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An analysis of abstracts in medical and economics journals: Microstructure and practical applications

ABSTRACT. Writing abstracts, both in a professional and academic environment, is a crucial skill, reflecting the ability to think synthetically and express thoughts in a concise way. Due to the rising popularity of indexing scientific papers in different databases, abstracts can determine the readability of a paper and its future quotation rate. This paper presents the results of an analysis of the microstructure of 40 abstracts from prestigious impact factor medical and economics journals, offering guidelines for designing abstract writing exercises in foreign language courses for specific purposes.

KEYWORDS: abstract, LSP, ESP, microstructure, economics, medicine, journal.

1. INTRODUCTION

Academic language teachers often note that their students' writing skills are not adequate to meet the needs of the professional market. The problem seems to be a lack of practical writing experience within the LSP (language for specific purposes) course. This is usually a result of time limitations and a general reluctance on the part of students to complete written exercises

during class due to vague rules of assessment and poor knowledge of writing rules, even in the learners' native language. Simultaneously, the ability to clearly formulate thoughts is one of the crucial elements determining not only the ability to practice communication in the workplace, but also one's potential professional career path.

The above-mentioned motives lay the foundation for reorganizing the curricula and implementing more writing exercises to give students the opportunity to develop professional writing-oriented skills and to understand the specificity of particular genres. The research described in the following paper is an attempt to fill in the missing gap concerning one of the most widespread academic and scientific genres – the abstract – and to provide authentic material excerpted from medical and economics journals as a basis for designing original, target-oriented exercises for the LSP class.

This paper consists of three parts. The first part provides an overview of current research concerning abstracts. The second part discusses an analysis of a sample of 40 abstracts from the micro perspective[1]; in this part, sample abstracts from medical and economics journals are analyzed in order to gather information about their microstructures. The information resulting from the analysis is used to suggest guidelines for developing abstract writing exercises that can be used in the LSP classroom.

1.1. Definition of the abstract

Current research defines the abstract in various ways: a summary of the main points discussed in a paper (Swales 1990: 15), a representation of the paper (Bhatia 1993: 82), or the reader's first encounter with the text (Martín-Martín 2005: 5). Borko and Chatman (1963: 150) state that it is "generally agreed that abstracts should include the four main topics (purpose, methods, results, and conclusions)". However, Weissberg and Buker (1990: 186) distinguished the following order of elements in an abstract:

B – some *background information*
P – the *principal activity* (or purpose) of the study and its *scope*
M – some information about the *methodology* used in the study
R – the most important *results* of the study
C – a statement of *conclusion* or *recommendation*

[1] The present paper is a continuation of the research that we presented in the paper "On the macrostructure of abstracts in medical and economics journals and its LSP implications" published in *JoLIE 11* (1) / 2018 (Mureșan & Kic-Drgas 2018).

According to the international standard ISO 214: 1976[2], the abstract is a shortened but precise representation of a document's content. Its meaning is expressed through the following functions:

- providing information about the content of a document,
- facilitating the finding of a given document,
- providing information about features that distinguish a given document from others in the same field.

Interestingly, scientists disagree about whether a research paper abstract "functions as a condensed reproduction of the text or rather as an expansion of the title, as well as the question of whether it is an indicator of the RA's content or rather an informative summary" (Gillaerts & Van de Velde 2010: 128).

We view the abstract as an indicator of the article's content. This corresponds with the function of attracting a potential audience to read the paper as well as distinguishing it from other papers. An abstract, as such, can be considered a paper in miniature and a genre that uses the strategies of coherence and cohesiveness to express the author's ideas. Analyzing an abstract is an essential indicator for determining the quality of a research paper, and its function extends beyond being simply informative, to provide insight into a scientific problem. Additionally, an abstract offers an example of the author's writing style, thus affecting the reader's decision about reading the paper.

