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CHALLENGES FOR NON-ENGLISH SPEAKERS: INTER- AND INTRALINGUAL FACTORS SHAPING THE WRITING OF UKRAINIAN AUTHORS IN BIOLOGICAL SCIENCES

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Background. Nowadays, almost all indexed journals expect submissions in English, which is a great challenge for exophonic authors. Code-switching context, where cross-language effects, especially native language interference, are well distinct, is critical for approaching the dilemma. Navigating the complicated issues of language-related challenges will be impossible without referring to three crucial levels of written production: lexical, syntactic, and textual. In our investigation, we address the nature of potential errors and their inter- and intralingual origins. In particular, we identify and interpret the deviations from Standard English in scholarly research writing of Ukrainian authors in the field of life sciences, exemplify and classify errors into categories based on the type of language misuse.

Materials and Methods. Language material for the study comprised 50 manuscripts submitted by authors from Ukraine to the journal “Studia Biologica”. This research is a mixed-method study encompassing descriptive qualitative and descriptive quantitative methods. Content analysis was employed as the data gathering technique. The analysis of texts was focused on tracing deviations from consistent principles and rules of Standard English and linguistic features of English research discourse and encompassed such steps as highlighting the error, cross-checking and stating the deviation, listing and classifying the errors, and tracing a possible connection of the error to authors’ first language interference.

Results. The study identified language areas where Ukrainian authors fail to effectively communicate their ideas to the global academic community. At *the textual level*, the problem areas encompass defective paragraph structure and excessive verbosity.



At the *syntactic level*, the most critical deviations from the language and stylistic norm comprised misuses of word order and clauses, wordy and confusing sentences with multiple issues that hinder the readability of text. The most widespread *grammatical mistakes* include missing predicates, faulty subject-verb agreement, incorrect forms of the verb, and inappropriate use of articles, pronouns, demonstratives and quantifiers. At the *lexical level*, the prevalent errors relate to various types of loan translation, but also include improper word choices and poor vocabulary. *Orthographic mistakes*, though in minority, refer to the spelling of toponyms, capitalisation, switching from American to British orthographic standards and other random spelling errors.

Conclusions. An insight into the nature of the analysed deviations suggests the presence of both intra- and interlingual factors that cause mistakes in papers submitted for publication in the field of life sciences. The error analysis can be beneficial in the educational process for both educators and practitioners. Proper understanding of the functional mechanism of the mistakes might increase the awareness of the potential pitfalls and consequently help avoid them. The classification of errors can be adopted in the educational process and contribute to the development of error pedagogy.

Keywords: Standard English, academic writing, scientific style, language interference, inter- and intralingual factors, life, environmental and agricultural sciences

INTRODUCTION

Telling a great story about research in a foreign language and making it appealing to a broad readership demands building up a viable written product through the prism of both code-switching context and writing accuracy. English, as the language of modern science and technology, seems to be carving out an important place in the language market (Ndiaye, 2014), and writing for academic journals is considered an intellectual activity, which requires adhering to specific strict criteria and standards for content and presentation quality to gain the desirable status “accepted for publication” (Asif *et al.*, 2020). It makes cross-linguistic communication in the academic context a more and more competitive and challenging field.

When we deal with scholarly research writing, ownership of English as any other target language (L2) is becoming a challenge for exophonic authors. The phenomenon of language ownership means not only mastering a foreign language at the level of linguistic rules, but the appropriateness that the language acquires through undergoing meticulous shaping to end up in the version acceptable by the large majority of editorial boards. Vested by specific standards for organizing and presenting ideas, “research” English is to remain as neutral as possible so as not to look very much specific to one culture but, at the same time, be consistent with academic writing traditions (Bailey, 2015; Glasman-Deal, 2009; Sowton, 2012; Yakhontova, 2003, 2021; Zhao, 2017).

Mastering a foreign language in the context of developing relevant cognitive skills in building insightful case studies or comprehensive, concise and informative investigations is a very challenging task for non-native speakers. Cross-linguistic issues usually caused by language alternation (Artetxe *et al.*, 2020; Bogulski *et al.*, 2019; Declerck *et al.*, 2016; Gass & Selinker, 2008; Johns & Steuck, 2021; Sadeghi & Alinasab, 2020; Wang, 2003; Woodall, 2002) have always encompassed many areas of language

misuse. The underlying factors of the first language (L1) interference (Bhela, 1999; Blake, 2021; Danzak, 2011; Kazazoğlu, 2020; Labicane & Oliva, 2022; Marita & Jufrizal, 2021; Nawal, 2018; von Grebmer Zu Wolfsthurn *et al.*, 2021; Yuniswati, 2017) result in a variety of linguistic inconsistencies. It seems interesting and worthy to reveal these language-related challenges, understand their nature as well as origin of possible errors in academic texts. In particular, there is a well-grounded demand for a glean insight into the deviations from Standard English in the texts written by Ukrainian authors who in the recent decade have demonstrated a growing enthusiasm in publishing their research findings in English.

Literature review. English has traditionally been and continuously is employed for developing intellectual scope in many areas of investigation. Hence, studies in navigating complicated issues of writing are recognized as a crucial component of language performance by many scholars (Bazerman, 2010; McNamara *et al.*, 2010; Phuket & Othman, 2015). English writing in both educational and professional settings is increasingly important as much as it is a complex process that demands cognitive analysis and linguistic synthesis (Declerck *et al.*, 2016; Nawal, 2018). Therefore, it is essential to investigate the critical domains of academic writing within the code-switching context and L1 interference, since both continue to exhibit numerous factors of linguistic incompetence in the written products of exophonic authors.

Extensive research has already been done in the area of academic writing with its specific conventions in terms of content, structure and style. In particular, S. Bailey (2015), J. M. Swales & C. B. Feak (2012), A. Wallwork (2011), A. Wirantaka (2016), and T. Yakhontova (2009, 2020, 2021) advocate for a formal tone and style, clear purpose, accuracy, absence of conversational features, use of an appropriate academic vocabulary, evidence-based arguments, logical reasoning, and rational conclusions as critical features which shape research writing as academic and required for scholarly publications. Similarly, a search of relevant literature from within the academic context yields results (O'Leary, 2022; Swales & Feak, 2012; Zhao, 2017) related to generally agreed ideas that research discourse is embedded with objective argument, logical structure, precision, consistency, and reliable sources.

