13.6% of all MD markers (n = 7,616), the highest proportion among the three languages. The subcategory of visuals (examples + other) stood out as the most prominent, constituting 66.1% of instances; a substantial portion of these were language examples (47.5%), which is typical for the discipline of linguistics. References to other visual elements, such as tables and graphs, accounted for 18.6%. In a similar distribution, references to the whole text constituted 19% of all endophoric markers. When examining the previewing and reviewing markers (10.3% and 4.7%, respectively), it becomes evident that Est authors often direct the reader's attention towards upcoming content in the text, rather than revisiting what was previously discussed.

The distribution of endophoric markers in **Latvian** data is the lowest of the three languages, with endophoric markers making up only 4.8% of all MD markers (n = 7,017) in the corpus. The most frequently used endophoric markers are those of visual elements (66.7%). Previewing and reviewing markers are evenly distributed with 12.1% each, and the usage of endophoric markers for examples is dramatically lower than in Est and Lit at just 3.5% of all endophoric markers. Endophorics referring to the whole text are relatively rare at just 5.6%.

Endophoric markers in the **Lithuanian** corpus constitute 9% of the annotated MD markers' overall usage (n = 8,433). The most frequent subcategory encompasses examples (29.4%) and 'other' visuals (27.2%), constituting more than half of instances of endophorics. Such even distribution of examples and 'other' visuals suggests that in linguistics RAs, references to tables, graphs, figures, and other visual elements are as prominent as references to language examples. Reviewing markers, comprising 23.1% of all endophorics, are the second most common subcategory. Previewing markers (13.5%) are among the less common endophorics in Lit, while references to the whole text (6.9%) appear to be the least common.

In all three languages, visuals are the most frequent endophoric markers, but in Lat data, this mainly applies to figures and tables (i.e., 'other' visuals), with language examples being rare, whereas in Est data, these stand out, constituting nearly half, i.e., 47.5% of all endophorics. Otherwise, the proportions of subcategories are considerably different across the three corpora. Reviewing markers are much more common in Lit texts than in Est and Lat. This suggests a tendency among Lit authors to emphasise and remind the reader of claims and arguments previously mentioned in the text. A contrary tendency appears in Est, where previewing markers are used more often than in the other languages. This approach primarily serves to guide the reader forward in the text, rather than remind them of the key points. Interestingly, markers referring to the whole text are very common in Est RAs (22 per 10,000 words), whereas in Lat RAs, those markers are hardly ever used (1.8 per 10,000 words), and in Lit, they also occur infrequently (4 per 10,000 words). These distributional differences suggest that the role of endophoric markers in the three languages varies, which may relate to differing traditions of academic writing in the three Baltic states.

4.2. Endophoric marker subcategories and functions in Estonian, Latvian, and Lithuanian

In the following subsections, we will give a detailed description of endophoric markers in each language, by presenting the most common words and phrases, and explaining their main functions in RAs. The selected examples are based on their prominence in the corpus. This means that mentioning a particular phenomenon in relation to any of the languages does not necessarily exclude the possibility of it occurring in the others, albeit to a lesser degree.

4.2.1. Reviewing markers

Reviewing markers, occurring more frequently in Lit than in Est and Lat, serve to direct the reader's attention to earlier content in the paper. This may involve specific references to preceding sections, such as *minėta įvade* 'mentioned in the introduction', *kaip jau minėta literatūros apžvalgoje* 'as already mentioned in the literature review', or *šio straipsnio 2.2 poskyryje* 'in subsection 2.2 of this article' in Lit. In Est, abbreviated directives are often added to guide readers in specific textual acts: *vrd osa 2* 'compare section 2', *vt jaotist 1.8* 'see section 1.8'. Reviewing markers also remind the reader of specific entities (i.e., sources, examples, illustrations) discussed in the article, like *minėtas rinkinys* 'mentioned volume', *minėto tipo konstrukcijos* 'constructions of the mentioned type', or *jau minėtas ispanų kalbos pavyzdys* 'already mentioned example from Spanish' in Lit.