1.2. Scientific problem

The meaning and importance of the abstract cannot be overestimated since abstracts are so widely available online, in contrast to full papers which are usually only available for a fee. Despite their utility, the writing of abstracts is a topic that does not attract enough attention as a subject of LSP courses. Hernon and Schwartz (2010) note that LSP courses do not teach the writing of abstracts as a necessary tool for publishing papers in highly ranked journals. Similarly, Frydrychova-Klimova (2012) points out that teachers pay the least amount of attention to the development of writing skills.

At the same time, the need for students to develop skills in scientific writing is growing. This is a result of universities introducing databases to store bachelor's and master's theses, requiring students to write abstracts. Moreover, writing scientific papers is a large part of the professional work of physicians and economists, regardless of whether or not they choose to pursue a scientific career. While there are efforts to promote writing skills across

[2] https://www.iso.org/standard/4084.html (accessed 5.11.2018).

the LSP curriculum (e.g. Russell 2007), the specific approach of using abstracts as a methodology to teach informative and concise writing skills is practically non-existent.

In conducting this study, we were inspired by the research carried out by Cross and Oppenheim (2006: 429), who analyzed "the semantic organization and thematic structure of 12 abstracts from the field of protozoology in an effort to discover whether these abstracts followed generally agreed abstracting guidelines." Based on this research, we analyzed the microstructure of a chosen sample of 40 abstracts in order to collect information about their structure and compare these results with previous research on the topic. Additionally, we designed exercises supporting the development of abstract writing skills within the LSP course.

1.3. Literature review

In Poland, abstracts were thematized above all by the following authors: Grabowska (1979), Trzęsicki (1986), Bartmiński (1992), Pytlik (2005), Ufnalska (2008), Pulikowski (2011) and Szyszkowska (2016). In other countries, abstract-oriented studies were conducted by Busch-Lauer (1995), Busa (2005), Cheng (2008), Kim and McDonough (2008), Pho (2008; 2009), Piqué-Noguera (2012), Cao and Xiao (2013) and Can, Karabacak and Qin (2016).

A thorough review of the literature offers the following areas of interest:

- analysis of abstracts delivering the background for formulating conclusions concerning the structure of a given text from a linguistic point of view (e.g. Trzęsicki 1986; Salager-Meyer 1991; Bartminski 1992; Nwogu 1997; Dahl 2004)[3],
- analysis of an abstract as a source of knowledge transfer (e.g. Grabowska 1979; Koltay 2010; Pulikowski 2011; Szyszkowska 2016),
- comparative analysis of abstracts written by natives and non-natives (e.g. Cao & Xiao 2013),
- analysis of abstracts as a background for didactic implications (e.g. Pytlik 2005; Frydrychova-Klimova 2015).

There is very little research on the use of abstracts as a didactic method for language instruction. This may be the result of either the relatively small interest in writing abstracts within LSP classes or undervaluing the importance that abstract writing has for professionals during their careers. Re-

[3] An interesting point concerning the structure of the short scientific texts is made by Mikołajczyk (2007), who compares scientific texts in German and Polish and concludes that the authors have a radically different approach to the text.

ferring to Swales (1990: 181), who claimed that abstracts "continue to remain a neglected field among discourse analysts", the present paper aims to combine both linguistic (micro)analysis of the genre and didactic implications.

The disciplinary specificity is reflected in the professionals' sensitiveness to the conventions that other members of their community find familiar and convincing (Hyland 2009: 5–6). In the fields of medicine and economy, the process of writing is centered around the wish to fill in a gap in knowledge, or to report experimental findings, and so forth, which creates the identity of the genre (Hyland 2009: 9). Since abstract writing has become an essential skill for professionals, teaching it should be an integral part of the educational process of preparing students for a professional career. Hartley (2003: 366–37) emphasizes the importance of abstract analysis in achieving higher clarity when writing journal abstracts.

1.4. Microanalysis

Analysis of the microstructure of a written text can include the following elements: word, sentence, or discourse levels. Microstructure analysis can examine a writer's conveyance of meaning (e.g. number of words, or ideas), grammatical complexity (e.g. clause density) and lexical diversity (e.g. number of different words) (Nelson & van Meter 2004; Puranik, Lombardino & Altmann 2007; 2008). In the next part of the paper, we will examine grammatical complexity and lexical diversity in more detail.