Apart from the need to convey information in an impartial but convincing and fact-based way, it is crucial to be equipped with knowledge of necessary linguistic and stylistic tools to build an academic text. A critical factor of written academic discourse is a *stylistic (literary) norm*. According to D. Crystal (2018), a *norm* is a standard practice in speech and writing. J. Zlatev & J. Blomberg (2019) claim that norm is the general standard of literary language. The broader notion implies consistent principles and established rules (see Thomson & Martinet, 2015; Swan, 2005) and habits of language usage circulating in a given society and at a certain period. On the other hand, it is next to impossible to work out universal language norms because each functional style has its regularities and implies pre-established and conventionally excepted parameters. Thus, the term "norm" has a broad meaning and can be differentiated as a language norm, literary norm, stylistic norm, and a norm of a particular style. In this study we consider the norm as an example of scholarly writing, and thus regard the notion through literary and stylistic aspects, making the norm variant fit into its obligatory boundaries that shape structural, stylistic and discourse aspects of the text. Consequently, neglect of the accepted norms can be regarded as an attempt to violate normative standards and

thus leave communication outside its proper function. These problems connect with broader issues of potential *deviations* caused by insufficient command of linguistic tools and contextual elements for building the written product and, additionally, L1 *interference*, which commonly results in *errors* made by non-English speakers.

Over the years, a considerable deal of research has been done on language-related challenges and their possible origins. F. M. Branzi *et al.* (2014), and M. S. Mansoor & Y. M. Salman (2020) explain *deviation* in linguistic terms as a notion that breaks the common norms or standards of language. J. N. Blom *et al.* (2017) claim that *deviations* are referred to as a result of sloppiness rather than a lack of proficiency. C. A. Bogulski *et al.* (2019) states that *deviation* in terms of interference directly relates to the phenomena of interactions of language systems under the conditions of bilingualism and can emerge either in contact with other languages or in the individual mastering of a non-native language under the influence of the native one. Synthesizing different meanings of the term, we argue that *deviations* naturally integrate into linguistic environment through lexical, semantic, syntactic, phonological, morphological, graphological, dialectal, and even historical manifestations, and have a language-switching nature. Experts, such as F. M. Branzi *et al.* (2014), A. Mickan *et al.* (2020), and S. von Grebmer Zu Wolfsthurn *et al.* (2021), claim that writing quality can also be affected by task difficulty, vocabulary matters, and direct translation primarily dependent on metalinguistic or ideational behaviour related to the writers' L1 expertise but not their L2 proficiency. R. M. Manchón *et al.* (2000) noted that more frequent addressing to L1 is associated with cognitively demanding tasks. The phenomenon of language-switching according to D. S. Qi (1998) has its functions in target language writing such as initiating an idea, developing a thought, verifying the meaning of the word, and compensating for working memory limitations due to the complexity of the task. B. R. Woodall (2002) defined the causal factors immensely contributing to language-switching: task difficulty, target language proficiency, and the genetic relationship between two languages. S. A. Crossley (2020) also came to similar findings stating that target language writing may differ in terms of linguistic and orthographic distances to the native language. Especially it is traced wherein the transfer of writing strategies influences linguistic features related to text cohesion, as well as argument structure and style. Considering all these, we assume that despite one's best efforts, writing in a foreign language implies turning to the native language for assurance and guidance as it is profoundly embedded in the mind since one learned how to speak.

No language is identically the same and, as a result, language system differences can interfere with one another in the outcomes (Marita & Jufrizal, 2021). Many researchers (Danzak 2011; Kazazoğlu, 2020; von Grebmer Zu Wolfsthurn *et al.*, 2021; and Yuniswati, 2017) believe that it is almost inevitable to avoid an inadvertent interference of the native language without traceable inconsistencies in error-prone areas and regard the *interference* as "cross-linguistics and language transfer" that negatively influences the target language structures and is the main underlying reason for errors. Accordingly, the interference is caused mainly by the similarities and differences in the structures of two languages, background knowledge and proficiency of the speaker, and mismatching language structures of both languages. In other words, *interference* is provoked by previous habits, coming from the native language or the lack of knowledge and understanding of necessary linguistic features. The researchers reflect on

the deliberate use of rules and forms of native language structures by writers while they address similarities between concepts in both languages. These opinions open up new paths for *language transfer* conceptualization in positive and negative aspects. That is, understanding similarities between native and foreign languages can lead to *positive transfer*, which will facilitate the target language mastery. On the other hand, when the items, structures or rules in both languages are different, *negative transfer* occurs. The latter apparently makes L2 users commit errors.

The question of negative interference inevitably arises when comparing languages (in this case, English and Ukrainian) that are not related and do not have many similar categories and structural entities. More than a few linguistic studies (Bhela, 1999; Danzak, 2011; Marita & Jufrizal, 2021; Ndiaye, 2014; Phuket & Othman, 2015; Yuniswati, 2017) illustrate a variety of error cases that stem from cross-linguistic interference. Almost all of the above researchers believe that phonological, morphological, orthographic, lexical, syntactic, and stylistic areas of language are potentially vulnerable to interference and thus bear the effects of native language influence that may launch errors of different language origins and levels.

According to the interest we pursue in our survey, we seek to characterize the underlying factors of native (Ukrainian) and target (English) languages interrelation through meticulous insights into the nature and sources of errors that might come forth in the process of written communication by Ukrainian authors. Our attempt at error identification limits its claims to English research writing and will embrace only crucial levels where cross-language effects are well distinct. It makes sense to navigate the complicated issues of error analysis through the three levels of written production: *lexical* (vocabulary-based issues), *syntactic* (grammar and sentence structural entities), and *textual* (style formatting, paragraph building, examining textual features and cohesion).

Regardless of what causes the inconsistencies or deviations from Standard English, it is necessary to understand what exactly lies within the definition of an *error* as a deviation from the norm of the target language. The researchers (Abdullah *et al.*, 2021 and Ndiaye, 2014) differentiate the terms “error” and “mistake” by referring the “error” to “systematic” and the “mistake” to “non-systematic”. They define them by considering an “error” as a deviation in competence whereas a “mistake” is a deviation in performance. Since the scope of this study did not embrace the goal of verifying the true nature of deviations – whether systematic or non-systematic ones, both terms “error” and “mistake” will be referred to as synonyms thenceforth.