Additionally, reviewing markers can serve as general reminders of key points, acting as generic references to something presented 'above' or 'already', without specifying the section of the mentioned claims and arguments. They function to revisit points the author may have discussed a few paragraphs back. In Est, common phrases include *eelkirjeldatud* 'described above', *eespool* 'afore', *ülal kirjeldatud* 'described above', *juba nimetatud* 'already mentioned', and *nagu öeldud* 'as said', and in Lit, *kaip minėta aukščiau* 'as mentioned above', *aprašyta kiek anksčiau* 'described earlier', *kaip jau buvo ne kartą minėta* 'as was mentioned not once'. Lat authors most frequently use *kā jau iepriekš minēts* 'as mentioned before', with *iepriekš* 'previously' and *kā jau iepriekš aprakstīts* 'as described previously' also being common markers. Overall, reviewing is expressed in a very short form in Lat, with guidance to look back at the previous text of the article. If an author has an important point to reiterate in their research, they are likely to provide additional details, rather than relying solely on an endophoric reference, which may not suffice depending on the research topic.

4.2.2. Previewing markers

Previewing markers, which are more common in Est than in the other two languages, anticipate upcoming content, serving to explain the forthcoming information and guide the reader. They either direct the reader to specific sections where the information will be discussed or make general announcements about topics to be addressed. In Est, references to specific parts of the text include expressions like *vt*

jaotis 2 'see section 2' or *vt järgmine osa* 'see next section'. In Lit, phrases like *šiame skyrelyje* 'in this subsection', *išvadose nurodoma* 'conclusions indicate', *straipsnio pabaigoje* 'at the end of the article', and *žemiau* 'below' are used.

General references to evolving text, including announcements of key points, are conveyed by markers like *vt altpoolt* 'see below', *järgnev arutelu* 'the following discussion', and *siin ja edaspidi* 'hereinafter' in Est, and *toliau* 'further' and *vėliau* 'later' in Lit. In Lat, markers such as *tālāk* 'further' and *nākamais* 'the next' typically refer to the next language example, whereas *tiks aplūkots* 'will be looked at' does double duty as a previewing marker and a whole text marker, depending on the author's choice.

4.2.3. Whole text markers

The subcategory of 'whole text', frequently attested in the Est data, refers to the text as one complete entity. These markers serve various purposes, often combined with frame markers that state the aim of the study, such as *selle artikli eesmärk ongi* 'the aim of this article is' or *käesolevas töös püütakse* 'the present study attempts to' in Est, and *straipsnyje siekiama* 'the article aims' or *šiame darbe bandoma nustatyti* 'this work attempts to identify' in Lit. In Lat, endophorics in regards to the whole text can appear in introductions, stating what the paper is about, using phrases like *šajā rakstā* 'in this paper' or *šajā pētījumā* 'in this study'. In some cases, the introduction will have a whole phrase in regard to the whole text, such as *šī raksta mērķis ir* 'the goal of this paper is', immediately ensuring the reader knows what the paper is about. It seems this whole text reference is the phrasing Lat editors may prefer, as it provides a clearer understanding of the content and introduces the research topic better.

Furthermore, when outlining the study's considerations, the whole text is mentioned to announce the subject of the article, as in *käesolevas artiklis analüüsin* 'in the present article I analyse' or *siinne artikkel annab ülevaate* 'this article gives an overview' in Est. In Lit, phrases like *šiame darbe nagrinėjami* 'this work analyses', *šiame tyrime remiamasi* 'this research is based on', or *šiame tyrime dėmesys sutelkiamas* 'this research focuses on/draws attention to' may be used. Additionally, markers can be employed to describe the article's structure (as in Est *artikkel on üles ehitatud järgmiselt* 'the article is structured as follows'), to describe specific principles used in the article (in Est *siinses artiklis lähtutakse* 'this article is based on' or *siinse uurimuse aluseks on* 'the basis of this study is'), or to retrospect on the entire article (e.g., *uurimus näitas, et* 'the study showed that' in Est). Therefore, endophoric markers referring to the whole text add to the organisation of elements of the text that highlight general principles of the study and give an overall view of the issues addressed.

