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The language planning policy in Ireland and Irish-language books: A hundred year perspective

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Abstract

An element of a nation's state policy is to support the use of a particular language or languages while prohibiting the use of other languages or their varieties in certain situations – usually formal. This is in the realm of language planning of which there are two basic types. Corpus planning involves establishing a standard language and promoting it among the language users. Status planning supports the use of a particular language through granting it the status of official language or auxiliary language in a given state or region, most often in the spheres of education, administration, services and media. This article discusses the Irish-language book in the context of language planning in Ireland. Particular observations are made from a perspective of a hundred years after most of Ireland seceded from the United Kingdom of Great Britain and Ireland to form an autonomous state (1922), which required the establishment of new national policies.

Keywords

Irish book, language planning, Irish language, language policy

Książka irlandzkojęzyczna w kontekście polityki planowania językowego w Irlandii z perspektywy stu lat

Abstrakt

Jednym z elementów polityki państwa jest wspieranie użycia określonego języka lub języków, a zarazem zakazywanie lub zniechęcanie do używania innych języków lub odmian językowych w pewnych, najczęściej oficjalnych, sytuacjach. Działania te mieszczą się w praktyce planowania językowego, w którym rozróżniamy dwa podstawowe typy. Planowanie korpusu polega na tworzeniu standardu języka oraz na rozpowszechnianiu go wśród użytkowników. Planowanie statusu wspiera używanie danego języka i najczęściej łączy się z nadaniem mu statusu języka urzędowego lub pomocniczego w państwie lub jego regionie, zazwyczaj w sferze edukacji, administracji, usług i środków przekazu. Artykuł omawia książkę irlandzkojęzyczną w kontekście planowania językowego w Irlandii. Sytuacja w Irlandii opisywana jest z perspektywy stu lat po oderwaniu się jej większej części od Zjednoczonego Królestwa Wielkiej Brytanii i Irlandii i ustanowieniu irlandzkiej państwowości w 1922 roku, co pociągnęło za sobą implementację polityki narodowej.

Słowa kluczowe

książka irlandzka, planowanie językowe, język irlandzki, polityka językowa

1. Introduction

On December 6th, 1921, in London, the Anglo-Irish Treaty (Articles of Agreement for a Treaty between Great Britain and Ireland) was signed by the representatives of the government of the United Kingdom of Great Britain and Ireland and a delegation of Dáil Éireann, the illegal nationalist assembly or parliament of Ireland which had been set up in Dublin in 1919. The Treaty concluded the Irish War of Independence and

provided for the foundation of the Irish Free State (1922–1937). It did not establish an independent state consisting of the whole Ireland, which Irish republicans had fought for, as six of the nine counties of Ulster, called Northern Ireland, remained under the British crown. However, it was not so much the partitioning of the island as the abandonment of the ideal of a republic and the oath of allegiance to the crown which members of the new parliament were obliged to take that generated a bitter debate in the Dáil (Ó hEithir 1997: 64) eventually leading to the Irish civil war between the two nationalist factions, ended in 1923 with the declaration of a ceasefire on behalf of the anti-treaty forces. From the very beginning, it was clear that the acceptance of dominion status was seen by a majority of Dáil Éireann as "the best compromise available, and as an alternate to the resumption of war with Britain"; however, it was also "conditioned by the belief, on the part of the Irish leaders who accepted it, that it was a stepping stone to independence" (Sweeney 1944: 183–184). Despite the oath of allegiance to the British crown, removed by the 1937 Constitution, which replaced the British monarch with the president (an tUachtarán) as head of state, the government of the Irish Free State could exercise considerable freedom and implement, among other things, new cultural policies, including language planning. This article addresses this issue and focuses on the production of Irish-language books subsidised by the government of the Free State as part of the implementation of the accepted language policy.

2. Sociolinguistic context

In the eighteenth century, due to the politically motivated process of the Anglicisation of Ireland, strengthened with the introduction of the anti-Catholic penal laws, Irish society was already divided into the smaller but more powerful ruling class of Protestant English-speakers and the disenfranchised

and dispossessed Catholics, who spoke Irish. Although, "the drift was strongly in favour of English, a knowledge of which was essential to socio-economic advancement" (Welch 1997: 265), it was the poorest class of native Irish-speakers that grew in number to reach over four million in the first decades of the nineteenth century, which could be circa 80 per cent of the population. However, as pointed out by Aidan Doyle (2015: 129), it is certain that many parents who knew Irish and spoke it to people of their generation, did not pass it on to their children and so it is likely that only "45 per cent reflects the real situation at the beginning of the nineteenth century." In the second half of this century, the social upheaval following the Great Famine (1845–1848) and the mass emigration of the native Irish from Ireland, which decimated their communities and necessitated their learning English, caused a massive language change. English in Ireland became for most people the primary medium of spoken and written communication; Irish, then favoured by about a quarter of the population, continued to be used mostly by older, often illiterate people from disadvantaged classes in peripheral areas (Ó Murchú 1999: 10). However, it was the peripherality of the Irish language that helped it survive because the language shift "slowed as it encountered around the western seaboard the densely populated areas, officially at the time known as 'congested districts', in which communities […] had little access to competence in English" (Welch 1997: 266). In these areas, which are now collectively referred to as the Gaeltacht, the Irish-speaking tradition continued. Another important factor that prevented Irish from dying was a vigorous Irish-language restoration movement which developed at the end of the nineteenth century within the wider Irish (cultural) Revival.

3. Cultural context

The phrase Irish Revival refers principally to the movements in literature and language in Ireland in the three decades from the death of Charles Stewart Parnell (1846–1891), the Leader of the Irish Parliamentary Party, in 1891 to the establishment of the Irish Free State in 1922, although this phenomenon was also evident in art, design, music, and sport. As rightly pointed out by John Strachan and Claire Nally (2012: 4), at that time almost every aspect of Irish culture was immersed in national significance and Breandán Ó hEithir (1997: 51–52) notes that "[i]n general the emphasis was on things that marked Ireland as different from England." The cultural revival was to support the Irish people's believe that Ireland should be run by the people of Ireland and to reinforce their struggle for independence. In sport, the Irish games of hurling and Gaelic football were promoted; in the area of Irish literature in English, the works by such writers as Lady Gregory (1852–1932), Standish James O'Grady (1846–1928), John Millington Synge (1871–1909) or, most notably, Nobel Prize winning William Butler Yeats (1865–1939) explored and exploited the old Irish sagas and native folk tales; in the field of languages, Irish was restored as the national language of Irish people. The latter task was carried out by Irish language organisations of which the most active was the Gaelic League (Conradh na Gaeilge) founded in 1893. Its first president was Douglas Hyde (1860–1949), an Irish linguist, academic and politician, who later served as the first President of Ireland, 1938–1945. In his famous lecture "The Necessity for De-Anglicising Ireland" (1892, online), Hyde considered the loss of the Irish language to be the sorest stroke that the rapid Anglicisation had inflicted upon Irish people and called for arresting this language's decay and bringing pressure upon Irish politicians "not to snuff it out by their tacit discouragement merely because they do not happen themselves to understand it." With such an attitude in mind the members of the Gaelic League prepared the ground for the language policy of the future Free State.

The aims of the Gaelic League, as expressed in its early pamphlet (1896), were "the preservation of Irish as a national language and the extension of its use as a spoken tongue; and the study and publication of existing Gaelic literature and the cultivation of a modern literature in Irish" (Purdon 1999: 37). The source of the living national language was obviously the regions of the Gaeltacht. There, however, different dialects were spoken and – due to the British system of education introduced throughout the United Kingdom of Great Britain and Ireland in the1830s and, what followed it, classes taught solely through the medium of English – many native speakers of the Irish language were illiterate in that language. There were obviously native speakers of Irish who could serve as teachers with linguistic authority but they needed to be trained in methodology. Training teachers was provided at intensive courses run in special colleges opened by the Gaelic League and so, soon Irish was introduced initially as an extra and subsequently as an ordinary subject in some primary schools (Ó Tuathaigh 2008: 26–27), adults' classes were organised and the learning of Irish was promoted at the festivals of music, verse and dancing which were sponsored by the Gaelic League. Since 1897 the League held the Oireachtas, i.e. the festival solely "on behalf of the Irish language", whose program included competitions for modern short stories in Irish, which would be suitable for publication in a Proceedings volume (Purdon 1999: 47) or *The Weekly Freeman*, the oldest nationalist newspaper in Dublin (Mac Eoin 1969: 58–59). "In themselves," writes Gearóid Mac Eoin (1969: 59), "the stories were not important and are never read today, but they were the first swallows of what was to be a good summer." After many decades when almost no literature was published in Irish (Ó Ciosáin 2004: 5), they – like all other works of modern Irish-language literature, such as *Séadna* (1904), the very popular novel by Peadar Ua Laoghaire (1839–1920) – were crucial for the development of the new literary language, based on the living speech of the people – *caint na ndaoine* but without the irregularities and roughness typical of everyday conversation.

Although it was in the sphere of education that the Gaelic League was most successful, its attempts to encourage the creation of a new literature cannot be ignored. What is more, the Gaelic League's publications were accompanied by debates about the possible forms of the new literary language and a print culture in Irish, which paved the way for language planning in the Irish Free State.

4. Language planning – a term and a task

Einar Haugen (1959: 8) defined language planning as "an activity of preparing a normative orthography, grammar and dictionary for the guidance of writers and speakers in a non-homogenous speech community." This definition would now be considered to be of corpus planning and differentiated from what is called status planning, the distinction made by Heinz Kloss (1969: 81) in his report of the possibilities of research into group bilingualism:

> The big difference between corpus and status planning is that the former cannot be done with the help of some specialists, chiefly linguists and writers, who are called upon to form an academy, commission or some other official or semiofficial body within the framework of which they are expected to do some long-range team-work. No such separate set-up, as a rule can take place, for status planning. This is done by statesmen and bureaucrats as part of their routine work, mostly with some legal but with very little sociolinguistic background.

So, in short, two dimensions of language planning are traditionally talked about:

> Corpus planning [which] deals with norm selection and codification, as the writing of grammars and the standardization of spelling [and] status planning [which] deals with initial choice of language, including attitudes toward alternative languages and the political implications of various choices. (Bright 1992: 311)

Yet, Robert L. Cooper (1989, cited in "Language Planning & Policy") adds language acquisition planning to it as a third major type of planning, important particularly in education, which includes decisions as to which languages are to be used as mediums of instruction.

It seems that both corpus and acquisition planning are related to or even usually result from status planning. If the status of a language is raised to official level in a state, it may be used at least at some, if not all, levels of education and this requires its standardisation, which becomes a task supervised, and often subsidised, by this state's government. This is how it transpired in Ireland when the Irish language received its constitutional official status in the Irish Free State.