Halliday (1996: 350) notes that "[t]he value of having some explicit knowledge of the grammar of written language is that you can use this knowledge, not only to analyze the texts, but as a critical resource for asking questions about them." In her analysis of 90 abstracts in health science, social science, education, and the humanities, Graetz (mentioned in Swales 1990) concludes that abstracts are characterized by:

- use of past tense,
- passive voice,
- non-use of negatives.

In contrast, the study conducted by Salager-Meyer (1992) on the basis of 84 medical abstracts suggests that verb tenses have different functions. Salager-Meyer concluded that the past tense is mostly used for describing purposes, methods and results; the present tense, however, is commonly used in conclusions and recommendations; and the present perfect tense is used for statements of the problem to show the author's disagreement with previous research. Also, the use of modals seems to be more frequent in medical texts and more research-oriented texts.

In addition to grammar, lexical complexity is a crucial element for abstract composition that is strongly underscored by Cohen-Vida (2012: 4985):

> Students must know that abstracts in which they simply replace words by their synonyms and copy structures from the source text resemble a word for word translation and are not considered good abstracts, the same way as word for word translations are not recommended in most situations. The phrases of the source text must be forgotten.

Frydrychova-Klimkova (2015: 910) shares the following observations concerning the lexical dimension of the text:

- preference for short words of Anglo-Saxon origin rather than long words of Latin origin (e.g. *to use*, not *utilize*),
- use of correct collocations, (such as *low speed, high speed*),
- avoidance of colloquial words (so, stuff …),
- reduced use of the abbreviation *etc.* as it is not academic,
- the need to explain an acronym when using it for the first time.

2. PURPOSE AND METHOD

Building on a previous study of the macrostructure of abstracts in medical and economics journals published in 2018 (Mureşan & Kic-Drgas 2018), we analyzed the same 40 abstracts of articles from a selection of journals that have an impact factor of above two, in the period February to March 2017. Thus, we analyzed 20 abstracts of original articles from different medical journals included in PubMed (the most commonly used search engine for biomedical research), and 20 abstracts of articles from journals of economics included in the Philadelphia List (in some countries known as the ISI Master Journal List).

The medical abstracts were selected randomly from the following journals (in the order of the research analysis): 1. BMJ ("The British Medical Journal"), 2. "The Lancet", 3. NEJM ("The New England Journal of Medicine"), 4. JAMA ("The Journal of the American Medical Association"), 5. "Annals of Internal Medicine", 6. "Nature", 7. "Pediatrics", 8. "Circulation", 9. "The Journal of Infectious Diseases", 10. "Brain: A Journal of Neurology", 11. "Clinical Infectious Diseases", 12. JACC ("Journal of the American College of Cardiology"), 13. "Science", 14. "Diabetes", 15. "Blood", 16. CMAJ (Canadian Medical Association Journal), 17. "American Journal of Preventive Medicine", 18. "Mayo Clinic Proceedings", 19. "Bulletin of the World Health Organization", 20. "The Journal of Clinical Investigation".

The economics journals the analyzed abstracts were chosen from were as follows: 1. "Cambridge Journal of Regions Economy and Society", 2. "Cambridge Journal of Economics", 3. "Defense and Peace Economics", 4. "Econometrics Journal", 5. "European Economic Review", 6. "German Economic Review", 7. "International Journal of Health Care Finance and Economics", 8. "Journal of Agricultural Economics", 9. "Journal of Comparative Economics", 10. "Journal of Home Economics Research", 11. "Journal of Economic Growth", 12. "Journal of Financial Economics", 13. "Journal of Monetary Economics", 14. "Journal of Socio-Economics", 15. "Marine Resource Economics", 16. "Maritime Economics & Logistics", 17. "Portuguese Economic Journal", 18. "Quantitative Economics", 19. "Socio-Economic Review", 20. "Econometric Reviews".