The perspective of error analysis in the context of native language (L1) interference is influentially based upon the lavish research findings (Blake, 2021; Danzak, 2011; Gass & Selinker, 2008; Labicane & Oliva, 2022; Marita & Jufrizal, 2021; Ndiaye, 2014; Phuket & Othman, 2015; Yuniswati, 2017). The scholars agree that typically errors derive from two sources: *interlingual* and *intralingual*. The main types of errors and factors for their reasons found in the aforementioned research reveal different results and thus merit discussion.

L. Ndiaye (2014) and P. R. N. Phuket and N. B. Othman (2015) assert that interlingual aspect (or native language interference) was found to be the dominant source of errors, recognized as the learners’ application of the native language elements in their spoken or written performances of the target language. Intralingual errors normally originate from incomplete knowledge of certain L2 areas (rules application, false analogy,

overgeneralization) and, therefore, are irrelevant to the native language interference but brought about by the nature of the L2 itself.

T. Marita and J. Jufrizal (2021) admit that factors for writing errors stem from using bilingual dictionaries, direct translation methods, or having poor language skills, that is, lack of syntactic knowledge. The four most common mistakes found in their research were determinants, verb and subject agreement, prepositions, and tenses, respectively. Limited grammatical and lexical competence caused learners' reliance on L1 in L2 writing.

G. E. M. Labicane and R. M. M. Oliva (2022) in their research on student writing elicit four types of errors: selection, addition, misordering, and omission, claiming that punctuation use, selection of correct verbs and prepositions, capitalization, subject-verb agreement, and selection of appropriate pronouns were the most challenging areas. M. Yuniswati (2017) provides error classification that includes 17 types of errors (noun form, concord, gerund, article, spelling, sentence without verb, word class, preposition, tense, passive form, conjunction, comparisons, aspect, if clause, embedded question, and cross-reference) and concludes that deviations found in terms of grammar and vocabulary are the most common. The researcher also provided some explanation on why the errors can be considered to result from L1 interference.

Finally, R. Danzak (2011) confirms previous studies on the issues of bilingual writing errors. The researcher points to interactive relationships among the lexical, syntactic, and discourse levels of writing, as well as potential cross-linguistic relationships between texts written in both languages. These outcomes support a general interactive processing language theory that recognizes bidirectional interfaces among areas of language (e.g., semantics, syntax, and discourse), cognitive-linguistic domains (attention and memory), and, for bilingual individuals, L1 and L2 (Danzak, 2011, p. 502).

Research of relevant literature within the context of the Ukrainian language interference and errors in the academic writing of Ukrainian authors yields only a few results, all of which come to a series of articles by T. Yakhontova (2020, 2021), where the researcher exemplifies mistakes committed by Ukrainian and other Slavic authors in their scientific publications. The attention is specifically drawn to paragraph-building issues. The cases of frequent occurrence are the lack of coherence, poor evidence-based supporting ideas, the combination of several ideas in one paragraph, deficiencies in the overall structure of a paragraph, scarce use of transition devices, which results in logical discrepancies, one-sentence or often unreasonably long paragraphs, and inaccurate citation.

Obviously, there is a need for a better understanding of the challenges faced by Ukrainian authors in the context of native (Ukrainian) language interference and issue-based language deviations in their scholarly writing. Thus, answers to the above questions could shed more light on these complex, important issues.

This study pursues the goal to detect and interpret the deviations from Standard English in the manuscripts of research papers in the fields of life, environmental, agricultural and medical sciences submitted for publication to a scholarly journal by non-English speaking writers. In particular, we identified inappropriate language uses, classified the errors into categories based on the type of their origin, and exemplified the mistakes related to grammar, vocabulary, phrases and collocations, spelling, punctuation, sentence structure, and style. Additionally, an attempt has been made to trace any possible connections of these misuses to authors' L1 interference.

MATERIALS AND METHODS

Language material for the study was selected from submissions to the journal "Studia Biologica" over a period of 2021–2023; their total number comprising 50. The texts used for analysis represent manuscripts submitted by authors from Ukraine whose first language is Ukrainian (occasionally Russian) between the peer reviewing and language editing stages. Eventually, the majority of language misuses discussed in this paper had been eliminated by the journal language editor prior to publication and thus did not appear in the final published versions of the articles.

This research is a mixed-method study encompassing a descriptive qualitative method and a descriptive quantitative method. The qualitative approach focuses on exploring and investigating the quality of a certain research subject while the quantitative deals with numerical data (Dawson, 2009).

Content analysis as part of the qualitative method was the data gathering technique. This technique enables researchers to investigate, highlight, examine, take note and analyse what is written, stated or prescribed in the document, content or the chosen sample (Dawson, 2009). The analysis of the manuscripts was focused on tracing deviations from consistent principles and rules of Standard English (see Thomson & Martinet, 2015; Swan, 2005), and linguistic features of English research discourse (Swales & Feak, 2012; Yakhontova, 2003, 2021). The process encompassed several steps: highlighting the error, cross-checking and stating its deviation from Standard English, listing and classifying the errors to be further described in the research results and discussion section, and tracing a possible connection of the error to authors' L1 interference. Finally, after the analysis of the data, the findings were presented using a descriptive analysis method (Dawson, 2009). Applying the method of quantitative analysis, we were able to trace the errors that prevail in the manuscripts under study and, in this way, to understand the origin of writing problems non-English speakers have. The study has been carried out on such aspects of writing assessment as paragraph and sentence structure, correspondence to grammar rules, proper use of vocabulary and phrases, punctuation, and spelling.

RESULTS AND DISCUSSION

Qualitative analysis. Analysis of the texts under study revealed several types of deviations from Standard English as well as a few cases of misuses of the English academic style. A deeper insight into the nature of these deviations suggests the presence of both intra- and interlingual reasons for errors including L1 interference, various examples of which are discussed below.

Structure, formatting and style. At the level of text composition, writing in the sciences is regulated by a set of clear, straightforward and fairly easy-to-follow guidelines. In the vast majority of the studied manuscripts, no violations of the formatting style (APA) were detected, presumably due to the fact that the texts were analysed at the post-reviewing stage. Usually, any improper formatting is corrected before the manuscript reaches the language editing stage. The same is the case regarding the paper structure. A manuscript would not be accepted by the Journal's Editorial office if the structural elements of the paper were missing or otherwise misrepresented.