5. Languages in Irish Constitutions

It is reported that numerous foreign journalists present at the sitting of the first Dáil, on January 21st, 1919, were surprised that the proceedings were carried out through the Irish language, which only a few could understand ("The Irish Language in the Oireachtas"). There is, however, no reference to the status of the Irish language in Ireland in the Constitution of Dáil Éireann (referred to below as: the Dáil Constitution), which was adopted on that day and remained "the basic law of the embryonic Irish state until the introduction of the Irish Free [State] Constitution" in 1922 (Farrel 1969: 127). The Dáil Constitution is a simple, direct document of only five short articles that sketch a provisional scheme of the (illegal) government (Farrel 1969: 135–136) set up by the members of the nationalist party Sinn Féin, who had won a general election in Ireland in 1918. In its case, specifying legislative or executive powers in Ireland seemed more important that the formal recognition of the status of the Irish language, the attitude to which could be simply manifested in practice, for example at sittings of the Dáil. It is, however, worth mentioning that the Dáil soon appointed its translator. This function was assumed by Micheál Ó Loingsigh

(1883–1942) (Cronin 1996: 153), who was later put in charge of an official translation service established by the government of the Free Irish State ("The Irish Language in the Oireachtas").

The appointment of a Dáil translator and, later, the establishment of the official translation service by the government of the Free State, indicated that in Ireland two languages were to be officially used. This was expressed directly in Article 4 of the Constitution of the Irish Free State (Saorstát Eireann) Act, 1922:

> The National language of the Irish Free State (Saorstát Eireann) is the Irish language, but the English language shall be equally recognised as an official language. Nothing in this Article shall prevent special provisions being made by the Parliament of the Irish Free State (otherwise called and herein generally referred to as the "Oireachtas") for districts or areas in which only one language is in general use.

Tomás Ó Máille (1990: 8) comments on Article 4 in the following way:

> The declaration by the Constitution that the National language of the Saorstát is the Irish language does not mean that the Irish language is, or was at that historical moment, universally spoken by the people of the Saorstát, which would be untrue in fact, but it did mean that it is a historic distinctive speech of the Irish people, that it is to rank as such in the nation, and, by implication, that the State is bound to everything within its sphere of action (as for instance in State-provided education) to establish and maintain it in its status as the National language and to recognise it for all official purposes as the National language. There is no doubt in my mind but that the term 'National' in the Article is wider than, but includes, 'official', in which respect only the English language is accorded constitutional equality.

Despite Ireland becoming officially bilingual, giving prominence to a language other than English was unique among Commonwealth countries (Walsh 2011: 41). It was significant that the new Constitution gave Irish official status "as an important

symbol of Irish identity as cultural nationalism took on the role of official state ideology" (Ó Croidheáin 2006: 170). Similarly to the Irish Constitution of 1937 (still in operation), which repeated and even strengthened the status of Irish, the Free State Constitution placed "positive obligations on the state to maintain and promote the status of the Irish language as the national language, including through areas such as the educational system" (Mac Giolla Chriost 2005: 119). This entailed the obligation of corpus planning and standardising the literary language to be used in print.

6. Irish-language books

Giving Irish its constitutional status of national language and of one of the two official languages in the Free State was part of its government's status language planning policy. This necessitated acquisition and corpus planning, for which the ground had been partially prepared by the Gaelic League. The organisation's most significant achievements were in the areas of education, where it had educated a number of teachers able to teach in new state schools, as well as of literature, where, after prolonged debates concerning the form of language to be used, the decision was taken in favour of *caint na ndaoine*. Yet, the Gaelic League had not resolved many specific problems, which now had to be faced by the government of the new state – no form of grammar or orthography to be referred to had been created and no type of script had been chosen to be used in printed literature.

The need for the use of two official languages made the government establish the Translation Section of the Oireachtas [the houses of Irish parliament], called Rannóg an Aistriúcháin, responsible for translating the Acts of the Oireachtas from 1922 onwards, the translation conducted mainly from English to Irish. One of the initial aims of the Rannóg an Aistriúcháin was to create a standard of Irish to be used by the state service whose duties required them to write Irish. It was gradually compiled

and published as *Gramadach na Gaeilge: Caighdeán Rannóg an Aistriúcháin* [*The Grammar of Irish: The Standard of Rannóg an Aistriúcháin*] in 1953. Brian Ó Cuív (1969: 33) points out that "it encouraged those concerned with it to issue a revised edition [*Gramadach na Gaeilge agus Litriú na Gaeilge: An Caighdeán Oifigiúil – The Grammar and Spelling of Irish: The Official Standard* (1958), which included also the new standard of Irish orthography] with a view to its providing a basis or a guide for teachers and for writers generally." According to this scholar, in 1969 Ireland appeared to be only "at the beginning of a new age of standard literary Irish." To him it was clear that neither the spelling nor the grammar of the official standard could accommodate all the existing variations of Irish. As a result, it did not come to represent any of them, yet, "with very minor revisions in the 1960 and 1979 [it] remains the written standard for Irish" (Nic Pháidín 2008: 102).

Such a – as it seems – late introduction of the official standard did not mean that no literature in Irish had been published in the Irish State. On the contrary, in 1926, the educational needs of teachers and students at schools where Irish was compulsory as well as the existence of a new adult readership led the government to establish An Gúm, a state publishing arm developed especially to satisfy these demands. Eleven years later Roibeárd Ó Faracháin (1937: 170) was to sum it up in the following words:

> the Government of Saorstát Éireann had a brain-wave for the benefit of literature in Irish. Rather […] one Minister of that Government, Earnán de Blaghd, had a brainwave. He saw that the publication of books in Irish was a business about which two things could be said certainly: that it was a vital need, and that it was moribund. One thing could save its life: subsidy. Whence the scheme popularly known as An Gúm.

According to León Ó Broin (1938: 126), "[t]o meet the situation created by the State assuming the leadership in the language revival, it was inevitable that the State should become itself

a publisher" but An Gúm, with which he himself collaborated as a writer and translator, was more than that – it "[did not wait] for the books to come along [but went] out of its way to get them, planning and subsidising all the stages preliminary to the acceptance of manuscript." The author points out that the state publisher was interested not only in school books but the whole range of contemporary literature. It was obvious that since there was no officially-accepted and imposed standard of Irish, creative Irish writers used regional varieties, however, considerable editorial work was done to their texts (and texts' language) before they got published.

Niall Ó Ciosáin and Clare Hutton (2010: 197) notice that "the state's support for Irish-language publishing went hand in hand with its enthusiasm for censorship: both initiatives involved the desire to control and direct the evolution of national book culture." A detailed study of An Gúm's publications that appeared in the Free State (Cisło 2018: 113–130 & 147–152) even gives the impression that more attention was paid to moral aspects of publications than to other matters, including the form of printed Irish. One of the problems that had not been resolved by the Gaelic League was the choice between the use of Roman and Gaelic types. In the latter one the fonts reproduce the shape of letters from Irish medieval manuscripts. Different variants of Irish types had been used in print since the 17th century but, at the same time, Roman type had also been used in printed Irish. In the Irish Revival period many language enthusiasts from the circles of the Gaelic League claimed that Gaelic fonts should be employed in print for patriotic reasons even if using them was more expensive and, as such, less practical (McGuinne 2010: 188). Indeed, most publications of the Gaelic League were issued in Irish characters. Yet, in the Free State "there was a tendency from the outset to use Roman type" (Ó Cuív 1969: 26), which was related to the costs of the use of two types of fonts (Roman necessary for printing English texts) both in printed and typewritten materials. In 1924 the Executive Council decided that Roman type was to be used generally

throughout the Civil Service except for Intermediate Examination papers, where Gaelic lettering was to continue as long as text books were printed in that manner (Ó Cearúil 1999: 27). Then, when An Gúm was established as a publishing arm of the Department of Education, numerous, if not most of, the books published under the auspices of the government of the Free State employed Gaelic characters, not Roman. This might have been because the conservative opposition to the use of the latter continued – in 1928 the Gaelic League even passed a resolution that "it [was] better for Irish that no great change be made in the type or the spelling of Irish until the language [was] out of danger of death or destruction" (Ó Cuív 1969: 29). Also for this reason printed literature featured many outmoded spelling and word forms.

7. Critical views

Critical views of An Gúm had appeared already within the first ten years of its activity. The state publisher was criticised for the poor quality of its publications, which related both to their physical form – like poor quality paper – and language level – in Ó Faracháin's (1937: 170) opinion, many original Irish-language books "would not have a chance of reaching print if they were written in English", and Micheál Mag Ruaidhrí (cited in O'Leary 2004: 508) went even further saying that as to most of these books "the Irish language would be better off had they never been published at all" and that it was „certain that more harm than good [would] come as a result of publishing them". It was criticised for imposing strict censorship as well as the introduction of the so-called translation scheme (1928), which was to tackle the shortage of original Irish-language works. The great number of translations that appeared within this scheme included books hardly ever read as they were easily available in English: "money have been largely wasted," wrote O'Neill (1946: 136–137, "readers of Irish will not read translations of books which they can easily procure in English". Such arguments were

balanced by other opinions, like the one expressed by Ó Broin (1938: 128):

> Most of these translations are from English, for the simple reason that sufficient translators could not be found at the time who could read any other language, but that very fact was sufficient to damn the scheme in some people's eyes. Why, they asked, should be expected to read English novels in translation when they could read them in the original? The proper answer to that question is that the translations were made available primarily for Gaeltacht-born people who, if things were natural, should be able to read Irish with greater facility than English.

8. Conclusion

Gearóidín Uí Laighléis (2007: 205) reports that "by 1937 [An Gúm] had published 362 texts altogether, 169 of these being translations" and adds that "[o]f the first 100 works of fiction published, approximately 60% were translations." Summing up the early activity of An Gúm, she calls it "an honest attempt to provide reading material in Irish" and states that "most worthwhile literature in Irish written in the 1920s and 30s was published by the Gúm" (Uí Laighléis 2007: 216). Indeed, it was under the auspices of this publisher that, for example, the works by Tomás Ó Criomhthain (1855/6–1937) and Peig Sayers (1873–1958) appeared, which belong to the canon of Irish-language literature. It shall be also remembered that the scheme was set up by the Department of Education when it was seen that textbooks and books for general reading were required on a scale beyond the capacity of any existing commercial publishing house, and so it had to be involved in acquisition planning. Now, when An Gúm has undoubtedly been the biggest Irish language publisher ever, taken its past and present educational bias, it is clear this function has been fulfilled. An Gúm was criticised for not caring for the quality of the language in which the books were published but in the Free State there was no officially accepted standard of Irish to be referred to. At the same

time, as pointed out by Nic Pháidin (2008: 104), An Gúm did contribute to the development of terminology, which took place in response to demand from education: "By 1939. Some ninety-nine novels mainly of English literature, had been translated by Irish-language authors including such works as *The War of the Worlds* by H.G. Wells, with a consequent use of new terminology." This partially indicates the role of An Gúm publishing in corpus planning. From the perspective of a hundred years the initiative seems unrivalled and even if it was to be regarded solely as instrumental – preparing the ground for the flowering of later literature in Irish, An Gúm's publications should be appreciated at least as still more of what Mac Eoin called "the first swallows of what was to be a good summer".