In the present study, we analyzed elements that pertain to the microstructure of the abstract, using the following ten research questions:

1. Which tenses are used in each part of the abstract (introduction, methods, results, conclusion)?
2. Which voice is used more frequently in the abstract – the active or the passive voice?
3. What linkers (if any) are used in the abstract?
4. What phrase connectors (conjunctions) (if any) are used in the abstract?
5. What verbs or phrases are used to present the objective of the study?
6. What verbs or phrases are used to present the results of the study?
7. What verbs or phrases are used to present the conclusions of the study?
8. Are modal verbs used in the abstract? Which ones and in which section of the abstract?
9. What verbs are used if the conclusions of the study are less certain?
10. Are numbers and percentages included in the abstract? If so, in which part(s)?

We then compared the data obtained to find out whether the results were similar or different – and to what extent – in medical and economics journals, in order to design LSP activities based on the results of our study.

3. RESULTS AND DISCUSSION

The analysis of the tenses used in each part of the abstracts (Research Question 1) showed notable differences between economics and medical abstracts. Thus, the present simple appears to be the preferred tense in economics abstracts (EA) in all parts of the abstract, as only in 4 instances (20%)

other tenses (past tense or present perfect) were used in the analyzed abstracts. In contrast, the past tense was used consistently to describe the purpose, methods and results of the medical research studies investigated. The present simple was used only twice (10%) to present the purpose of the study in medical abstracts (MA), whereas in the structured abstract the to-infinitive fulfilled this function. Modal verbs were also used in 5 MA (25%) in the Background section and in 6 abstracts (30%) in the Conclusion. At times, several tenses/verb forms were used for the Background and / or Conclusion in the same abstract (Present Simple, Present Perfect, Past Tense, modal verbs). The Present Perfect was used in the Background of MA (4 times), in the Purpose and the Conclusion sections of one EA respectively, and in the Conclusion of a MA.

Table 1. Tenses used in the parts of the abstracts

Abstract no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Background – EA	PS	PS	PS PT	–	PS	–	–	–	PS	PS	–	PS	–	PS	–	PS	–	PS	PS	PS
Background – MA	–	PS	PT PS	PS	M	M PS	PP	PS	PP PS M	PP PS	PS	M	PS	PP M	PS	PS	PS M	–	–	PS
Purpose – EA	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS	PP	–	–	PS	–	PS	PS	–	PS	PS
Purpose – MA	I	PT	–	I	I	PS	PS	PT	–	PT	PT	PT	PT	PT	PT	PT	PT	I	I	–
Methods – EA	–	–	–	PS	PS	–	PS	PS	–	PS	–	PS	PS	PS	–	PS	PS	PS	–	PS
Methods – MA	PT	PT PS	PS	PT	PT	PT PS	PS PT	PT	PT	PS M	PT	PT	PT	PT	PT	PT	PT PS	PT	PT	PT
Results – EA	–	PS	PS	PS	PS	PS	–	PS	–	PS	PS	–	PS	–	PS	PS	PS	SP	–	PS
Results – MA	PT	PT	PS	PT	PT	PT PS	PT	PT	PT	PS M	PT	PT	PT	PT	PT	PT	PT	PT	PT	PT
Conclusion – EA	PP	–	PS	–	PS	–	PS	PS	PS	–	PP	PS	PT	PS	–	PS	PS	–	PS	PS
Conclusion – MA	PT	PT PS	PT PS	PT M	PT PS	PS M	PS PT PP M	PS	PT	PS M	PS	PT	PS	PS M	PS	PT PS M	PT	PT PS	PT	PS

PS = Present Simple, PP = Present Perfect, PT = Past Tense, I = infinitive, M = modal verb (present), EA = economics abstracts, MA = medical abstracts

Regarding the use of the Active Voice (AV) and/or the Passive Voice (PV) in abstracts (Questions 2), as expected, we found that AV had significantly higher prevalence in EA, and that PV use in EA accounted only for

40% of the abstracts. In MA, on the other hand, PV was used in the majority of abstracts (85%) and, surprisingly, had the same or higher prevalence in 3 abstracts (15%). PV was used mostly to describe the methods and results of the study in MA.