4.2.4. Markers of visual text elements

Endophoric markers labelled as 'visuals', frequently occurring across the three languages, encompass various visual elements in text, including graphs, schemes, charts, tables, and figures. These markers often co-occur with the directive 'see',

considered an engagement marker. Through this directive, readers are encouraged to examine visualised data, such as *vt tabel 2* 'see Table 2' in Est, *žr. 3 pav.* 'see Figure 3', *žr. 2 lentelę* 'see Table 2' in Lit, and *sk. 1. Tabulu* 'see Table 1', *sk. 2. Grafiku* 'see Graph 2' in Lat. Visuals can be presented in brackets or seamlessly integrated into the text, enhancing its comprehensibility (e.g., *(vt tabel 2)* '(see Table 2)' vs. *alljärgnev tabel võtab kokku* 'the following table summarises').

Visuals also co-occur with boosters (e.g., the verb 'to see'), such as in Lit *kaip matyti iš 1 paveiksle pateiktų kreivių* 'as seen from the graphs presented in Figure 1', *kaip matyti pateiktoje lentelėje* 'as seen in the table provided', *iš iliustracijos aiškiai matyti* 'from the illustration it is clearly seen'. The combination of interactive (endophorics) and interactional (boosters) MD markers helps readers process the quantitative and qualitative data, and establish necessary correlations reported in the findings.

Alongside tables, graphs, and other visual elements, examples serve an important role in facilitating comprehension of linguistic phenomena. In most cases, the numerical value of examples is indicated alongside the verbal expression, e.g., *11 pavyzdyje* 'in example 11', *4 ir 5 pavyzdžiai* 'examples 4 and 5' in Lit. Examples can co-occur with verbs of showing (e.g., *rodyti* 'show', *liudyti* 'confirm') functioning as boosters, e.g. *5–6 pavyzdžiai liudija* '5–6 examples confirm', or with the directives *žr.* 'see' and *plg.* 'cf'. References to examples are also made through demonstrative pronouns, e.g., *šiame pavyzdyje* 'in this example', *šie pavyzdžiai* 'these examples', which function as signposts guiding the reader in the processes of data analysis and/or comprehension of linguistic theory.

In Lat, referring to other visual elements is most prevalent among all endophoric markers, perhaps because these are the most 'stable', in the sense that both author and editor need to have them within the text so that the included information can be linked to the issues or information described within the paper itself. Journals may have guidelines about formatting and the number of graphs allowed, but some authors may use them to condense lists of language examples, like *sk. 3 piemēru 2. tabulā* 'see example 3 in Table 2'. Conversely, in Est linguistic articles, a substantial portion of visual markers primarily consists of textual language examples, like *vt nt näited 5 ja 6* 'e.g., see Examples 5 and 6'.

4.3. Endophoric markers across research article sections

4.3.1. Estonian

In examining the distribution of endophoric markers within the sections of RAs in the Est dataset (Table 4), it was observed that as many as 703 markers out of 1,034 (68%) were concentrated in the results and discussion sections. Notably, the subcategory of visuals, particularly language examples, was most frequently employed there (examples 59.3%, other visuals 22.8%). While it is possible to rationalise the higher occurrence of markers in raw frequencies in these sections due to their typically greater length compared to other parts of the article, it is noteworthy that the normalised frequency of endophoric markers was still highest in these sections. Furthermore, the prevalence of language examples there is most likely a discipline-specific feature.