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Verbs derived from interjections in Polish, Russian and German

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Abstract

The article discusses verbs derived from interjections in three languages: Polish, Russian and German. In particular, it presents an overview of derivation processes which are implemented while forming the analyzed lexemes, the most productive affixes in the three languages in question and specific characteristic features of the word formation processes involved therein. The present study is based on the material of Polish, Russian and German verbs derived from representative, impulsive and imperative interjections and shows that, as far as morphological processes are concerned, numerous analogies exist between Polish and Russian. For instance, morphemes *-a*(*ć*) / *-a*(*mь*) are highly productive, both languages implement the morpheme *-ot-*/ *-om-* as well as the infixes *-k-*/*-к-* and *-cz-*/*-ч-*. Because of the different properties of the language, which belongs to a different language family, German verbs derived from interjections display slightly different characteristic features.

Keywords

Interjections, word formation, verbs derived from interjections, onomatopoeia, comparative linguistics

Czasowniki odinteriekcyjne w języku polskim, rosyjskim i niemieckim

Abstrakt

W artykule omówiono czasowniki odinteriekcyjne występujące w języku polskim, rosyjskim i niemieckim. W szczególności zaprezentowano sposoby derywacji analizowanej grupy leksemów oraz najbardziej produktywne formanty w trzech rozpatrywanych językach, a także przedstawiono specyfikę derywacji czasowników odinteriekcyjnych. Materiał badawczy stanowiły polskie, rosyjskie i niemieckie czasowniki utworzone od interiekcji reprezentatywnych, impulsywnych i imperatywnych.

Przeprowadzona analiza wykazała, że w sferze słowotwórstwa polskich i rosyjskich czasowników odinteriekcyjnych można wykryć wiele analogii. Obserwujemy więc dużą produktywność morfemu *-a*(*ć*)/ *-a*(*mь*), obecność w obu językach morfemu *-ot-*/*-om-* oraz morfemów wstawnych *-k-*/*-к-* i *-cz-*/*-ч-*. Nieco inaczej, z uwagi na właściwości systemu językowego, prezentuje się natomiast proces tworzenia czasowników odinteriekcyjnych w języku niemieckim.

Słowa kluczowe

interiekcje, słowotwórstwo, czasowniki odinteriekcyjne, onomatopeje, językoznawstwo porównawcze

1. Introduction

Interjections play quite a significant role as potential word stems and new lexemes are often derived from them, for instance nouns, adjectives or secondary interjections. However, it is the verbs that are particularly frequently formed from interjections, possibly because of the fact that sounds often accompany a variety of activities (Petkova 2011: 63).

For the Slavic languages the same stages and direction of word formation processes exist, i.e. interjection → verb → verbal derivate (secondary interjection, expressive verb, noun etc.)

(Daković 2006: 169). It follows from the above that verbal derivatives in Polish and Russian are formed directly from the interjection. It is worth pointing out that interjections constitute a fairly productive category, and in most cases representative interjections – onomatopoeias, become potential word stems, e.g.: *kra-kra* (Polish for *caw-caw*), *bzz* (Polish for *buzz*), *chlup* (Polish for *splash*) *cmok* (Polish for the sound of kiss *mwah*), less frequently impulsive interjections such as *ech* (Polish for *ah!*), *och* (Polish for *oh!*) or imperative interjections like *bis* (Polish for *encore!*) or *aport* (Polish for *fetch!*). The label *onomatopoeia* is occasionally used with reference not only to words formed from a sound associated with or imitating what is named but also all their derivatives. Polish *Encyklopedia językoznawstwa ogólnego* (*Encyclopedia of General Linguistics*) (Polański [ed.] 1999: 406) is an example of such an approach, as it labels as onomatopoeias all vocal imitations of the type *kwa-kwa* (Polish for *quack-quack*) or *ku-ku* (Polish for *cuckoo*) as well as their derivatives, e.g. *kwakać* (Polish *to quack*), *kukać* (Polish for *to cuckoo*), *kukułka* (Polish name for the bird *a cuckoo*). Thus, this *Encyclopaedia* implements the term onomatopoeia rather widely.

In a similar vein, the term onomatopoeia is defined in the dictionary edited by Kuznecov (1998) (*Большой Толковый Словарь / Bol'šoj Tolkovyj Slovar'*):

> 1. воспроизведение голосом или техническими средствами естественного звучания кого-, чего-л. 2. слово, в основе которого лежит подражание природному звучанию обозначаемого объекта
> [1. The imitation of a natural sound given off by someone or something by means of a human voice or a technical device. 2. A word formed from a sound associated with what is named – translation A. Goldman]

and in a dictionary compiled by Ožegov (1968) (*Словарь Русского Языка / Slovar' Russkogo Âzyka* 1968: 223), who defines onomatopoeia as:

> воспроизведение природного звучания какими-н. напоминающими его звуками речи (напр. мяу-мяу, ку-ку), а также слово, возникшее путём такого подражания (напр. кукушка, квакать)
> [the imitation of a natural sound by means of speech resembling the given sound (e.g. miaow-miaow; cuckoo) and also a word thus derived (np. a cuckoo, to quack) – translation A. Goldman].

In the present article the term onomatopoeia is understood narrowly as a word imitating sound or movement. Onomatopoeias will be studied as word stems from which other parts of speech imitating a sound or symbolizing a movement are derived.

2. The aim and scope of the study

The main focus of the present study is first and foremost, verbs derived from representative interjections (onomatopoeias), followed by verbs derived from the remaining types of interjections. The term *verbs derived from interjections* is understood in the present study to be a more general term than the term *onomatopoeic verbs.* However, both terms are used interchangeably with reference to derivatives formed from onomatopoeias.

This paper lists the verbs formed from interjections, discusses the derivation processes implemented while forming them, the most productive affixes in the three languages in question and specific characteristic features of the word formation processes involved.

The lexicographic research material comes from the following sources:

- *Słownik języka polskiego PWN* edited by Drabik and Sobol (2007);
- *Słownik języka polskiego* edited by Doroszewski (1959-1969);
- *Słownik języka polskiego* compiled by Szymczak (1994);
- *Słownik onomatopei czyli wyrazów dźwięko- i ruchonaśladowczych* compiled by Bańko (2009);

- *Толковый словарь русского языка* (*Tolkovyj slovar' russkogo âzyka*) compiled by Ožegov and Švedova (1992);
- *Большой толковый словарь русского языка* (*Bol'šoj tolkovyj slovar' russkogo âzyka*) edited by Kuznecov (1998);
- *Толковый словарь служебных частей речи русского языка* (*Tolkovyj slovar' služebnyh častej reči russkogo âzyka*) compiled by Efremova (2004);
- *Duden – Deutsches Universalwörterbuch* (www.duden.de);
- *PONS Wielki słownik polsko-niemiecki i niemiecko-polski* compiled by Dargacz and Flisak (2007);
- *Deutsches Wörterbuch* compiled by Wahrig (2010).

The lexicographic material thus obtained has been divided into three categories with reference to the different types of interjections and is discussed in the following order:

(a) representative interjections;
(b) impulsive interjections;
(c) imperative interjections.

3. Verbs derived from representative (onomatopoeic) interjections

As mentioned earlier, onomatopoeias constitute the most productive category of interjections when it comes to verb derivation processes. Onomatopoeic verbs may be used with reference to activities performed by living creatures – people or animals, as well as activities carried out by machines, devices, objects or some other elements of the inanimate world. Two meaning components can be discerned: "'to do something' + 'to give off a characteristic sound while doing it'" (Gasz 2012: 55).

The overview of the verbs formed from interjections shall begin with the verbs imitating sounds given off by animals (see Table 1).

Table 1

Polish, Russian and German verbs derived from animal onomatopoeia (*Verbs naming an activity accompanied by a sound coded by the given onomatopoeia but not derived from this onomatopoeia)

Polish		Russian		German		English translation of the verb
Onoma-topoeia	Verb	Onoma-topoeia	Verb	Onoma-topoeia	Verb	
bee	beczeć	бе-бе	блеять	bäh-bäh	bähen	to bleat (of a sheep)
ku-ku	kukać	ку-ку	кукукать	kuckuck	kuckucken	to give off a sound of a cuckoo
kra-kra	krakać	кар-кар	каркать	krah, krah	krächzen	to caw
mee	meczeć	ме-ме	блеять*	mäh	mähen	to bleat (of a goat)
chrum	chrumkać	хрю-хрю	хрюкать	grunz-grunz	grunzen	to oink
wrr	warczeć	вррр	ворчать	grr	knurren*	to growl
hau-hau	haukać	гав-гав	гавкать	wau-wau	bellen*	to woof
bzz	bzyczeć	жжж	жужжать	summ	summen	to buzz
kum-kum	kumkać	ква-ква	квакать	quak-quak	quaken	to croak
kwa-kwa	kwakać	кря-кря	крякать	quak-quak	quaken	to quack
mrr, mrau	mruczeć	мур-мур	мурлыкать (мурчать)	rrr	schnurren*	to purr
ko, ko	gdakać*	куд-кудах	кудахтать	gack, gack	gacken	to cluck
muu	muczeć	му-у	мычать	muh	muhen	to moo
miau	miauczeć	мяу	мяукать	miau	miauen	to miaow
pi-pi	piszczeć	пи-пи	пищать	piep, piep	piepen	to squeak (of a mouse)
sss	syczeć	шшш	шипеть	sss	zischen	to hiss
czmych	czmychać	шмыг	шмыгать	husch	huschen	to give off a sound of running away (of a rabbit or fox)
kukuryku	kukurykać	ку-ка-ре-ку	кукарекать	kikeriki	krähen*	to crow (of a cock)
gę, gę,	gęgać	га-га-га	гоготать	schnatter	schnattern	to cackle
gul, gul	gulgotać	бал-бал-бал	булькать	gobble	gurgeln*	to gobble
gruchu	gruchać	грру-грру	ворковать*	gruuh, gruuh	gurren	to coo
ćwir, ćwir	ćwierkać	чик-чирик	чикчирикать	tschilp, tschilp	tschilpen	to chirp, to twitter
kle-kle	klekotać	кле-кле	клекотать	klapp	klappern	to clatter (of a stork)

An analysis of the examples in Table 1 leads to the conclusion that the derivation process of onomatopoeic verbs in the three languages in question is remarkably regular. As confirmed by the study made by Mączyński (Mączyński 1982, 1991), in the Polish language suffixes *-a*(*ć*) and *-e*(*ć*) are used most frequently. These two suffixes are actually the only Polish suffixes for the verbs imitating animal sounds collected in Table 1. Most often they are not attached directly to the onomatopoeia but follow an infix *-k-* or *-cz-*, e.g. in *muczeć, chrumkać* or *miauczeć.* The morphological base itself may also be modified, e.g. in *ćwi**e**rkać* or *w**a**rczeć.* When dealing with animal onomatopoeias which are reduplicatives, in the verbs derived from them the second part of the interjection is only preserved in a skeleton form, e.g. *gę**g**ać*, *kra**k**ać*, *ku**k**ać.* In a few examples less frequently used infixes appear: *-ot-* in *gulg**ot**ać*, *klek**ot**ać* and *-szcz-* in *pi**szcz**eć.*

There are a few Polish animal onomatopoeias which do not form the verbs directly. A verb with a different root is used to name the activity accompanied by a sound coded by the given onomatopoeia, for instance the verb *gdakać*.