Table 2. Active / passive voice used in the abstracts

Abstract no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Active voice (EA)	5	5	7	4	6	5	4	6	4	6	4	7	4	7	4	6	4	6	6	11
Passive voice (EA)	0	1	0	0	0	1	0	0	1	1	1	0	2	1	0	0	0	0	0	2
Active voice (MA)	9	12	15	5	8	16	13	14	8	13	8	8	9	14	11	16	6	4	1	12
Passive voice (MA)	4	4	5	5	6	2	2	3	6	0	5	7	1	1	4	0	11	8	8	0

Table 3. Linkers used in the abstracts

Linkers	EA	MA
Contrast	In spite of Although Nevertheless Whereas	Despite Although
Reason and cause	Because As	–
Purpose	In order to	–
Consequence	Consequently As a consequence As a result Therefore	Thus
Addition	Moreover Furthermore In addition As well as In addition to	In addition
Exemplification	For example	–
Succession	Firstly Second Finally, To sum up	In conclusion
Emphasis	–	Importantly Of note
Comparison	–	Compared with

When searching for the linkers used in the studied abstracts (Question 3), we found that transition words were often used in EA (in 85% of the EA) and significantly more rarely used in MA (in 50% of the MA). (Table 3) This is partly due to the fact that most MA (75%) were structured – and in structured abstracts (containing headings) linkers are rarely needed – and almost all (95%) EA were unstructured, which required the use of linkers for text cohesion.

The fourth research question, concerning the phrase connectors used in the abstracts, proved not to be particularly relevant to our study, as common conjunctions were identified in almost all abstracts. For example: *but*, *despite*, *though* (to express contrast) and *because*, *to* (to introduce the reason).

As regards the verbs and phrases employed to present the objective of the study (Question 5), we observed certain similarities between EA and MA. The verbs *examine*, *analyze*, *show* and *investigate* were used in both EA and

Table 4. Verbs and phrases presenting the objective of the study

Abstract no	Verbs/phrases describing the objective (EA)	Verbs/phrases describing the objective (MA)
1	The study *presents*, investigates	To *compare* the effectiveness…
2	explore	We aimed to *analyze*…
3	*contradict* the traditional view…	–
4	show	To *estimate* associations of …with …
5	*analyzes* the impact of…	To *assess* the association between … and … and to *estimate* …
6	This article *revisits* …	Here we *show* that …
7	This paper *offers* a simple model of ...	examine
8	examine	We *assessed* the effect of … on …
9	presents	there is no research *evaluating* whether …
10	aims to *analyze*	Here we *studied* …
11	explore	… were evaluated
12	–	This study *analyzes* the association of … with …
13	This paper *proposes* …	Analyze
14	present	We used … to *test* whether …
15	–	Hypothesize
16	Depict	We *tested* the association of … with …
17	confirm prediction	This study aimed to *assess* …
18	–	To examine …
19	analyze	To *investigate* …the association between … and…
20	articulate, depict, present, discuss	…remains unknown.

MA for this purpose. In EA, the verbs *present* (4 times) and *analyze* (3 times) were the most prevalent, whereas in MA *assess* and *analyze* were most frequently used (3 times each), followed by *examine*, *evaluate*, *test* (twice each). A particularity would be that in structured medical abstracts, the objective is usually stated in an incomplete sentence (subject and verb elliptical clause), which starts with a to-infinitive: e.g. to *compare*, *to estimate*.

The analysis of the verbs and phrases that were used to present the results of the studies (Question 6) showed that a larger variety of verbs were used to describe results in medical abstracts. This can be explained by the fact that in MA the Results section is commonly the longest and presents the most important findings precisely, and that MA are, in general, significantly longer than EA. (Mureşan & Kic-Drgas 2018). The verbs *find*, *result*, and *suggest* were used in both EA and MA.