However, issues were revealed at the level of paragraph organization. Experts in English academic writing emphasise that a paragraph is a group of sentences that

communicate and elaborate a single central idea (Bailey, 2015; Yakhontova, 2021). Nevertheless, we encountered a number of one-sentence paragraphs as well as abnormally long and wordy paragraphs that comprised fifteen or more sentences and were marked by poor cohesion and rather vague logical connections between the numerous ideas crammed into them. Improper paragraph organization in the texts produced by Ukrainian science writers can stem from the inadequate level of academic writing education in both L1 and L2.

In addition, stylistic deviations become exposed through excessive verbosity or tautology. According to N. Mykytenko, M. Kozolup, and N. Rozhak (2021), science writing is marked by precision and clarity; unnecessary verbosity is not welcomed there. Our study revealed that at times Ukrainian authors tend to overuse expressions which contribute no important information to the text, or repeat the same idea in different words, for instance: “*additionally, it is well known about...*”, “*as a result of our research, we found that...*”, “*there is also an article by Pacheco (2019) in which the author mentioned...*”, “*based on the results we received during our experiments*”.

Besides, in many cases writers prefer less formal vocabulary to academic one, for example authors often use “*so*” instead of “*thus*”, “*but*” for “*however*”, “*although*”, “*that is why*” instead of “*therefore*”, “*for this reason*”, “*also*” for “*in addition*”, “*moreover*”, etc. This is indicative of a rather limited richness and scope of some authors’ vocabulary. Moreover, we noticed that the core vocabulary of some writers was restricted to the simplest basic words and phrases, many of which could have been substituted with more pertinent academic synonyms: “*We do not think [assume, believe, suppose] that...*”, “*an important [significant, essential, vital] contribution*”, “*we used glycerol to give [impart, provide] the films elasticity*”, “*The analysis of each sample was made [performed, conducted] in two replicates*”. The above examples may imply that authors do not always make sufficient effort to elaborate their texts in the truly academic style.

Sentence structure. It can be asserted that the most critical deviations from the language and stylistic norm occur at the syntactic level comprising various cases of misuses of word order, clauses, or transition elements that establish inter- and intra-sentential connections. Among the most frequent word order violations found in the studied material were errors resulting from improper use of impersonal passive constructions or other misuses of the passive voice, such as “*Under conditions of DM, it is observed energy depletion...*”, “*...there was investigated the influence of NCP on the activity of enzymes...*”, “*...and to the suspension was added 0.1 ml of sterile water...*”, “*...to animals for 14 days was injected intramuscularly agmatine or administrated orally red wine concentrate*”. The last two examples are particularly indicative of L1 interference, compare Ukrainian: “*до суспензії було додано 0.1 мл. дистильованої води*”, “*... тваринам впродовж 14 днів вводився агматин...*”

We observed multiple deviations from the norm in various types of clauses, in many of which L1 interference can be inferred, for example, clauses of purpose: “*Each locality was selected within radius of 100 m in order to initial conditions were similar* (щоб вихідні умови були схожими)”, or contrast: “*if for other regions, researchers note the nesting of woodpigeon in cities..., then in our region, Woodpigeons first nested in villages* (якщо в інших регіонах ..., тоді в нашому...)”. Interestingly, among the mistakes detected in the texts under study were ones transferred from L1, such as the following example of a misplaced modifier that stems from the incorrect use of a participial phrase: “*Analyzing*

the reliable cases of nesting of the species registered by us in different biotopes (n = 390), the share of identified nests in the settlements of the Verkhnie Pobuzhzhia was 50 %.... A confusing sentence like this can be fairly common for Ukrainian speakers.

Quite often, issues with sentence structure are tightly linked with improper uses of transitional elements or linking words. For instance, in the following sentence *“In rural settlements, the Woodpigeon average density during the nesting period – 1.7 pairs/km², although in some villages it can reach 11 pairs/km²”* the author could not differentiate between *“although”* and *“whereas”*, both of which express contrast. Similarly, another author confused the meanings of *“instead of”* and *“unlike”*: *“Instead of our previous faunistic investigations of soil invertebrates..., the synecological research of ants aims...”*. The following sentence illustrates an unsuccessful attempt to give an example: *“One of them is that, an altered flow of lipids in the liver, ..., can be accompanied by...”*. In the next case, the authors probably misinterpreted the meaning of *“therefore”* as an exact equivalent of Ukrainian *“маким чином”*: *“Therefore, we found that the red wine concentrate, ..., possessed a stronger effect on the activity of constitutive and inducible isoforms of NO synthase”*. Moreover, in several manuscripts, the word *“therefore”* was used at the beginning of a paragraph, which confirms the aforementioned.

In addition, we encountered a number of inappropriate uses of relative clauses. These included erroneous uses of defining and non-defining relative clauses (see example below), or incorrect choices of relative conjunctions: *“The yellow fruits of cornelian cherry ... contain a significant amount of substances..., which properties, biological effects and mechanism of action are not fully understood”*. Erroneous uses of clauses are often accompanied by mistakes in punctuation. In the studied material, the most common punctuation errors were connected with excessive use of commas, e.g. with defining relative clauses: *“The majority of ant species, which build their nests with a visible substrate elevation (ant hill), belong to the functional group of „ecosystem engineers”*”, with participial phrases: *“CHOLIndex, calculated on the basis of the difference between LDL-C and HDL-C, in control, under DM...”*, and other types of clauses. We can conclude with confidence that such mistakes originate from an interlingual source since clauses of most types are usually separated with commas in the Ukrainian language irrespective of their position in a sentence.

Finally, the texts under study contained numerous instances of complex problems at the syntactic level deriving from multiple causes and/or their combination. The cases in focus are usually long and wordy sentences with an accumulation of clauses, faulty subject-verb agreement, misplaced modifiers, incorrect word choices, or other issues that hinder their readability or coherence. We can describe such sentences as *“awkward”* ones that lack clarity and effectiveness in communication. Here are some of the most representative examples: *“Increasing of energy supply in cells and decreasing blood glucose concentration after improving glucose uptake and inhibition of lipolysis by PBMT, as we expect, lead to a decrease in the production of ketones, which is in compound with inhibition of lactate dehydrogenase (LDH) activity and with a corresponding reduction of lactate concentration in blood plasma, which is also an effect of PBMT, and may cause an increase in blood pH and reduce diabetic ketoacidosis”*, *“Currently there are no satisfactory means for the pharmacological correction of plasma membrane calcium ATPase function and there is an extremely actual of elaboration, synthesis, and study of substances with the targeted impact on plasma membrane calcium ATPase”*,

"Our previous works have been shown a pronounced cytotoxic effect of thiazole derivatives in combination with polymeric carriers on tumor, while were not cytotoxic against pseudo-normal cells in vitro". Apparently, the confusing meaning and poor readability of such sentences is related to their excessive complexity – a feature that used to be characteristic of the former "soviet" and "post-soviet" academic writing style.