In Russian in principle the affix *-а*(*ть*) is used in order to form verbs derived from animal onomatopoeias. There are very few cases of verbs with the suffix *-ка*(*ть*), e.g. *гав**кать***, *хрю**кать***, *мяу**кать***, and only one verb with *-е*(*ть*) – *шип**еть***. In two verbs the infix *-ч-* is used: *вор**ч**ать, мы**ч**ать*, in one case the infix *-щ-*: *пи**щ**ать*, or *-от-*: *клек**от**ать.*

Morphological base forms themselves are often modified, e.g. in the verbs: *в**о**рчать*, *ж**у**жжать*, *б**у**лькать*, *б**л**еять*, *г**о**г**о**тать*, *м**ы**чать*, where vowels in the roots of the words change or where additional phonemes appear.

In the case of verbs derived from a reduplicative its second part, similarly to Polish, appears only in its skeleton form: *ква**к**ать*, *кря**к**ать*, *кар**к**ать.* Onomatopoeic verbs are also derived from complex onomatopoeias, e.g. *кудахтать*, *кукарекать*, *чикчирикать.* In the first of these verbs only the second element of the onomatopoeia is used; in the remaining two the whole onomatopoeia is fully utilized and the suffix

-a(*mь*) is added. Few of the Russian animal onomatopoeias are not used to form new verbs at all, and the activities accompanied by a given sound are named by means of verbs not derived from the onomatopoeia.

Such a similarity between Polish and Russian derivation processes pertaining to animal onomatopoeic verbs seems striking. Not only are the affixes used similar but also modifications in the roots of the words. Both languages also implement verbs with completely different roots, e.g. *gdakać*, *ворковать* in order to name an activity accompanied by a given onomatopoeia.

As mentioned earlier, in the German language the derivation process of animal onomatopoeic verbs is even more regular. In the vast majority of cases suffix *-en* is attached directly to the base form of the word, i.e. the onomatopoeia, e.g. *gack**en***, *muh**en***, *miau**en***, *quak**en***, *bäh**en***, *mäh**en***, *grunz**en***, *piep**en***, *tschilp**en***, less frequently the suffix *-ern*, e.g. *klapp**ern***, *schnatt**ern.*** In a few cases the derivation process is accompanied by the change of a vowel sound in the root – *kr**ä**chzen*, in few other cases the activity is named with a verb not derived from the onomatopoeia – *knurren*, *bellen*, *schnurren*, *krähen.*

The following section of the present paper focuses on Polish, Russian and German verbs derived from representative interjections imitating sounds given off by humans: vocal and non-vocal onomatopoeias accompanying movement, eating or drinking (Table 2).

An analysis of the examples in Table 2 leads to a conclusion that the principles, mechanisms and relations operating with reference to animal onomatopoeic verbs are also implemented while forming verbs derived from representative onomatopoeias imitating sounds given off by humans.

Table 2

Polish, Russian and German verbs derived
from onomatopoeias imitating sounds given off by humans
(*Verbs naming an activity accompanied by a sound coded by the given onomatopoeia but not derived from this onomatopoeia)

Polish		Russian		German		English translation of the verb
Onoma-topoeia	Verb	Onoma-topoeia	Verb	Onoma-topoeia	Verb	
cmok	cmokać	чмок	чмокать	schmatz	schmatzen	to smack one's lips
tup-tup	tupać	топ-топ	топать	tapp, tapp	tappen	to thump (of one's feet)
chi-chi	chichotać	хи-хи	хихикать	hi-hi	kichern*	to giggle
chlip-chlip	chlipać	хны-хны	хныкать	schluchz	schluchzen	to sniffle (of crying)
cha-cha	chachać (się)	ха-ха-ха	хохотать	ha-ha	kichern*	to laugh loudly
chrr, chrap	chrapać	хррр	храпеть	—	schnarchen	to snore
chrup	chrupać	хруп	хрупать	knusp	knuspern	to crunch
mlask	mlaskać	ням-ням	нямкать	schmatz	schmatzen	to slurp
ciam	ciamkać	чав-чав	чавкать	schmatz	schmatzen	to munch
kich	kichać	чих	чихать	hatschi	niesen*	to sneeze
człap, człap	człapać	шлёп-шлёп	шлёпать	schlurf, schlurf	schlurfen	to plod
tfu	pluć*	тьфу	тьфукать	pfui	spucken*	to spit
szur-szur	szurać	шарк	шаркать	scharr	scharren	to shuffle
szu-szu	szeptać*	шу-шу	шушукать	—	flüstern	to whisper
hep	czkać*	ик-ик	икать	schluck	schlucken	to hiccup
fiu	fiukać	фю	фюкать	pfi	pfeifen	to wow

In the case of Polish, a clear majority of onomatopoeic verbs collected in Table 2 is formed by means of the suffix *-a*(*ć*), e.g. *chrup**ać***, *cmok**ać***, *chlip**ać***, *mlask**ać***, *tup**ać***, *człap**ać***, *szur**ać***. An additional affix *-ot-* is implemented only in one verb: *chich**ot**ać*, in another verb *-k-*: *ciam**k**ać.* A few of the Polish interjections are not used as base forms for onomatopoeic verbs. Instead, a verb with a different root is used to name the activity

accompanied by the given sound. There are three such verbs: *czkać, szeptać, pluć.*

Like in Polish, in the case of the Russian onomatopoeic verbs imitating sounds given off by humans all rules and derivation principles are the same as for animal onomatopoeic verbs. In fact, the suffix -*а*(*ть*) is implemented in almost all cases, e.g. *чих**ать**, хруп**ать**, ик**ать**, шлёп**ать**, топ**ать**, чмок**ать**.* The suffix -*ка*(*ть*) is used sparingly, e.g. in verbs *хихи**кать**, хны**кать**, фю**кать**, нямк**ать**, чав**кать**.* The verb *хохотать* illustrates a slightly different derivation process. An additional affix appears there as well as a change of the vowel *а* to *о* in the morphological root itself.

Two Russian verbs are formed from the whole onomatopoeic reduplicatives. These are *хихикать* derived from *хи-хи* and *шушукать* derived from *шу-шу*. In both cases the suffix -*ка*(*ть*) is implemented.

The lexical material obtained for the German language also confirms that the derivation processes operating for onomatopoeic verbs are regular. All the verbs are derived directly from their base forms by means of suffix *-en*, e.g. *schmatz**en**, tapp**en**, schluchz**en**, schatz**en**, schlurf**en**, scharr**en**, schluck**en**.* Onomatopoeias *hi-hi*, *ha-ha*, *pfui* and *hatschi* are not used for deriving onomatopoeic verbs.

We finish the overview of Polish, Russian and German verbs derived from onomatopoeias by an analysis of words imitating the sounds of the inanimate world, both the natural world like wind, water or plants, and the man-made objects such as machines or devices.

Both the natural world objects and man-made objects may motivate the creation of the same onomatopoeias, for instance, the words coding the sound of falling. *Bum*, *bach*, *pac*, *bęc* are just a few examples of such onomatopoeias. They are collected in the category of artificial onomatopoeias, but they might just as well be collected in Table 3 which contains interjections imitating the sounds of the inanimate world. Duplicating the same items in two different groups seems pointless, though.

Table 3

Polish, Russian and German verbs derived from onomatopoeias imitating sounds given off by inanimate natural world

(*Verbs naming an activity accompanied by a sound coded by the given onomatopoeia but not derived from this onomatopoeia)

Polish		Russian		German		English translation of the verb
Onoma-topoeia	Verb	Onoma-topoeia	Verb	Onoma-topoeia	Verb	
bul-bul	bulgotać	буль-буль	булькать	gluck	glucken	to bubble
chlup	chlupać	хлюп	хлюпать	gluck	glucken	to slosh
chlust	chlustać	хлюст	хлюстать	platsch	platschen	to whoosh (of liquid)
prysk	pryskać	брызг	брызгать	spritz	spritzen	to spray
plum	plumkać	плюх	плюхать	plump(s)	plumpsen	to patter (of rain)
szsz (szu)	szemrać	жур-жур	журчать	platsch	plätschern	to murmur, to rustle
kap-kap	kapać	кап-кап	капать	tropf-tropf	tropfen	to drip
plusk	pluskać	плеск	плескать	platsch	platschen	to splash
świst	świstać	сь-сь-сь	свистать	pfi	pfeifen	to swish
szsz (szu)	szumieć	ш-ш (шу)	шуметь	sch-sch	brausen*	to swoosh
szur-szur	szurać	шур-шур	шуршать	sch-sch	scharren	to scrape
trzask	trzaskać	треск	трескать	krach	krachen	to snap

Table 4

Polish, Russian and German verbs derived from onomatopoeias imitating sounds given off by objects, machines or devices

(*Verbs naming an activity accompanied by a sound coded by the given onomatopoeia but not derived from this onomatopoeia)

Polish		Russian		German		English translation of the verb
Onoma-topoeia	Verb	Onoma-topoeia	Verb	Onoma-topoeia	Verb	
cyk	cykać	тик	тикать	tick	ticken	to tick (of a clock)
buch (*on falling*)	buchać	бух	бухать	rums	rumsen	to bang (of falling)
buch (*on steaming*)	buchać	пых	пыхтеть	puff	puffen	to burst (of steam)
bach	—	бах, бабах	бахать, бабахать	—	—	to plonk
brzęk	brzękać	бряк	брякать	klirr	klirren	to clank
pac	pacać	шлёп	шлёпать	klatsch	klatschen	to splat

dzyń-dzyń	dzwonić*	дзинь-дзинь	звенеть*	kling	klingeln	to ding
ciach	ciachać	динь-динь чик-чик	чикчикать	zack	zacken	to slash
skrzyp	skrzypieć	скрип	скрипеть	quietsch	quietschen	to screech
stuk	stukać	стук	стучать	klopf, klopf	klopfen	to tap
puk	pukać	тук-тук	туктукать	klopf, klopf	klopfen	to knock
tyr-tyr, ter-ter	terkotać	тыр-тыр	тарахтеть*	trr	knattern*	to clatter
pstryk	pstrykać	щёлк	щёлкать	knips	knipsen	to snap
klik	klikać	клик	кликать	klick	klicken	to click

An analysis of the onomatopoeic verbs collected in Tables 3 and 4 confirms all observations made with reference to the derivation of verbs discussed earlier. In Polish, in 99 % of the cases the suffix *-a*(*ć*) is used, e.g. *chlup**ać***, *chlust**ać***, *prysk**ać***, *kap**ać***, *plusk**ać***, *świst**ać***, *trzask**ać***, *cyk**ać***, *brzęk**ać***, *stuk**ać***, *puk**ać***, *pstryk**ać***, *klik**ać***, *buch**ać***. In one of the collected words the suffix *-e*(*ć*) is used: *skrzypi**eć***.