Table 4. Endophoric markers across text sections in Estonian data

Section	No. of words	Visuals: examples			Visuals: other			Reviewing			Previewing			Whole text			Total		
		Raw fr	Fr/10,000	%	Raw fr	Fr/10,000	%	Raw fr	Fr/10,000	%	Raw fr	Fr/10,000	%	Raw fr	Fr/10,000	%	Raw fr	Fr/10,000	%
Introduction	10,898	25	22.9	19.2	1	0.9	0.8	5	4.6	3.8	31	28.4	23.8	68	62.4	52.3	130	119.3	100
Literature review	6,348	31	48.8	50.0	7	11.0	11.3	6	9.5	9.7	6	9.5	9.7	12	18.9	19.4	62	97.7	100
Method	6,429	7	10.9	12.3	11	17.1	19.3	3	4.7	5.3	13	20.2	22.8	23	35.8	40.4	57	88.7	100
Results and discussion	52,944	417	78.8	59.3	160	30.2	22.8	34	6.4	4.8	44	8.3	6.3	48	9.1	6.8	703	132.8	100
Conclusions	7,262	10	13.8	22.2	5	6.9	11.1	1	1.4	2.2	0	0.0	0.0	29	39.9	64.4	45	62.0	100
Other	5,343	1	1.9	2.7	8	15.0	21.6	0	0.0	0.0	12	22.5	32.4	16	29.9	43.2	37	69.2	100
Total	89,224	491	55.0	47.5	192	21.5	18.6	49	5.5	4.7	106	11.9	10.3	196	22.0	19.0	1,034	115.9	100

Table 5. Endophoric markers across text sections in Lithuanian data

Section	No. of words	Visuals: examples			Visuals: other			Reviewing			Previewing			Whole text			Total		
		Raw fr	Fr/10,000	%	Raw fr	Fr/10,000	%	Raw fr	Fr/10,000	%	Raw fr	Fr/10,000	%	Raw fr	Fr/10,000	%	Raw fr	Fr/10,000	%
Introduction	19,711	17	8.6	22.4	9	4.6	11.8	22	11.2	28.9	15	7.6	19.7	13	6.6	17.1	76	38.6	100
Literature review	14,569	4	2.7	7.1	7	4.8	12.5	24	16.5	42.9	7	4.8	12.5	14	9.6	25.0	56	38.4	100
Method	10,811	4	3.7	6.3	20	18.5	31.7	16	14.8	25.4	12	11.1	19.0	11	10.2	17.5	63	58.3	100
Results and discussion	73,270	201	27.4	36.5	175	23.9	31.8	106	14.5	19.2	66	9.0	12.0	3	0.4	0.5	551	75.2	100
Conclusions	12,405	4	3.2	15.4	2	1.6	7.7	13	10.5	50.0	2	1.6	7.7	5	4.0	19.2	26	21.0	100
Other	4,368	2	4.6	12.5	1	2.3	6.3	1	2.3	6.3	4	9.2	25.0	8	18.3	50.0	16	36.6	100
Total	135,134	232	17.2	29.4	214	15.8	27.2	182	13.5	23.1	106	7.8	13.5	54	4.0	6.9	788	58.3	100

Markers of other visual elements in the text (e.g., tables, graphs) have the second-highest frequency, indicating the authors' intention to clarify the results in a more comprehensive and clear manner. In the introductions, which exhibited the second highest frequency of endophoric markers after the results and discussion sections, references to the whole text prevailed (52.3%), followed by previewing markers (23.8%) and examples (19.2%). This phenomenon can be attributed to the purpose of an introduction in a RA, which is, among others, to outline the structure of the paper and provide a framework for the reader. In the literature review sections, language examples again emerged as the predominant subcategory (50%), followed by references to the whole text (19.4%). The latter category was also the most frequently used in both method and conclusions sections (40.4% and 64.4%, respectively). In method sections, previewing markers followed with 22.8%, and in conclusions, examples with 22.2%. The high score and broad distribution of references to the whole text could serve as evidence of the Est authors' tendency to mention the text at hand in the most various contexts.