Grammar. The great variety of grammatical mistakes engendered in authors' insufficient mastery of the target language, lack of accuracy, or transfer of grammatical patterns from their first language can cause disruption at the sentence level (e.g.: faulty subject-verb agreement, missing predicate, etc.) or manifest themselves locally (e.g.: missing article, incorrect quantifier, etc.). Our study revealed the presence of various types of grammatical mistakes, some of which can be associated with L1 interference. This section gives an account of the most prevalent ones and seeks for their possible links with L1 impacts.

Errors that can possibly entail confusion or poor readability of a sentence are usually connected with inappropriate use of verbs, especially predicates. Regarding this, the most widespread mistakes of Ukrainian authors include missing predicates, especially linking verbs such as **be**, for example: "In rural settlements, the Woodpigeon average density during the nesting period – 1.7 pairs/km²", "The most noticeable morphological changes in the soil profile during pine succession [are] related to the degradation of the sod layer", "Objective: to find out the density during the nesting period, the peculiarities of nesting and behavior of the species in the settlements of the Verkhnie Pobuzhzhia". Presumably, the first two examples illustrate a transfer of Ukrainian sentence patterns wherein linking verbs in compound nominal predicates can be omitted (...густота заселення припуття в період гніздування – 1,7 пар/км²), or predicates can be expressed by participles alone (...морфологічні зміни в ґрунтовому профілі під час сукцесії сосни пов'язані з деградацією дернового шару).

Other misuses of verbs and their forms revealed in the texts under study included faulty subject-verb agreement (usually a singular noun/pronoun subject combined with a plural verb or vice versa), incorrect tense form of the verb, or inappropriate use of the passive voice. Below are some examples of such mistakes: "Investigations in the field of anticancer vaccines develops very intensively", "One of the main hurdles for using thiazole derivatives are their poor solubility in water", "...by 2017 its nests have already been registered in parks and squares of the city", "537 million adults (20–79 years) are living with diabetes in 2021", "Further fructose consumption didn't accompany by a significant increase in the bodyweight of animals". Apparently, the above cases hardly imply L1 interference, but rather can be attributed to inadequate L2 command of the writers, lack of accuracy or attention at the editing stage.

In addition, we spotted a number of errors connected with the use of the infinitive/gerund constructions as well as modal verbs. Most frequently, authors confuse infinitives and -ing forms, for instance: "Nadia-3 bacteria are capable to utilize Fe(III), Cr(VI)...", "The use of olive oil ... is promising because it allows to obtain the following diagnostic markers of the pathological condition...". However, we spotted cases of improper use of the infinitive that can potentially change the meaning of a sentence or make it unclear, for example: "To solve this problem, the literature describes many ways...". Regarding the use of modal verbs, Ukrainian authors occasionally make wrong choices of such verbs due to insufficient knowledge of their meaning and use. Thus, in the following

case “*an altered flow of lipids in the liver ... may be accompanied by a reduced production of apo A protein...*” the authors describe a possibility (not a probability), however they choose the modal verb “*may*” instead of “*can*”. Similarly, in the following example “*PEG-containing polymeric carriers have to be considered and further investigated*” the authors confused “*have to*” with “*need*” or “*should*”. Shades of meanings conveyed by English modal verbs can sometimes be hardly distinguishable to non-native speakers, which naturally causes their incorrect use.

The most common mistakes detected with regard to nouns, pronouns and determiners involved misuses of the singular and plural forms. We could observe multiple mismatches between pronouns or demonstratives and their referent nouns: “*no cytotoxicity of this compounds was detected*”, “*in another cases*”, “*two others experimental groups*”. Occasionally, errors were found in the use of plural forms of terms originating from other languages, e.g.: “*the species of the Salvinia and Azolla genus*”. Notably, Ukrainian authors quite often misuse words such as “*both*”, “*either*”, or “*neither*”: “*samples ... which had not previously been dyed with both [either] natural and [or] synthetic dyes...*”, “*...both [neither] of them haven't [have] been used for the last ten years...*”. Quantifiers also pose a challenge to exophonic writers – errors connected with them are rather common: “*the amount of tumor cells*”, “*the quantity of people with this pathology*”. Apparently, most of the above mistakes can be associated with authors' insufficient mastery of English grammar.

A variety of language issues in the texts under study were related to the use of incorrect forms of words, the most frequent of them being misuses of participle I and participle II: “*...the specimens ...were fed 500 mg of Tropical SuperVit Basic contained [containing] beta-1.3/1.6-glucan*”, “*the maximum accumulation of MP ... was also detected at days 8–10 comparing [compared] to the start of exposure*”. Some cases included improper uses of adverbs or adjectives: “*The aim of this study was to evaluate the potentially ability of ETS to prevent...*”, “*We observed a statistically significantly activation of AST*”, “*a decrease in alive roots biomass*”; confusion about using noun, verb and gerund forms: “*long-term observing*”, “*for a prolong time*”, “*drugs used in therapy of rheumatoid arthritis can effect male fertility*”, and various other errors.

However, incorrect uses of articles were the most numerous among grammatical mistakes. Presumably, this is due to the fact that the category of the article does not exist in the Ukrainian language, hence Ukrainian authors often ignore it. We often observed two extreme cases of either a nearly total neglect or a redundant ubiquity of articles. The cases of article misuses are diverse; below are some examples: no articles with singular countable nouns – “*[a] significant feature*”, “*[a] transplanted model tumor*”, indefinite articles with plural or uncountable nouns – “*a whole NK/Ly cells*”, “*a grape polyphenols*”, no articles with adjectives in the superlative form “*this river is [the] most contaminated Dniester tributary*”, incorrect use of articles with proper names – “*[the] Chornohora Mountain massif*”, “*[the] Uzh River*”, and a wide range of other misuses – “*the aim of [the] present study...*”, “*[an] area undergoing [-] process of natural afforestation*”, “*complexes of the thiazole derivatives*”, etc. It appears that the article is one of the most confusing English grammatical categories for Ukrainian science writers.