Verbs used with reference to activities accompanied by rustling need particular attention. In Polish, the onomatopoeia – *szsz* and its variant – *szu* are used and they motivate the formation of two different verbs *szumieć* and *szemrać.* Both verbs are used with reference to activities accompanied by a soft, muffled crackling sound like that caused by the movement of (dry) leaves.

Additional affixes appear in a few verbs: *-ot-*, e.g. *bulg**ot**ać*, *terk**ot**ać*, and *-k-*, e.g. *plum**k**ać*, and *-g-*, e.g. *bul**g**otać*.

Examples from the Russian language also confirm all observations made earlier about the derivation of the onomatopoeic verbs. Suffix *-a*(*mь*) is unquestionably the most productive morpheme, e.g. *хлюп**ать***, *хлюст**ать***, *брызг**ать***, *плю-х**ать***, *кап**ать***, *плеск**ать***, *треск**ать***, *бух**ать***, *бах**ать***, *бряк**ать***, *шлёп**ать***, *щёлк**ать*** etc. The suffix *-e*(*mь*) appears in a few cases, e.g. *скрип**еть***, *шум**еть***, *пыхт**еть***. The suffix *-ка*(*mь*) is found in just one example: *буль**кать***.

Additional affixes are used do derive some verbs: *-ч-*: *сту**ч**ать*, *жур**ч**ать*; *-т-*: *пых**т**еть*; *-ш-*: *шур**ш**ать*. Verbs are also formed from the whole onomatopoeic reduplicatives, e.g. *чикчикать* and *туктукать*.

As for the German language, similarly to the examples discussed earlier, in 90 % of the cases studied the suffix *-en* is implemented, e.g. *gluck**en***, *platsch**en***, *spritz**en***, *tropf**en***, *krach**en***, *quietsch**en***, *klopf**en***, *klick**en***, *knips**en***. In two cases other suffixes are used: *-eln* in *kling**eln***, or *-ern* in *plätsch**ern***.

A few of the German onomatopoeias are not used as base forms for onomatopoeic verbs. Instead, a verb with a different root is used to name the activity accompanied by the given sound. There are three such verbs in the studied material, e.g. *brausen*, *rauschen*, *knattern.*

To summarise, Polish, Russian and German onomatopoeic verbs are derived with a great deal of regularity. The suffix *-a*(*ć*) predominates in Polish, *-а*(*ть*) in Russian and *-en* in German.

In a few cases other suffixes are used, e.g. *-e*(*ć*), *-i*(*ć*) in Polish, *-ка*(*ть*) and *-е*(*ть*) in Russian and *-ern*, *-eln* in German.

In all three studied languages single instances of additional affixes are implemented, most notably *cz-*, *-k-* or *-ot-*, and alternations in the morphological roots themselves.

It is worth pointing out that prefixes modifying meaning may be added to onomatopoeic verbs. In the case of Polish, they are:

(a) prefixes meaning the beginning of a given activity, e.g. *za-*: *zakukać*, *zaszumieć*, *zaskrzypieć*, *zastukać*, *zakrakać*, *zamruczeć*;
(b) prefixes meaning the end of a given activity, e.g. *wy-*, *do-*, *od-*, *na-*: *wykrakać*, *wypstrykać*, *dotupać*, *dochrapać*, *odpukać*, *nakapać*;
(c) prefixes meaning great intensity of a given activity, e.g. *za-*, *roz-*, *na-*: *zachlapać*, *zapryskać*, *roztrzaskać*, *rozpryskać*, *rozćwierkać* (*się*), *nachlapać*;
(d) prefixes meaning that the given activity has not been completed or is brief or limited in time, e.g. *po-*: *pobrzękać*, *popukać*, *postukać*, *popryskać.*

In Russian the meaning of onomatopoeic verbs is also modified by adding prefixes. Petkowa (2011: 70-72) enumerates a series of such prefixes and they are collected in Table 5.

Below follows a set of examples of onomatopoeic verbs derived by means of prefixes collected in Table 5:

(a) prefix *за-* derives verbs denoting the beginning of a process/ activity, e.g. *забахать, закрякать, закукарекать, затявкать, захихикать, захрапеть, захрюкать, зацокать*;
(b) prefixes *раз-/рас-*, *на-*, *пере-*, *до-*, *об-*, *от-* derive verbs denoting the end of a given activity, e.g. *размурлыкать*, *размяукать*, *расшлёпать*, *набухать*, *начирикать*, *перекукать*, *перечиркать*, *дощёлкать*, *обстукать*, *общёлкать*, *откукать*, *отстукать*;
(c) prefixes: *вы-*, *с-* derive verbs denoting the full utilization of the object performing the activity, e.g. *выбухать*, *выхохо-тать*, *вычихать*, *сбухать*, *сощёлкать*;
(d) prefixes *вз-/вс-*, *при-*, *про-*, *по-* or *под-* are used for deriving verbs with a meaning that the activity is incomplete or it accompanies another process or activity, e.g. *прокукарекать*, *промурлыкать*, *прохрюкать*, *вскрякать*, *всхлипать*, *пристукать*, *причмокать*, *погоготать*, *поикать*, *постукать*, *похихикать*, *поцокать*;
(e) prefix *на-* emphasises the intensity of the activity, e.g. *накапать*, *начихать*, *набухать*;
(f) prefixes *в-*, *из-/ис-*, *у-*, whose sense is spatial, are used for deriving verbs with that meaning, e.g. *вбухать*, *исчирикать*, *убухать*.

Table 5

Prefixes used for derivation of onomatopoeic verbs in Russian (Results of own study after Petkova 2011: 70–72)

The meaning of prefix	Prefix
The beginning of the activity	за-
The end of the activity	раз-/рас-, на-, пере-, до-, об-, от-
Full utilization of the object performing the activity	вы-, с-
Activity incomplete or accompanies another activity	вз-/вс-, при-, про-, по-, под-
Intensity of the activity	на-
Spatial sense of the activity	в-, из-/ис-, у-

The overview of Russian onomatopoeic verbs derived by means of attaching a prefix must be by completed by mentioning the verbs formed by attaching both a prefix and a suffix ***-ся***: *достукаться*, *размурлыкаться*, *перехихикаться*, *расчирикаться*, *почмокаться*, *нахихикаться.*

To finish off the discussion of the onomatopoeic verbs, suffixes with a sense of singularity are worth mentioning. In Polish it is the suffix *-nąć*, e.g. *miauk**nąć***, *pstryk**nąć***, *chlip**nąć***, *stuk**nąć***, *puk**nąć***, *kap**nąć***, in Russian *-ну(ть)*, e.g. *ик-**нуть***, *мяук**нуть***, *скрип**нуть***, *храп**нуть***, *щёлк**нуть***.

4. Verbs derived from impulsive interjections

Impulsive interjections form a much less productive category than the representative interjections. One might even claim they are unproductive, since only few verbs are derived from them. Polish lists the following verbs: *ach – ach**ać***, *och – och**ać***, *ech – ech**ać***, *joj – joj**czyć*** – all derived by means of suffixes *-a(ć)* and *-czy(ć)*.

In Russian, in a similar vein, only few impulsive interjections lend themselves to forming verbs. However, in comparison with Polish, they form a relatively numerous category comprising the following items: *ах – ах**ать***, *ох – ох**ать***, *эх – эх**ать***, *ух – ух**ать***, *ой – ой**кать***, *ну – ну**кать***, *эй – эй**кать***, *фу – фу**кать***, *фю-фю – фюфю**кать***, *хм – хмы**кать***. Two of the most frequently used suffixes implemented for the derivation of onomatopoeic verbs, i.e. *-а(ть)* and *-ка(ть)*, are also used in this word formation process.

An analysis of the German language material also shows very few verbs derived from impulsive interjections i.e. *seufz – seufz**en**, ächz – ächz**en**, grins – grins**en**.*

5. Verbs derived from imperative interjections

As in the case of impulsive interjections, imperative ones seldom serve as roots of verbs. In Polish there are very few such verbs

with the meaning of encouragement to carry out the activities named by the interjection. Two of the verbs implement suffix *-owa*(*ć*): *aport – aport**ować***, *bis – bis**ować.*** Another two verbs, used only in colloquial speech, use suffix *-a*(*ć*): *siup – siup**ać***, *hops – hops**ać.*** It may be speculated that the verbs *siupać* and *hopsać* may not be derived from imperative interjections at all but from homonymic onomatopoeias imitating the sounds of movements.

There are slightly more verbs derived from imperative interjections in the Russian language where: six verbs are derived by means of the suffix *-ка*(*ть*), i.e. *ату – ату**кать***, *ау – ау**кать***, *брысь – брысь**кать***, *тпру – тпру**кать***, *тю-тю – тютю**кать***, *эй – эй**кать***; and one verb each by means of suffixes *-а*(*ть*): *гоп – гоп**ать***; *-ова*(*ть*): *баста – баст**овать***; *-иро-ва*(*ть*): *бис – бис**ировать***. However, most of the verbs listed here have become archaisms and are hardly ever used in modern Russian. Only Dal's dictionary (Dal' 1903-1909) lists them and none of the more contemporary dictionaries of Russian.

German lexicographical sources do not list any verbs derived from roots that are imperative interjections.

6. Conclusion

In the three researched languages, derivates formed from representative interjections – onomatopoeias, constitute the vast majority of verbs whose morphological root is an interjection.

In Polish *-a*(*ć*) is the most productive suffix, e.g. *buch – buchać, szur – szurać, stuk – stukać, cyk – cykać* etc. Inter-jections that are reduplicatives may also become morphological roots for verbs, e.g. *kra-kra – krakać*, *gę-gę – gęgać*, *gul-gul – gulgać*, where the second part of the interjection may only be preserved in its skeleton form.

The suffix *-e*(*ć*), as in: *be – beczeć*, *miau – miauczeć*, *brzęk – brzęczeć* is undoubtedly used much less frequently and often the verbs in this category additionally contain infixes *-k-* or *-cz-* or the root morpheme itself is modified, cf. *ćwir – ćwierkać*, *frr – furczeć*, *wrr – warczeć*.

There is a group of interjections, both simplexes and reduplicatives that use the affix *-ot-* + *-a*(*ć*) in order to from a new verb. Mączyński (Mączyński 1991) claims that the morpheme *-ot-* serves an extra function of adding a sense of intensity to the derived verb, cf. *tup – tupotać*, *chlup – chlupotać*, *chichi – chichotać*.

Polysyllabic interjections very rarely serve as morphological roots from which verbs are derived, e.g. *kukuryku – kukurykać*.

In Russian verbs are derived from interjections by means of the suffixes *-a*(*mь*) as in: *ах – ахать*, *бух – бухать*, *ох – охать*, or *-ка*(*mь*) like in: *кар – каркать*, *баю – баюкать*, *тяв – тявкать*, *ой – ойкать*.

As in Polish, the Russian verbs are also formed from interjections that are reduplicatives. In such cases, the suffix *-ка*(*mь*) is often used, e.g. *улюлю – улюлюкать*, *хихи – хихикать*, *шушу – шушукать*. Disyllabic or polysyllabic interjections may also become base forms for deriving verbs, e.g. *кукареку – кукарекать*, *курлы – курлыкать*, *агу – агукать*.