4.3.2. Latvian

In Lat linguistics papers, authors have the freedom to structure their work with an introduction, main body, and conclusion, but no other section-specific requirements are defined by journals. Most guidelines focus on other technical aspects, such as font size, reference formatting, and often only remind the authors to include an introduction and summary. Thus, most endophoric markers appear within the text section that can be categorised as 'other' – even if authors use subheadings, these do not reflect IMRaD, and depending on the topic of the paper, there may not be a clear method or discussion section. Some exceptions to the distribution are 12 occurrences of previewing endophoric markers in introductions, 2 instances of reviewing endophoric markers in conclusion and 1 instance of reviewing markers in the introduction. This freedom of article structure may be the key factor that affects the use of endophoric markers in Lat.

4.3.3. Lithuanian

The distribution of endophoric markers across various sections of articles in the Lit data (Table 5) yields similar results to those obtained in the Est data. All types of endophoric markers most frequently occurred in the results and discussion sections (70%), in which examples (36.5%) and other visual elements as tables, graphs and figures (31.8%) dominated. However, unlike in the Est corpus, the second most common section that contained endophoric markers was the method section, with the predominant subcategories of visuals referring to tables, graphs and figures (31.7%) and reviewing markers (25.4%). The introduction and literature review sections shared an almost equal amount of endophorics (about 38 per 10,000 words), demonstrating the higher frequencies of reviewing markers (28.9% in the former and 42.9% in the latter). References to prior parts of the text were among the most frequent MD resources, making up 50% in the conclusions, which contain the least amount of endophoric markers.

The prevalence of reviewing markers in the introductory, theoretical and concluding sections of the paper may underscore the explanatory character of these sections in Lit linguistics articles. Lit authors emphasise establishing links between ongoing explanation and argumentation and claims made in the preceding parts of the text. In the introductions, the second most frequent subcategory of endophoric markers was examples (22.4%), followed by previewing markers (19.7%). In the literature review sections, the second most common subcategory was reference to the whole text (25%). It should be noted that references to the whole text were most frequently found in the footnotes (50%), the theory section (25%) and conclusions (19.2%). In the footnotes, these endophoric markers indicate a more detailed explanation of terms and procedures employed in the study. In the latter two sections, the higher frequencies of references to the whole text are related to their combination with frame markers that set the aim, procedures, and character of the study at the beginning of an article as well as address the relevance of the findings in the final section.

5. Discussion and conclusion

In this article, we have demonstrated the varying usage of specific endophoric markers across Est, Lat, and Lit, while highlighting their generally comparable underlying functions. Furthermore, the study emphasises that disciplinary conventions can significantly differ between languages and affect the presentation of specific MD markers.

Regarding **language-specific differences**, the study highlighted that MD markers in general, and endophoric markers in particular are most often used in Est RAs. In Lit data, MD markers were used the least often, however, the use of endophoric markers is still higher than in Lat. While MD markers in Lat are used slightly more often than in Lit, RAs exhibit the lowest frequency of endophorics in Lat. The most often used endophorics in all three languages are markers of visual text elements, whereas the occurrences of other endophoric marker subcategories are rather diverse in each language. Est RAs had a relatively higher proportion of whole text markers compared to Lat and Lit. Lit data expressed higher reliance on reviewing markers, while Est writers employ more previewing markers. In Lat data, previewing, reviewing and whole text markers are very infrequent.

Such differences could be attributed to the possibly unique writing style, or writing tradition, of each language. Est RAs seem to better represent the writer-responsible side of the scale, whereas Lat RAs are rather an indication of the reader-responsible side (see Hinds 1987, MacKenzie 2015). Like in Est RAs, numerous instances of endophoric markers in Lit texts highlight reader/writer interaction. However, it is possible that there is more than one dimension of writer responsibility in texts. For example, the prevalence of reviewing markers in Lit RAs allows the reader to easily find mentioned arguments and claims in the preceding text and draw connections with unfolding argumentation. At the same time, the higher use of previewing markers in Est might acquaint the reader with what is to be expected in the following text, and therefore also make it easier for the reader to perceive the text as one coherent argument (e.g., see Walková, Bradford 2022). However, the