Table 5. Verbs and phrases describing the results of the study

Abstract no.	Verbs / phrases describing results (EA)	Verbs / phrases describing results (MA)
1	–	find, achieve, report (PV)
2	*results are consistent with …*, indicate	record (PV)
3	*The pattern of results … is most consistent with …*	identify (PV), show
4	result	occur, associate (with) (PV), relate (PV), decrease
5	find, (results) suggest	associate (with) (PV), increase, find, account (for)
6	obtain (estimates)	reduce, expect *(reduced … as expected)*, indicate (PP), exhibit, decrease, increase
7	–	peak, remain, correlate (*was less prevalent and highly correlated with)* indicate *(were more likely to indicate)*
8	find out	increase, reduce, attenuate (PV), associate (with) (PV)
9	–	associate (with) (PV)
10	observe, note	(recordings) show, indicate (PP), find
11	analyze	fail (to), progress (to), observe (PV), correlate (with)
12	–	associate (with) (PV)
13	focus, result	display, differ, indicate (PP)
14	report	increase, correlate (with), display
15	–	associate (with) (PV), induce
16	state	include, account (for)
17	assert	observe (PV), associate (with) (PV), exhibit
18	discuss, argument, (results) underscore (the importance of …)	associate (with) (PV)
19	–	estimate (PV), detect (PV), associate (with) (PV)
20	result	reveal, highlight (PP), diminish, facilitate, reduce, suggest (PP)

PV = Passive Voice, PP = Present Participle

Our analysis showed significant differences between the verbs and phrases used to draw the conclusions in economics and medical abstracts (Question 7), the verb *conclude* being the only common element in the analyzed abstracts. (Table 6) Therefore, we may infer that, when teaching students about abstract writing, we need to have in mind that each field of ESP (English for Specific Purposes)/LSP might have its particularities in terms of language use and thus choose the class materials accordingly.

Table 6. Verbs and phrases describing the conclusions of the study

Abstract no.	**Verbs/phrases describing conclusions (EA)**	**Verbs/phrases describing conclusions (MA)**
1	To conclude	was *associated* with
2	–	*resulted* in; should *focus* on
3	identify, sum up	Simple past (*were*); present simple (*are*)
4	–	were *estimated* to be … These results *should help* identify …
5	We *find support* for the view that …	was *not associated* with … It is *likely* that … *represents*…
6	–	Our findings *elucidate* … may be …
7	It also *explains why* … which *explains* …	… *should be taken into consideration* … to improve …
8	… *appear* as …	Our findings *provide* … to *explain*
9	*offers* final reflections on ... the results *suggest* …	… was *associated* with …
10	–	The present study *demonstrates* that… *providing* strong evidence that… Our findings *support* the idea that….
11	It is concluded that …	Present Simple (*is/are*)
12	This increase largely *occurs* through …, with a much smaller effect on …	… was *associated* with …
13	had no significant effect on …	Our findings *explain* how… We *propose* that… This work *contributes* novel insight into…
14	We *show* that ...	We *conclude* that… … *indicating* that…
15	–	Our data *indicate* novel insights into…
16	*obtain* the result that …	The results *suggest* that…
17	recapitulate	… was *associated* with …
18	–	These findings *underscore* the importance of…
19	reflect on	… was *observed* …, *highlighting* the need for …
20	conclude	illustrate

Modal verbs (Question 8) are sometimes used in the last part of abstracts, the Conclusion, to express possibility or to give suggestions. Our analysis showed that 35% of the medical abstracts and only 10% of the economics ones contained such modal verbs, of which *should* had a higher prevalence (50%) (see Table 7). They can also be present in the Background section to suggest lack of certainty of the accuracy of current knowledge in the field.