As in Polish, in Russian the affixes *-от-* and *-еть-* are used to derive a verb from an interjection, e.g. *топ – топотать*, *хохо – хохотать*, *хруст – хрустеть*.

The affixes *-га*(*mь*), *-жа*(*mь*), e.g. *брюзжать*, *горгать*, *лязгать,* are rarely implemented to derive verbs from interjections. Moreover, in a few derivatives infixes *-х-*, *-ш-*, *-с-*, e.g. *пырхать*, *лупсить*, *кыршить* are used.

To sum up, many analogies may be made between Polish and Russian in the word formation processes pertaining to the derivation of onomatopoeic verbs. Especially the morphemes used for deriving verbs from representative interjections are similar. Thus, morphemes *-a*(*ć*)/*-a*(*mь*) in both languages are

highly productive and both languages make use of the morpheme *-ot-*/*-от-* as well as the infixes *-k-*/*-к-* and *-cz-*/-ч-.

Prefixes which slightly modify the meaning of the newly formed verbs are also utilized while forming onomatopoeic verbs. The resulting meaning may have an additional sense of, e.g. starting an activity – with prefixes *za-* (Polish)/ *за-* (Russian); finishing an activity – with prefixes *wy-*, *do-*, *od-*, *na-* (Polish) and *раз-*/ *рас-*, *на-*, *пере-*, *до-*, *об-*, *от-* (Russian) or great intensity of the activity, e.g. *za-*, *roz-*, *na-* (Polish) and *на-* (Russian).

In the collected examples there are also instances of verbs which make use of the suffixes *ną*(*ć*) (Polish)/ *-ну*(*ть*) (Russian) which add a sense of singularity or briefness to the newly formed verbs.

Possibly because of different typological features of the language, the derivation of onomatopoeic verbs looks different in German. However, the representative interjections lend themselves to the process as actively and productively as in Polish and Russian. In German, though, the derivation formation process consists in attaching an *-en* infinitive morpheme to the interjection, e.g. *platsch – platschen*, *klick – klicken*, *klopf – klopfen*, *bums – bumsen*, *puff – puffen*, *miau – miauen*, *quak – quaken*. Very few of the verbs use other morphemes i.e. *-ern* or *-eln.*

The category of the verbs formed from imperative or impulsive interjection is rather modest in size, as there are just a few verbs like that. In Polish database there are only four instances for each type, in Russian only ten each, in German three impulsive and no imperative examples.

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The obstruentised rhotic of Polish: An acoustic study

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Abstract

This paper reports the results of a study aimed at establishing the acoustic characteristics of the obstruentised rhotic of Polish, i.e. an r-sound that is neither adjacent to a vowel nor syllabic. The study has revealed that the physical realisation of the sound is dependent on the position it occupies within the syllable as well as on the manner of articulation of the following segment. In onset positions, the obstruentised rhotic is likely to be articulated as a trill when followed by a stop. In contrast, spirantised variants are common in those clusters where the rhotic precedes a fricative. In prosodically weak coda positions, the degree of phonetic reduction is greater than in the onset. The observed variants include voiceless trills, spirantised rhotics, affricated rhotics, taps and instances of deletion.

Keywords

rhotics, Polish, phonetic reduction

Analiza akustyczna polskiego /r/ w pozycjach nieprzylegających do samogłoski

Abstract

Artykuł przedstawia wyniki badania mającego na celu określenia cech akustycznych polskiego dźwięku /r/ w kontekstach, w których nie przylega on do samogłoski. W przeciwieństwie do niektórych języków słowiańskich, np. czeskiego czy chorwackiego, polski fonem /r/ nie jest zgłoskotwórczy w takim otoczeniu. Wyniki badania sugerują, że fizyczna realizacja fonemu /r/ zależy głównie od pozycji dźwięku /r/ w sylabie oraz od sposobu artykulacji następnej spółgłoski. W nagłosie sylaby, /r/ ma często realizację drżącą, jeśli następny dźwięk jest wybuchowy lub nosowy, np. w słowie *krnąbrny*, szczelinowy alofon jest natomiast częstym wariantem w zbitkach spółgłoskowych, w których /r/ znajduje się przed spółgłoską szczelinową, np. w słowie *drżenie*. W artykule opisano ponadto inne alofony dźwięku /r/: bezdźwięczny drżący, szczelinowy, zwarto wybuchowy i jednouderzeniowy. Zaobserwowano również nieliczne przypadki elizji. Zgromadzone dane wskazują ponadto, że stopień redukcji fonetycznej dźwięku jest wyższy w wygłosie niż w nagłosie.

Słowa kluczowe

dźwięki rotyczne, polski, redukcja fonetyczna

1. Introduction

There seems to be a general consensus in phonetic literature that the natural class of rhotics can hardly be defined on acoustic or articulatory grounds due to its being made up of segments that differ with respect to their place and manner of articulation (Ladefoged and Maddieson 1996, Lindau 1985, Wiese 2001). Despite the significant differences among r-sounds, all members of the natural class share an important distributional feature, i.e. they occupy vowel-adjacent positions within the syllable. However, in some languages, rhotics do not necessarily adjoin

a vowel, e.g. in Czech *krk* 'neck', *krv* 'blood' or the words *herd* and *father*, pronounced [hɻd] and [fɑːðɻ] in American English (Ladefoged and Maddieson 1996: 234). In these examples, the rhotic sounds constitute a peak of sonority within a cluster and, therefore, are regarded as syllabic consonants.

Due to the overwhelming preponderance of vowel-adjacent rhotics in the world's languages, most phonetic literature focuses on sounds that follow the pattern (Blecua 2001, Demolin 2001, Jaworski and Gillian 2011, Proctor 2009, Recasens and Espinosa 2007, Solé 2002, Żygis 2005). A fair amount of attention has also been devoted to syllabic rhotics (Browne 1993, Jaworski 2014, Priestly 1993, Sussex and Cubberley 2006), while very little has been written about obstruentised rhotics, i.e. r-sounds that are neither vowel-adjacent nor syllabic (Gussmann 2007). Sound combinations containing an obstruentised rhotic can be found in Polish as well as in the languages that make up the Eastern Slavonic group. Being cross-linguistically rare, such consonant clusters are definitely marked, which further implies that they should manifest a tendency towards phonetic reduction.

The paper attempts to fill the gap in the literature by providing a detailed description of the acoustic characteristics of the obstruentised rhotic of Polish. The sound's properties are examined with respect to: (i) its position within the syllable and (ii) the manner of articulation of the adjacent segment(s). The Polish rhotic phoneme /r/, classified as a post-alveolar trill, is normally reduced phonetically to a tap or, less frequently, to a fricative or approximant even in those contexts where its articulation should not pose a serious problem, as in the word-initial position (Gussmann 2007, Jaworski and Gillian 2011, Jaworski 2018, Łobacz 2000). Surprisingly, one often gets the impression that a strong, trilled allophone of /r/ is frequently produced in #rC and CrC clusters not only in careful speech, but also in conversational Polish.

The paper is structured as follows. Section 2 outlines the diachronic changes that affected r-sounds in the Slavic lan-

guages and brought obstruentised rhotics into existence. Section 3 is concerned with the distribution of the obstruentised rhotic of Polish. Section 4 describes at some length how the data analysed in the study were collected. This is followed by Section 5, where the obtained results are presented and interpreted. The final part of the paper includes several concluding remarks and suggestions for further research.

2. The rise of the obstruentised rhotic

During the Proto-Slavonic period (ca. 1,500 BC – the 10th century AD), one Slavic language is said to have been spoken throughout the Slavic area, although a certain amount of dialectal variation was definitely present (Klemensiewicz 1999, Moszyński 1984, Stieber 1979, Shevelov 1964). For practical purposes, Proto-Slavonic is further divided into Early Proto-Slavic (EPSl), also referred to as Common Slavic (CS), and Late Proto-Slavic (LPSl).

The phonology of EPSl was greatly affected by two phenomena referred to as the tendency for intrasyllabic harmony and the tendency for rising sonority (Carlton 1990, Moszyński 1984, Schenker1993: 67, Shevelov 1964, Stieber 1979, Townsend and Janda 1996). The former was primarily manifested by palatalisation of consonants before front vowels, whereas the latter consisted in arranging sounds within the syllable such that their sonority increased while moving from the first to the last segment. Since only open syllables could meet the requirement, all coda consonants were eliminated.[1]

As far as the rhotic segments of EPSl are concerned, some of the processes that affected them were intimately related to, or conditioned by, certain changes to the vowel inventory of EPSl. According to Carlton (1990: 98), the Early Proto-Slavic vowels were distinctive with respect to the following features:

[1] This phenomenon is also referred to as the law of open syllables (Carlton 1990, Schenker 1993).

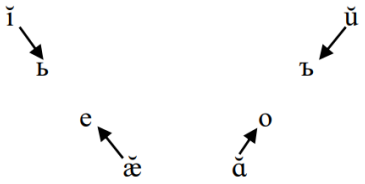
height (high vs. low), advancement (front vs. back) and duration (long vs. short),[2] as presented in (1). Apart from these vowels, EPSl also had vowel-sonant sequences, inherited from Proto-Indo-European, which are said to have been diphthongs (Carlton 1990, Moszyński 1984, Shevelov 1964, Stieber 1979).

(1) ĭ ŭ

æ̆ ă

During the Late Proto-Slavic period, the short vowels underwent a qualitative change, presented in (2), which brought into existence two mid-open and two mid-close vowels. It is the vowels [ь] and [ъ], referred to as *jers*, that played a crucial role in the development of both obstruentised and syllabic rhotics.

(2)



The jers /ь/ and /ъ/ had weak and strong variants. The strong jers subsequently developed into fully fledged vowels, while the weak jers fell out of the system. The fall of the weak jers /ь/ and /ъ/, which began in the 10th century and is said to have been completed by the end of the 12th century (Stieber 1979: 49, Townsend and Janda 1996: 73), not only reduced the number of vowels in the inventory, but it also signalled the end of phonotactic constraint on consonant clusters, i.e. the law of rising sonority. The immediate consequence of the change was the rise of many types of consonant clusters including ones containing

[2] In Slavic linguistics, the diacritics [˘] and [¯] represent phonologically short and long vowels, respectively.

inter-consonantal r-sounds which are still retained in several Slavic languages either as syllabic or obstruentised rhotics (Carlton 1990, Stieber 1979, Townsend and Janda 1996).

Obstruentised and syllabic rhotics arose as a result of changes that affected the **tъrt* and **trъt* sound patterns. By convention, the grapheme <t> stands for any consonant, <r> for any liquid and <ъ> for any jer (Carlton 1990, Stieber 1979, Townsend and Janda 1996). Importantly, the changes that affected **tъrt* and **trъt* were closely related although the two sound patterns were quite different in terms of phonology as the former was a diphthong, while the latter contained a common onset cluster followed by a vowel (Carlton 1990, Stieber 1979, Townsend and Janda 1996).