Overall, we can conclude that, with regard to grammar, deviations often result from a lack of expertise in English or insufficient accuracy, i.e. intralingual factors. Nevertheless, we can occasionally find examples of negative transfer from the writers' first language.

For instance, in the following expression “30 % of *infertiles men*” the authors used the attribute in the plural form according to the corresponding Ukrainian pattern. In the next sentence “*In our case L. niger belongs to that group, what is supported by the recent research*” the choice of the conjunction reveals the influence of the Ukrainian language – “...що підтверджується нещодавніми дослідженнями”. Thus, the instances of L1 interference, however less frequent than in other areas of language use, are still traceable in grammar.

Lexical level. The province of lexis provides the fertile soil for exophonic writers wherein the first language interference thrives. Our findings reveal numerous cases of inappropriate words choices, building faulty collocations and incorrect phrases that emerged as a result of the authors’ turning to L1 semantic or structural patterns. In this section, we will illustrate diverse instances of the English language misuse within the realm of vocabulary and phraseology.

Numerous misuses of words and phrases in the studied texts can be associated with the phenomenon of *loan translation*, or *calque*, generally defined as “ad hoc word-for-word or morpheme-per-morpheme translations from one language into another” (Aikhenvald, 2006, p. 24). Although loan translation is a normal process of language development resulting from language contact, the cases in focus are rather occasionalisms produced by authors who for various reasons resort to copying L1 patterns. L. Meriläinen *et al.* (2016) distinguish between 2 types of such copying: *semantic copying* whereby semantic features of a lexical unit are transferred from L1 and *combinational copying* that implies creating a replica of a phrasal structure or using a mixture of morphological and syntactic features of both languages. Additionally, some lexical deviations encountered in the course of our study were embedded in the phenomenon of *code-switching* herein referred to as unconscious or unintentional use of L1 lexemes in the target language in contrast to *language switching* which associates with “the controlled and willed switching to another language” (Treffers-Daller, 2009, p. 58). Below are presented examples of lexical misuses grounded in various types of loan translation or code-switching.

Semantic calques were frequently noticed at the level of separate words. In most cases authors tried to convey the original meaning of a Ukrainian lexeme by using its closest English equivalent from the dictionary without the knowledge about combinability and patterns of use of the lexeme in English. One of the most frequently misused words in the studied manuscripts was “*to establish*” with its commonly known meaning “*встановлювати*” that was erroneously interpreted in some contexts: “*among the established elements, sulfur has the largest share*”. We also recorded inappropriate uses of the noun “*sign*” (“*знак*”) or its verb form “*to sign*”: “*the development of all signs of human metabolic syndrome*”, “*levels of significance of differences were signed with asterisks*”. The following examples illustrate more cases of semantic copying: “*based on the received data* (одержані дані)”, “*the research on the spatial distribution of ant nests witnesses* (засвідчує) the need for...”, “*staying on a ... diet* (перебування на дієті)”. Although in many cases the incorrectly used lexemes do not prevent the reader from understanding, a more thorough selection of a suitable synonym would definitely benefit the text. Other registered instances of improper word choices due to insufficient knowledge of their semantic potential include confusing uses of “*different*” vs “*various*”: “*many studies, actively conducted globally by different laboratories*”, “*occupy*” vs “*constitute*”.

“Microthermic group includes a small number of species and occupies only 30 % of their number”, “contain” vs “include”: “[the] group contains very common species”.

Undoubtedly, combinational copying was among the prevalent instances of loan translation in the texts under study. We detected manifold examples that reveal authors' attempts to create English collocations or phrases relying on structural patterns of their native language. By doing so, they usually introduce elements of their first language phraseological units into English set phrases thus producing mixed collocations combining features of both L1 and L2.

The most common with regard to the above are phrases with prepositions. We found numerous cases of transfer of Ukrainian elements into English prepositional phrases, for example: *“biomass accumulation decreased in 4 times (в 4 рази)”, “... increased the activity of lipid hydroperoxides in the lymphoma cells on 29–36 % (на 29–36 %)”, “in condition (в умовах) of diabetes”, “on this time (на цей час), it became clear that...”, “the concentration of ... changed in the limits (в межах) of 590–790 items L-1”, “the decision of the commission ... of the Institute of Animal Biology of NAAS from (від) 16.06.2020”. On the other hand, there were multiple misuses of prepositions that can be referred to the group of intralingual errors, not arising from L1 impacts: *“at open high-mountain areas”, “control rats that were treated with red wine concentrate ... during 14 days”, “at the 6th, 9th and 12th days after inoculation”, “at 3 days or more the percentage of mononuclear leukocytes significantly decreased”.**

Apart from prepositional phrases, the studied manuscripts contained diverse examples of collocations coined by means of verbatim translation of corresponding models from the Ukrainian language. For instance, our study revealed repeated use of the phrase *“against/on the background”* by several authors, which is not common for English research writing, but is a replica of the Ukrainian collocation *“на млі”*: *“The breakdown of proteins is accompanied by the depletion of the body's protein reserves against the background of increased formation of...”*. Below follow more examples of phrases produced via combinational copying that sound unnatural to English native speakers, partly due to excessive verbosity inherent in the Ukrainian academic writing conventions: *“because of the aforementioned aspects”, “under the conditions of a higher dose of Cr(VI)”, “the influence of the external environment”, “determination of glucose concentration was performed...”, “the material collection was realized by...”*.

Introduction of one's first language lexical units into the target language academic texts, otherwise referred to as code switching, is hardly possible in the studied material since Ukrainian and English are not closely related languages. However, academic vocabularies of both include numerous common international borrowings, some of which developed new semantic potential in the recipient language thus becoming different in meaning and/or use while preserving the original similar phonetic and orthographic features. We detected a few deviations in the use of such international lexemes in the English research discourse by Ukrainian authors, for example *“filter-fed organisms, like bivalve molluscs, ...can be perspective bioindicators for MP pollution”, “it is a perspective to use treatments...”*. Another variation of code switching is manifested in employing L1 orthographic patterns for international compound nouns which do not coincide with the English norm: *“medico-biological problem”*.