Table 7. Modal verbs used in abstracts

Abstract no.	**Modal verbs in context (EA)**	**Modal verbs in context (MA)**
2	–	Health maintenance *should* focus on…
4	–	These results *should* help identify priorities …
6	–	…cells *may* be a marker of…
7	Gender differences in task allocations *may* sustain vertical gender segregation …	… *should* be taken into consideration
10	–	…cortical neurons *can* become… these neurons... *could* contribute to…
14	–	*may* promote a sustained inflammatory state …
16	*Should* the tax rate differences […] *vary* …	prevention strategies *should* target…

The answers to Question 9 confirm what the literature states in this respect, namely that tentative verbs such as *suggest*, *indicate*, *appear*, *estimate* (Table 6) are sometimes used to express a degree of uncertainty. Modal verbs like *can*, *could*, *may*, *should* (Table 7) or expressions such as *it is likely that* (A5M-medical) are sometimes used to fulfill the same purpose.

Our analysis also revealed (Question 10) that numbers and/or percentages were used in 8 abstracts (40%) in economics journals and in 17 abstracts (85%) in medical journals, mostly in the Results, but also in the Methods sections of the abstracts, or even in the Conclusion. Almost all structured medical abstracts (95%) contained numbers and percentages. These findings point to the high relevance and importance of precise presentation of the study results in medical articles, whereas abstracts in economics journals appear to be, in general, more descriptive.

4. APPLICATIONS

The conclusions resulting from this study provide an overview of the microstructure of abstracts which can be used to develop teaching materials for the LSP classroom. These materials are designed to help learners master the art of writing professional abstracts that make use of lexical and grammatical structures present in peer-reviewed scientific journals.

4.1. Preparatory exercises

Reading comprehension is the first step in working with abstracts, which are, for many learners, a new and unknown form used in professional and scientific work. An introductory exercise for working with abstracts can involve questions referring to the content of abstracts, as they can be complicated to understand despite taking a shorter form.

The next step toward getting used to the concise language of the abstract is purely mechanical: looking for and *excerpting structures* expressing, for example, the results, aims or conclusions of an abstract. This is the basis for shortlisting useful expressions and analyzing their usage in an authentic context, such as the ones presented in this paper in Tables 3–7. Also, *completing the gaps* made in genuine abstracts with linking words would encourage learners to focus on the structure and connections between the parts of abstracts.

After discussing the structure of the abstract based on the given materials, instructors can present learners with a range of abstracts and ask them to *identify potential errors*. An online resource that presents common difficulties of writing abstracts can be useful for this exercise[4].

4.2. Writing exercises

Before learners write their own full abstracts, it is advisable to conduct exercises with shorter forms of writing, like *translating sentences* using the excerpted expression structures or *writing short paragraphs* referring, for example, only to the results or aims of an abstract. A useful exercise could be *paraphrasing* the chosen phrases from the analyzed abstracts into less scientific discourse. Another useful exercise which would help learners to develop their writing skills is writing an abstract of a genuine paper and comparing it with the original abstract.

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[4] *Writing an abstract – common mistakes*, uploaded by Zhenya Bakin, for example: https://www.youtube.com/watch?v=ynUiPhi8qEc (access: 21.12.2018).

5. CONCLUSION

The results of our study are consistent with the literature, and offer more evidence regarding the use of language in abstract writing. Our analysis provides examples of useful verbs and phrases that are often used in abstracts to convey different purposes. Moreover, we added some practical applications of the research results by suggesting a few guidelines for designing learning activities to be used in the ESP/LSP classroom. Although our results cannot be generalized, as the research corpus included only 40 abstracts of scientific articles, they can be considered reliable as they offer useful insights into the way abstracts of original research published in prestigious journals are actually written.

Other possible directions of scientific research on the topic can vary from making a comparative analysis of corpora in different languages, excerpting commonly used structures, or checking the frequency of specific terminology. An interesting possibility for further research on abstract writing would be to analyze the particularities of the specific terminology (higher specialization) used in abstracts, conduct multilateral and interdisciplinary analysis of abstracts to observe the cultural and discipline-specific influences on the text, and finally use the collected material to design a course on developing writing skills.

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