Proto-Slavic diphthongs were simplified, or monophthongised, by dropping the first element, which also affected the existing **tъrt* sound patterns. However, the changes were not uniform. In East Slavic, **tъrt* changed such that an imitative vowel was epenthesised after the liquid. This phenomenon, referred to as *pleophony* or *polnoglasie* (Shevelov 1993, Timberlake 1993), transformed **tărt* into **torot*. In the South and West Slavonic languages, the strong /ъ/ and /ь/ of **tъrt* developed into full vowels (Carlton 1990, Moszyński 1984, Stieber 1979), whereas weak jers were lost. The loss of weak jers resulted in the emergence of **tr̩t* sound patterns, where the front vs. back contrast had been neutralised, with some exceptions.

As regards **trъt*, in East Slavic, reflexes of **trъt* not only keep the order of the jer and liquid, but they also distinguish between the front and back jer in the case of /r/ (Townsend and Janda 1996: 65). In other areas, three reflexes of **trъt* occurred, depending on whether the jer was strong or weak (Carlton 1990: 153). The deletion of the front jer /ь/ yielded the syllabic palatalised sonant /r̩ʲ/, whereas the elision of the back jer /ъ/ gave rise to the plain syllabic rhotic /r̩/. In LPSl, the two syllabic rhotics remained distinctive in South Slavic and Central Slavic,

but in the course of time, they merged into /r̩/.[3] The next important development involved a merger of the syllabic rhotics arising from **trъt* with those arising from **tъrt* (Carlton 1990: 153).

Sound sequences of the **tr̩t* type, irrespective of their origin, underwent further changes in the different Slavic languages. In most South Slavic languages, the rhotic still has the phonological status of a syllabic consonant. As for West Slavic, Czech and Slovak are the only languages in which the rhotic sound retained its syllabicity.[4] In Polish and the two Sorbian languages, the **tr̩t* syllable remained unchanged, but it was later restructured in various ways. Importantly, in none of the three languages are interconsonantal rhotics considered to be syllabic. Finally, in Bulgarian and Kashubian, **tr̩t* was replaced with syllables containing a vowel whose quality differed from what might be expected from strong [ъ] or [ь]. This replacement was typically, **tr̩t* > **trVt*, but changes of the **tr̩t* > **tVrt* type were also attested (Carlton 1990, Moszyński 1984, Schenker 1993, Stieber 1979, Townsend and Janda 1996).

[3] During the Old Church Slavonic period (OCS), which extended from the mid 9th century till the end of the 11th, the plain and palatalised syllabic sonorants were not distinguished from sequences of sonorants followed by a reduced vowel. It is assumed that, prehistorically, there were front and back syllabic sonorants, always followed by a front or back vocalic element respectively, as suggested by the two spellings *črъvь* and *črъvь* 'worm' (nom. sg.) (Huntley 1993: 127). The difference was no longer marked in the ortho-graphy of OCS as the two sounds had merged. Huntley (1993) further argues that the sonorant pairs /l/ – /lʲ/ and /n/ – /ɲ/ were still distinct after /r/ and /rʲ/ had merged. Neutralisation of the phonological contrast between the two trills may be attributed to their being hardly distinguishable, which was due to the very short linear distance between their places of articulation.

[4] The phonotactics of the Czech language allows for sound sequences in which the fricativised trill /r̝/ occurs in interconsonantal position or in post-consonantal, word-final position, e.g. *pohřbu* 'funeral' (gen. sg.) or *vnitř* 'interior' (archaic). In spite of this, the sound does not have the status of a syllabic rhotic (Bičan 2013).

3. Distribution of obstruentised rhotics in Modern Polish

The phonotactics of Modern Polish is rather complex as it allows for heavy onset clusters, e.g. *pstrąg* [pstrɔ̃ŋk] 'trout', and even heavier coda clusters, e.g. *przestępstw* [pʃɛstɛ̃mpstf] 'crime' (gen. pl.). In addition to that, Polish also allows for cross-linguistically rare sound patterns that include obstruentised rhotics in onset and coda positions. Obstruentised rhotics occur in the four contexts presented in (3).

(3a) #_C – word-initial, preconsonantal position, e.g. *rdza* [r͡dza] 'rust'
(3b) C_C – inter-consonantal, onset position e.g. *drwal* [drval] 'woodcutter'
(3c) C_.C – inter-consonantal, coda position, e.g. *Piotr.ka* [pjɔtrka] 'Peter' (gen. sg.)
(3d) C_# - word-final, postconsonantal position, e.g. *wiatr* [vjatr] 'wind'

It must be emphasised at this point that the Polish lexicon does not contain very many words meeting the phonotactic criteria in (3). For instance, the sound combination in (3a) is found only in the following eight words: *rdest* 'knot grass', *rdza* 'rust', *rdzeń* 'core', *rtęć* 'mercury', *rwać* 'to tear', *rwetes* 'turmoil', *rżeć* 'to neigh', *rżnąć* 'to cut' and their derivatives. Equally infrequent are clusters of the C_C type in (3b). Excluding proper nouns, which definitely extend the list, there are only ten lexical items that follow this sound pattern: *brnąć* 'wade', *drgać* 'vibrate', *drwal* 'woodcutter', *drwić* 'sneer', *grdyka* 'Adam's apple', *krnąbrny* 'recalcitrant', *krtań* 'larynx', *trwać* 'to last', *trwonić* 'squander', *trwoga* 'fear'. In addition to these words, interconsonantal coda rhotics are also found in several derivatives of *krew* 'blood' and *brew* 'eyebrow', where the vowel of the root is deleted, e.g. *krwisty* 'bloody', *brwi* 'eyebrows'.

With regard to coda positions, inter-consonantal r-sounds (3c) only occur in word-medial clusters, e.g. in several inflected

forms of the name *Piotrek* such as *Piotrka* (gen. sg.), and in several inflected and derived forms of the noun *mędrzec* 'sage', e.g. *mędrca* (gen. sg.). Clusters of this type are also found in a handful of words to which the prefix *kontr-* 'counter' can be attached, e.g. *kontrkandydat* 'opponent'. Word-final, post-consonantal rhotics (3d) occur in a relatively large number of words, many of which are of foreign origin, e.g. *metr* 'meter', *litr* 'liter', *teatr* 'theater', *filtr* 'filter' (see the Appendix).

The clusters in (3) constitute an articulatory difficulty not only by virtue of being rather infrequent. It has been established that infrequent words are not reduced phonetically to the same extent as high-frequency words (Bybee 2001, Shockey 2003). Francis and Kučera (1982) define high frequency words as ones that occur more than 35 times per one million words. According to the National Corpus of the Polish Language (nkjp.pl), the vast majority of the target words used in this study are regarded as low-frequency items. The proper name *Piotr* as well as the gen. sg. form of *krew* 'blood' constitute exceptions to the general rule.

4. The study

The primary objective of the study is to provide a detailed description of the acoustic and temporal characteristics of the obstruentised rhotic of Polish. The former specifies the F1 and F2 values of the vocalic elements occurring between constriction phases of trills, while the latter includes the duration of the constituents of rhotics. An attempt is also made to determine whether or not the position within the syllable exerts an influence on the pronunciation of the rhotic phoneme. Finally, the collected data are also expected to provide conclusive evidence as to how the neighbouring segment(s) affect the physical realisation of the obstruentised rhotic of Polish.

To achieve the goals of the study, ten native speakers of Polish, aged 21–22, were asked to take part in the recording session. At that time, they were students at Szczecin University in its Department of English. None of the participants were

reported or observed to have a speech impediment or hearing impairment. The participants were asked to read a list of words embedded in the carrier phrase *Powiedziała X, not Y* 'She said X, not Y'. The rationale behind choosing this carrier phrase is that the items in slots X and Y are contrasted, which increases the likelihood of trilling. The target words contained obstruentised rhotics in the four contexts presented in (3). The wordlist was designed such that, in each group, half of the rhotics were immediately followed/preceded by a stop and the other half by a fricative (see the Appendix). In addition, 75 words with the vowels /i a u/ in stressed position were used as distractors. The vowels were later used as a frame of reference for describing the quality of intrusive vocalic elements of obstruentised trills.

The recording sessions took place in the phonetics lab at Szczecin University in November 2011. The data were recorded at a 44,100 Hz sampling rate directly into a laptop computer (Sony Vaio SVF1532U1EW) using an M-Audio Uber Microphone. The Praat Software (version 4.2.21) was used to digitise the data, carry out the acoustic analyses and produce spectrograms and oscillograms.

5. Allophones of the obstruentised /r/ of Polish

An acoustic analysis of the data revealed that the obstruentised rhotic of Polish is highly susceptible to phonetic change in the four contexts investigated in the study. Given their articulatory and acoustic properties, the allophones encountered in the recordings were divided into five groups, according to their manner of articulation. These include: voiced trills [r], fricated trills [r̝], spirantised rhotics [ɻ], affricated rhotics [rˢ] and taps [ɾ].[5] In addition to these variants, instances of deletion were included, although they were rather infrequent. Table 1 provides

[5] Since the IPA alphabet does not provide a symbol for affricated rhotics, [rˢ] will be used throughout the paper to represent variants of this type as it involves a closure followed by a period of friction.

information as to the frequency of the occurrence of the six articulatory variants of the obstruentised /r/ distinguished in the study.

With regard to voiced trills, the vast majority of rhotics that fall into this category (89 %) include two full cycles of vibration, while in the remaining 11 % three cycles were made. If three constriction phases occur, the degree of phonetic reduction increases with each consecutive occlusion. This phenomenon is illustrated in Figure 1, which depicts a trill in the word *brnąć* [brnɔ̃t͡ɕ] 'to wade'. Typically, the first cycle includes a complete closure, while in the second and third cycle the constrictions are usually incomplete and may even have an indistinct formant structure (see also Jaworski 2018).

Fricated trills tend to occur in clusters in which they are flanked by voiceless consonants, e.g. in the words *krtań* [kr̥taɲ] 'larynx' and *trwoga* [tr̥fɔga] 'fear'. Allophones of this type were also encountered in post-consonantal, word-final position (see Table 1). Fricated trills exhibit marked differences with respect to the number of occlusions, which is very likely to be correlated with the amount of articulatory effort. The trill in Figure 2, which presents the word *krtań* 'larynx' pronounced by S3, is made up of five cycles of vibration (marked A-E); however, the 40 instances of fricated trills found in the data typically include three closures, with durations ranging between 12.4 and 15.7 ms. The short duration of the closure phase results from the considerable amount of friction that is due to its being preceded by a voiceless plosive[6] (see Jaworski 2018).

[6] Although Polish voiceless plosives are weakly aspirated even in stressed syllables, in C_C onset clusters they tend to be pronounced with a considerable amount of friction due to a greater-than-usual articulatory effort exerted by speakers.