rarer occurrence of previewing and reviewing markers in Lat data might also be a sign of writer responsibility on yet another dimension, where the authors do not refer the reader back and forth in the text, but just clearly mention a concept whenever it is crucial for the overall clarity of the text. Taken together, some aspects of the use of endophoric markers can reflect reader vs. writer responsibility features in RAs. However, it must be kept in mind that such responsibility is always a cultural phenomenon, determined by the expectations of the members of a particular culture. Therefore, a collection of purely linguistic or textual features is not sufficient to make any far-reaching conclusions about writer vs. reader responsibility (see Magennis 1997), and generalisations (such as those offered by Mur-Dueñas 2011) must be taken with some caution.

Interestingly, the frequencies of endophoric markers in Est (115.9 per 10,000 words), and Lit data (58.3 per 10,000 words) are much higher than previously reported for English. For example, Hyland and Tse (2004) found that in postgraduate dissertations written in English, on average 23.4 endophorics are used per 10,000 words in disciplines from public administration to electronic engineering. Mur-Dueñas (2011) confirmed a similar proportion for business management RAs in English, while in corresponding Spanish data, she found 36.3 endophorics per 10,000 words (in our study, Lat data exhibited quite similar proportions: 31.3 per 10,000). However, in the results and discussion sections of engineering MA theses, Lee and Casal (2014) found 106.2 endophoric markers in English vs. 88.1 in Spanish per 10,000 words. In Chinese RAs on the topic of L2 learning, endophoric markers have shown to be very rare, occurring 12.7 times per 10,000 characters (Mu et al. 2015).

There are several possible reasons for such differences, for instance disciplinary, genre, text section, and language related aspects. **Disciplinary differences** are 'responsible' for the ways how authors create and connect arguments. For example, humanities tend to rely more on MD overall, but endophoric markers in particular are more frequent in hard disciplines (Dahl 2004, Hyland, Tse 2004, Hyland 2005). In our study, we have focused on the field of linguistics, which can be seen as an interesting test case between soft and hard disciplines, considering the more recent trends (at least in some sub-disciplines of linguistics) to step toward a rigorous and statistically quantifiable field. On one hand, our results suggest that the prevalent use of examples in Est and Lit linguistics RAs confirms the disciplinary convention to specify various linguistic phenomena through exemplification and illustrations. Therefore, Est and Lit linguistics as a field stand closer to the conventions of hard sciences. Latvian tradition, on the other hand, has maintained the features of a more 'traditional' humanities discipline of philology. On the other hand, the frequent occurrences of 'other' visuals (tables, graphs, and figures) across the three languages indicate that in linguistics, like in disciplines of the hard sciences (Hyland 2005: 157), the connection between images and text is of primary importance in reporting findings and facilitating the processing of information for the reader (see also Hyland, Jiang 2018: 24).

Different **genres** are shown to display different usage patterns of MD markers. For example, the use of endophorics in RAs is different from long pedagogic texts such as textbooks, where it is even more important to guide the readers when navigating through the text (Hyland 2005: 167). Likewise, writers incorporate more endophoric markers in MA theses (Burneikaitė 2008, Lee, Casal 2014). We have indicated that even within one specific genre, languages might express quite

different metadiscursive practices. This can be clearly seen in the variations of how text sections encode writer-reader interactions.

Our study comprehensively assessed RAs across all **text sections**. In analysing endophorics in Est and Lit data[6], we found that reviewing markers are notably present in literature reviews for both languages, aiding in connecting ideas and contrasting arguments. Previewing markers, chiefly found in method and 'other' sections, are more prevalent in Est introductions but sparse in conclusions due to their anticipatory role. Whole text markers exhibit distinct patterns between the languages: frequently observed in Est introductions, conclusions, and methods, they are primarily found in Lit's 'other', method, and literature reviews. However, they are least prevalent in results and discussions in both datasets. Markers of language examples and visual elements dominate the results and discussions. The 'examples' category is common in Est literature reviews, less so in Lit, while references to visuals are second-most frequent in method sections for both languages.