Orthography. The analysis of our research material exposed a few scarce cases of spelling misuses that can be conventionally divided into several groups: mistakes related

to adherence to a specific orthographic standard (British versus American), spelling of toponyms, inappropriate capitalization, and random spelling errors. Regarding the first group, it should be admitted that occasionally authors switch from British to American spelling standard, although the general preference is given to the American one.

The second group deserves special attention, since here influences of a third – Russian – language become apparent. Thus, we recorded some cases of erroneous spelling of Ukrainian cities' names, such as “Kiev”, or “Kharkov” in manuscripts submitted by authors who presumably use Russian as L1. Moreover, the use of certain Ukrainian geographical names in English remains controversial and disputable since, to date, there is no single reliable lexicographic source that presents the unique established standard for spelling Ukrainian toponyms. For this reason, we could observe multiple ways of spelling or even naming Ukrainian geographical regions, e.g.: “Polissia” and “Polissya”, “Podillia” and “Podillya”, “Verknie Pobuzhzhia” and “Upper Pobuzhzhia”. Apparently, this problem can only be resolved by creating a comprehensive list of Ukrainian toponyms that would set the standard for spelling of all the country's geographical names.

The detected capitalisation mistakes were often linked to spelling names of geographical objects. Thus, some authors did not capitalize such words as “river”, “mountains”, “plateau”, etc. collocated with the corresponding proper names, for example: “the Vorskla river”, “the Transcarpathian lowland”, etc. Apart from it, some authors mistakenly capitalized names of chemical substances or elements: “X-ray microanalysis of films revealed such elements as Sodium, Silicon, Sulfur, Potassium”. Other spelling mistakes comprised a wide range of diverse cases including commonly confused words such as “than” – “then”, “data” – “date”, some random errors like “multi-story buildings”, “mountain massive”, “do too [due to]”, etc. However, virtually no mistakes were recorded in relation to the spelling of specific technical terminology.

Quantitative analysis. The recorded deviations from Standard English as well as misuses of the English academic style were classified into categories and are presented in **Table**.

The quantitative results of this study show that *sentence structure* misuses constitute a third (29 %) of all linguistic deviations in the analyzed texts by Ukrainian authors. The most vulnerable aspects are word order and clauses, as well as wordy and confusing sentences with multiple issues, such as accumulation of clauses, misplaced modifiers, inadequate collocations, etc. These findings are confirmed by previous studies by T. Marita and J. Jufrizal (2021) and R. Danzak (2011), both illustrating a similar error-prone area where different sentence entities undergo the impact of cross-linguistic relationships and may often be influenced by a lack of syntactic knowledge.

Two other challenging parts of writing are related to *English grammar* and *appropriateness of vocabulary*, with the incidence of mistakes at 26 % and 25 %, respectively. Missing predicates, faulty subject-verb agreement, incorrect forms of the verb, and inappropriate use of articles, pronouns, demonstratives and quantifiers are among the most prevalent mistakes in grammar. The lexical level includes various types of loan translation, improper word choices, and poor vocabulary. Our results are partly consistent with those of J. Blake (2021), S. Kazazoğlu (2020), G. E. M. Labicane & R. M. M. Oliva (2022) and M. Yuniswati (2017), who reported that the most frequent cases identified were related to factual or grammatical accuracy, literal word trans-

lation, word choice, common misuse of tenses categories and aspects, noun forms, comparisons, if clauses, embedded questions, cross-reference, misordering, omission, and subject-verb agreement. Accordingly, we may observe that lexical errors may vary across countries. The explanation of these types of errors frequency lies within the insufficient mastery of L2 grammar and vocabulary rules, direct translation, lack of contextual knowledge, and, again, native language interference, found to be the dominant source of errors by L. Ndiaye (2014), P. R. N. Phuket & N. B. Othman (2015), and B. R. Woodall (2002). Apparently, Ukrainian (like many other exophonic) writers use their native language as guidance in thinking and arranging ideas, but non-correspondence between the structures of their native and English languages, as well as a lack of awareness of the peculiarities of English academic writing seem to be the main reasons for deviations and inconsistencies in authors' writing productions.

Classification of errors in the manuscripts of research papers under study

No	Category /Aspect	Frequency, %
1	Text structure and style	13
	• Formatting	2
	• Paragraph structure	4
	• Verbosity	7
2	Sentence structure	29
	• Word order	16
	• Clauses and linking words	9
	• Punctuation	4
3	Grammar	26
	• Missing predicate	3
	• Subject-verb agreement	4
	• Tense forms, infinitive, gerund, participle	7
	• Modal verbs	2
	• Nouns, pronouns, determiners, quantifiers	10
4	Lexis	25
	• Loan translation	17
	• Code switching	2
	• Poor vocabulary	6
5	Orthography	7
	• British vs American spelling	1
	• Spelling of toponyms	2
	• Capitalisation	1
	• Random spelling mistakes	3
6	Total	100

The excerpts from Table on *text structure and style* illustrate that these areas suffer fewer violations – 13% of the total number of errors. However, defective paragraph-writing skills (4 %) of Ukrainian authors as well as excessive verbosity (7 %) cause concern. These research findings are in line with A. Wirantaka (2016) and T. Yakhontova (2020, 2021), who attribute the origins of writing errors to the influence of national writing styles and the insufficient awareness of non-native writers of the main principles of paragraph development (historically elaborated in the field of English writing) and composition.

Spelling misuses are among the scarcest (7 %) due to the use of machine language check software. Mostly, these are random spelling errors (3 %). Spelling of toponyms is also a troublesome aspect mainly due to the ambiguity of the existing standards. Authors should also be more accurate in using the rules of capitalisation in English and, equally importantly, avoid switching from British to American orthographic standards.

CONCLUSIONS

This research has shown distinct language areas where Ukrainian authors may fail to communicate their scientific ideas. At the level of text structure and style, they include a defective paragraph structure and a limited scope of academic vocabulary, which mostly stem from the inadequate level of academic writing training in both L1 and L2, as well as excessive verbosity engendered by their native academic discourse traditions.

At the syntactic level, the most critical deviations from the language and stylistic norm comprise misuses of word order, clauses, linking words and transition elements. Long and wordy sentences with an accumulation of clauses, misplaced modifiers, incorrect word choices, etc. hinder the readability of manuscripts. These features often imply L1 interference as well as the impact of “post-soviet” academic writing style.