In assessing MD markers quantitatively, one must consider the influence of **language structure** on normalised frequencies, especially between typologically distinct languages. Analytic languages like English, Chinese, and Spanish likely have a higher word count due to function words (e.g., pre- and postpositions, articles, particles, etc.), while synthetic languages such as Estonian, Latvian, and Lithuanian integrate many functions within single words (e.g., case endings, compound nouns and verbs, etc.). Therefore, MD markers are not always straightforwardly quantifiable and comparable across languages (see also Hyland 2017). Furthermore, MD is a pragmatic and rhetorical concept, characterised by its flexible and sometimes imprecise nature, which can manifest in a multitude of forms, ranging from individual words to entire clauses or sentences (Hyland 2005, 2017). Hence, for a deeper understanding of Est, Lat, and Lit endophoric markers, and MD in general, further studies with a more qualitative perspective are also needed.

The challenges in annotating a comprehensive set of MD markers and their cross-linguistic comparisons constitute the primary limitations of this study. Given the linguistic variation, these challenges inherently impact data processing and subsequently the interpretation of results. Such comparisons necessitate a deeper evaluation of potential annotation discrepancies and their implications for the overarching theoretical framework. Future research must thoroughly address cases where specific markers are categorised differently in various languages. For example, how to handle scenarios where whole text markers are viewed primarily as frame markers in Lit, as opposed to being seen as endophoric markers in Est, as also opposed to very limited occurrences, even the lack of whole text frame markers in general in Lat.

Overall, this insight into the usage of endophoric markers in Est, Lat, and Lit shows that there are inherent language and/or cultural differences in academic writing in the Baltic countries. Even though endophoric markers are used in all three languages, language-related features greatly impact the usage of MD and its distribution. By taking this knowledge into account when teaching and analysing academic writing, it is possible to make a conscious impact on preserving and promoting the diversity of languages in academia.

[6] As indicated in Section 4.3.2, comprehensive conclusions about the functions of endophorics across text sections are not possible for Lat, due to the flexible ways of structuring RAs.

Abbreviations

Est	Estonian
fr	frequency
IMRaD	Introduction, Methods, Results, and Discussion
Lat	Latvian
Lit	Lithuanian
MD	metadiscourse
RA	research article

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“VT JÄRGNEVAT ARUTELU SIINSE UURINGU LÕPUS”: TEKSTISISESED VIITED EESTI, LÄTI JA LEEDU TEADUSARTIKLITES

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Artikkel uurib metadiskursuse üht kategooriat, tekstisiseseid viiteid (ingl *endophoric markers*) eesti, läti ja leedu keeleteaduslikes artiklites. Eesmärk on välja selgitada, kas tekstisiseste viidete varieerumist võib mõjutada rohkem keel, kirjutamistraditsioon või valdkondlikud tavad. Otsitakse vastust küsimusele, kas tekstisiseste viidete kasutusmustrid peegeldavad Balti riikide erinevaid kirjutamistraditsioone. Uurimisandmestiku moodustavad kolm omakorpust, millest igaühte on kogutud keeleteaduslikud artiklid ühes keeles. Analüüs keskendub teadusartiklites esinevatele eri tüüpi tekstisisestele viidetele: 1) ees- või 2) tagapool kirjutatule, 3) visuaalsetele elementidele või 4) kogu tekstile osutavatele keelenditele. Analüüsi tulemusena ilmnesid mitmesugused keele- ja valdkonnaspetsiifilised eripärad nii metadiskursuse markerite jaotuses kui ka funktsioonides. Sellist tekstisiseste viidete varieerumist keeliti võib põhjendada erinevate kirjutamisstiilide või -traditsioonidega Balti riikides.

Võtmesõnad: metadiskursus, akadeemilised tekstid, eesti keel, läti keel, leedu keel

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