Grammatical mistakes demonstrate authors’ incomplete mastery of the target language, lack of accuracy, or transfer of grammatical patterns from L1. The most widespread mistakes of Ukrainian authors include missing predicates, especially linking verbs, faulty subject-verb agreement, incorrect tense forms of verbs (including the verbals), inappropriate use of the passive voice, nouns and pronouns, modal verbs, articles, demonstratives and quantifiers. Apparently, the above cases can be attributed to inadequate language command of the writers or insufficient accuracy, revealing the influence of intralingual factors in writing.

At the level of lexis, it has been traced that authors’ attempts to create English phrases relying on structural patterns of their native language result in mixed collocations which combine features of both L1 and L2 and sound unnatural to English native speakers. On the other hand, there are multiple misuses of prepositions that can be referred to the group of intralingual errors, not arising from L1 impact.

At the level of orthography, special attention is drawn to the spelling of toponyms since it undergoes the influence of a third language, Russian. Absence of unique standard for spelling Ukrainian toponyms makes the matter controversial and disputable.

All in all, the results of this study point to cross-linguistic relationships between L1 and L2 in the production of academic texts by exophonic authors. An insight into the nature of the analysed deviations suggests the presence of both intra- and interlingual origins of errors including L1 interference. Thus, interlingual factors leading to errors in the manuscripts of research papers submitted by Ukrainian scientists become apparent through the inappropriate use of bilingual dictionaries, direct translation methods, and transfer of national writing traditions, whereas intralingual reasons for mistakes are engendered in authors’ poor target language skills and lack of accuracy.

Finally, the research has demonstrated that error analysis can provide a valuable insight into the difficulties that Ukrainian authors might face in writing academic texts and be beneficial in the educational process for both educators and practitioners. Proper understanding of the functional mechanism of the mistakes might increase their awareness of the pitfalls and consequently help avoid them. The classification of the

errors can be adopted in the educational process and contribute to the development of error pedagogy.

Further research is needed to analyse other spheres where academic writing is applied. The studies can benefit not only the methodology of teaching English but also the domain of written discourse for applied needs.

COMPLIANCE WITH ETHICAL STANDARDS

Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

AUTHOR CONTRIBUTIONS

Conceptualization, [M.K.]; methodology, [H.K.]; validation, [-]; formal analysis, [-]; investigation, [M.K.; O.P.]; resources, [O.P.; M.K.]; data curation, [M.K.; H.K.; O.P.]; writing – original draft preparation, [M.K.; O.P.; H.K.]; writing – review and editing, [M.K.; O.P.; H.K.; O.A-S.]; visualization, [H.K.; M.K.; O.A-S.] supervision, [-]; project administration, [M.K.]; funding acquisition, [-].

All authors have read and agreed to the published version of the manuscript.

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МІЖМОВНІ ТА ВНУТРІШНЬОМОВНІ ЧИННИКИ ВПЛИВУ НА АНГЛОМОВНЕ НАУКОВЕ ПИСЬМО УКРАЇНСЬКИХ НАУКОВЦІВ У ГАЛУЗІ БІОЛОГІЧНИХ НАУК

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Вступ. У наші дні майже всі індексовані журнали очікують подань англійською мовою, що значно ускладнює проблеми академічного письма для авторів, чиєю рідною мовою не є англійська. Вирішенню цієї проблеми допоможе розуміння особливостей впливу однієї мовної системи на іншу (т. зв. коду-перемикання), що вказує на наявність перехресних інтерференцій, де особливо помітним є втручання рідної мови. Написання статей англійською мовою неможливе без звернення до трьох ключових рівнів письма: лексичного, синтаксичного і текстового. У нашому дослідженні звертаємось до розгляду природи потенційних помилок і їхнього міжмовного та внутрішньомовного походження. Зокрема, виявляємо й інтерпретуємо відхилення від стандартної англійської мови в наукових текстах українських авторів у галузі біологічних наук; наводимо приклади та класифікуємо помилки за відповідними мовними категоріями.

Матеріали та методи. Мовний матеріал для дослідження становлять 50 рукописів українських авторів, надісланих до журналу Біологічні Студії протягом 2021–2023 років. Це дослідження базується на поєднанні описового та кількісного методів. Технікою збору даних був контент-аналіз як частина описового методу. Аналіз рукописів було зосереджено на відстеженні відхилень від принципів і правил англійської мови та лінгвістичних особливостей англومовного академічного дискурсу. Аналіз охоплював такі етапи: виявлення помилок, перевірка та визначення відхилення, перелік і класифікація помилок, а також відстеження їхнього можливого зв'язку з інтерференцією рідної мови авторів.

Результати. Дослідження виявило мовні аспекти, де українським авторам не вдається ефективно донести свої наукові ідеї до світової академічної спільноти. На текстовому рівні проблемні місця переважно охоплюють неправильну структуру абзаців і надмірну багатослівність. На синтаксичному рівні найпомітніші відхилення від мовної та стилістичної норми включають неправильне вживання порядку слів у реченні, багатослівні та заплутані речення з численними різноплановими помилками, які заважають розумінню тексту. До найпоширеніших граматичних помилок належать брак присудків, неузгодженість підмета і присудка, неправильні форми дієслова, неправильне вживання артиклів, займенників і числівників. На лексичному рівні серед найтиповіших помилок виявлено різні види кальки, неправильний вибір слів і недостатній словниковий запас. Орфографічні помилки, хоча й у меншості, стосуються правил написання топонімів, великої літери, змішування американського та британського орфографічних стандартів, а також інших випадкових порушень правопису.

Висновки. Аналіз виявлених відхилень свідчить про вплив як внутрішньо-, так і міжмовних чинників на процес написання наукових текстів українськими

вченими-біологами. Аналіз помилок може допомогти у розумінні сутності труднощів, з якими українські автори стикаються під час написання академічних текстів, і бути корисним у навчальному процесі як для викладачів, так і для користувачів мови. Правильне розуміння механізмів виникнення помилок може сприяти усвідомленню складнощів, а отже, допомогти уникнути їх. Класифікація помилок може бути використана у навчальному процесі та зробити внесок у розвиток методики викладання англійської мови за академічним спрямуванням.

Ключові слова: стандартизована англійська мова, академічне письмо, науковий стиль, мовна інтерференція, міжмовні та внутрішньомовні чинники, біологічні, екологічні й аграрні науки