Table 1
Number of articulatory variants produced
in the four contexts examined in the study

Context \ Variant		r	r̝	ɻ	rˢ	r	ø
#_C	(195)	160	-	-	35	-	-
C_C	(197)	127	23	34	8	5	-
C_.C	(193)	-	-	121	65	-	7
C_#	(198)	-	17	140	24	11	6
Total	(783)	287	40	295	132	16	13

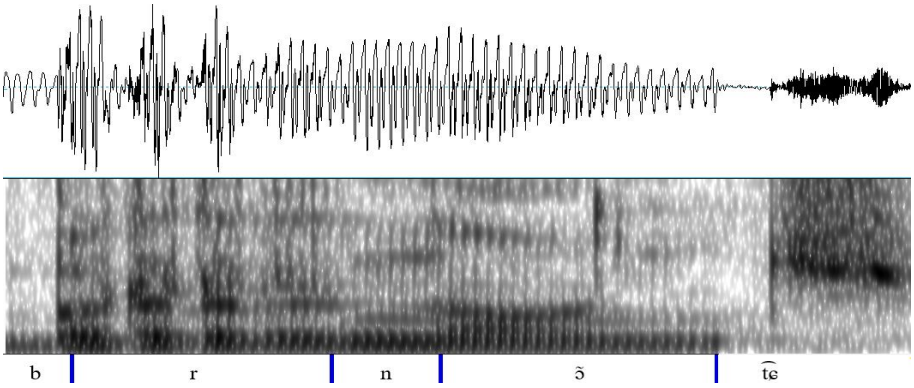


Figure 1
Spectrogram of *brnąć* 'to wade' with a trill with three constrictions

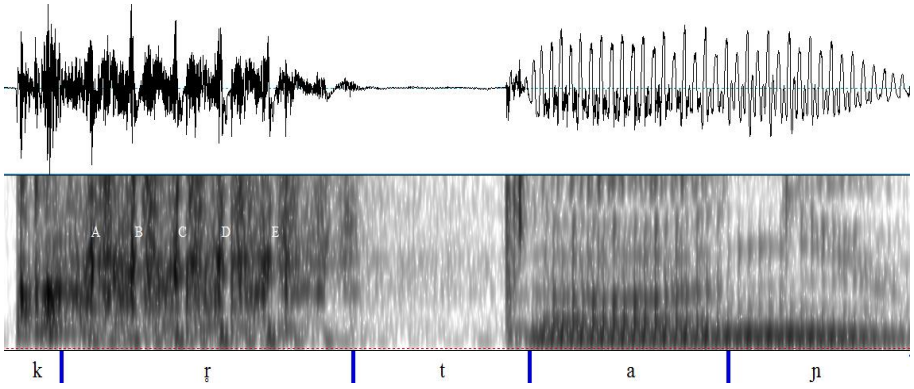


Figure 2
Fricated trill in the word *krtań* 'larynx' produced by S3

Spirantised rhotics constitute the most frequent allophone of the obstruentised /r/ of Polish. A token of this type, produced in the word *trwonić* [tɻfɔɲit͡ɕ] 'squander', is presented in Figure 3. Spirantised rhotics represent a greater degree of phonetic reduction than fricated trills due to the fact that the former lack a complete constriction. In other words, they are realised phonetically as a period of friction. On the other hand, the changing amplitude of friction in the oscillogram and the changing intensity of the spectrum indicate that the articulating part of the tongue was not totally motionless throughout the rhotic segment. This also suggests that the speaker tried to produce a trill. Trills require a considerable amount of articulatory effort as well as a high degree of articulatory precision. Therefore, they are not always attainable, especially in connected speech. As a consequence, they are usually sacrificed and the less demanding allophones of /r/ are produced.

Somewhat surprisingly, as many as 132 of the tokens were classified as affricated rhotics. Allophones of this type consist of a tap followed by a strong burst of noise similar to that of an unaspirated plosive. The duration of the burst release was used as a criterion for distinguishing between tapped variants and affricated ones. It was arbitrarily assumed that an affricated rhotic is made up of a closure followed by a period of friction that is at least 1.5 times longer than the closure phase.[7]

Figure 4 depicts a word-final, affricated rhotic produced in the word *bóbr* 'beaver'. The rhotic sound is separated from the preceding plosive by a 35-millisecond intrusive vocalic element. The rhotic itself consists of an 18-milisecond complete closure phase followed by a period of relatively strong friction whose duration is 15 miliseconds longer. The duration of the closure phase is thus comparable with that of the taps produced in numerous languages (see Baltazani 2009 for Greek, Blecua 2001,

[7] Affricated rhotics do not seem to have been mentioned in phonetic literature, yet realisations that meet the articulatory criteria described above are presented in Celata et al. (2016). The authors use the symbol [ɾ̝] to represent affricated allophones of rhotics occurring in Sicilian Italian.

Jaworski and Gillian 2011 for Polish, Jaworski 2018, Recasens and Pollarès 1999 for Spanish). As for the period of friction, it may be even twice as long as the constriction phase. Interestingly, neither the spectrogram nor the oscillogram show signs of vocal fold activity throughout the rhotic sound. This finding is somewhat surprising given that the preceding plosive is fully voiced.

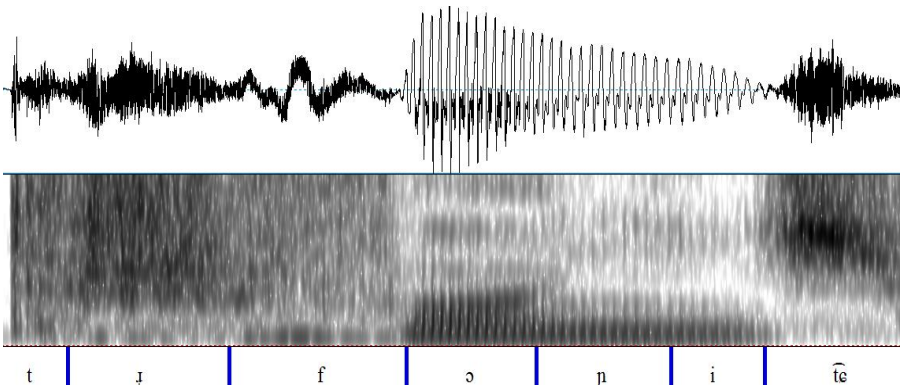


Figure 3
Spirantised rhotic in the word *trwonić* 'squander'

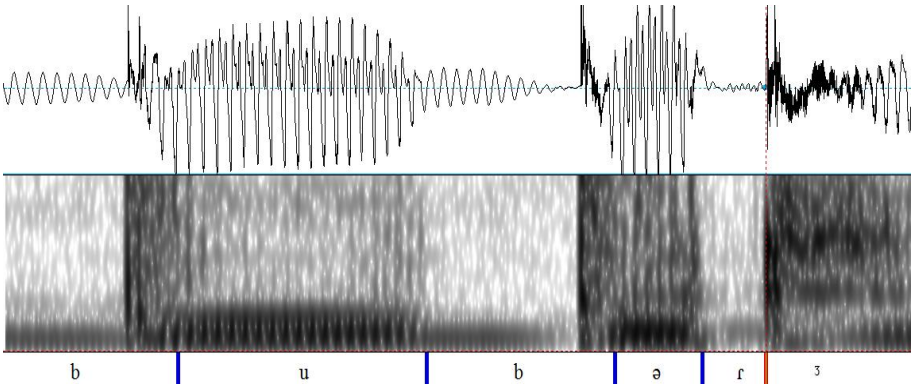


Figure 4
Affricated rhotic in the word *bóbr* 'beaver'

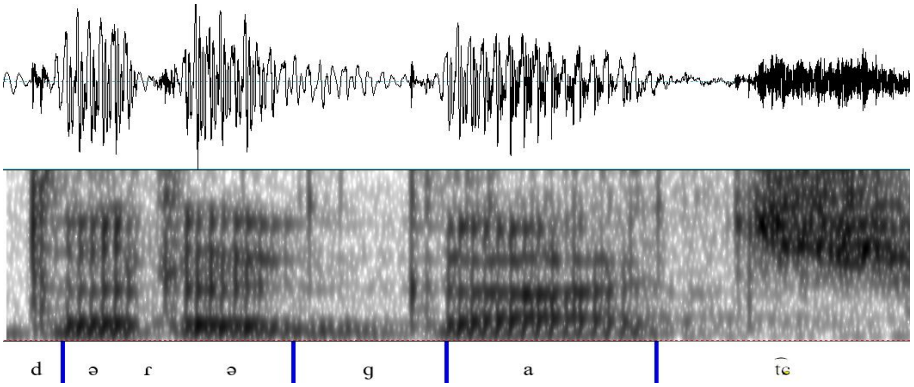


Figure 5
A tapped variant of obstruentised /r/
occurring in the word *drgać* 'to vibrate'

Obstruentised rhotics may also be realised phonetically as taps. In the recordings analysed for the purposes of the study, tapped variants constituted a tiny minority, as only 16 instances of tapping were encountered. These findings are rather surprising given that the taps constitute the most frequent allophones of vowel-adjacent r-sounds, not only in Polish, but also in the other Slavic languages (Jaworski 2018). Figure 5 presents a variant of this type, produced in the interconsonantal position in the word *drgać* [drgat͡ɕ] 'to vibrate'. Since this token occurs between two plosives, the tap is separated from the flanking plosives by two intrusive vocalic elements. In this case, the preceding element is shorter than the following one, 24 ms and 32 ms respectively, but by no means should it be regarded as the norm (see Jaworski 2018). As for the acoustic properties of the vocalic elements, they happen to correspond with those of the neutral vowel schwa. The preceding and following intrusive elements are almost identical with F1 at the level of 511 Hz and 514 Hz, and F2 values of 1490 Hz and 1497 Hz respectively. The closure phase of 17 ms falls within the range described the in works of other authors investigating rhotics, e.g. Blecua (2001), Solé (2002), Ladefoged and Maddieson (1996), Recasens and Pallarès (1999), Jaworski (2018).

5.1. Initial, pre-consonantal position

In the initial, pre-consonantal position, only two variants of /r/ occur, namely a voiced trill and an affricated rhotic. The former is considerably more frequent (82 %) than the latter (18 %). The results strongly suggest that the two allophones of /r/ are, to some extent, dependent on the manner of articulation of the following consonant as trilling appears to be the norm in those target words where rhotics are immediately followed by stops, as in *rdest* [rdɛst] 'knot grass', while affrication is common in rhotic-fricative sequences, e.g. *rżeć* [rʒɛt͡ɕ] 'to neigh'.

As regards the acoustic properties of trills occurring in this context, Table 2 presents the mean duration of the first two constriction phases as well as those of the vocalic interval between the closures (V1) and between the second closure and the following consonant (V2) produced by the ten participants. In the case of the male participants, the average duration of the first closure phase is 18.13 ms (± 4.17), while that of the second occlusion is 17.25 ms (± 4.63). The vocalic intervals, however, follow the reverse pattern in which V1 is slightly longer than V2 (20.4 ms vs. 22.3 ms respectively). The results yielded by a one-way ANOVA test indicate that there is a certain amount of inter-speaker variation, yet the differences did not turn out to be statistically significant ($p > .05$).[8] As regards the duration of C1, the amount of inter-speaker variation is relatively close to the 5 % significance threshold ($df = 9$, $F = 1.72$; $p = 0.0889$). A similar level of variation was obtained for the duration of C2 ($df = 9$; $F = 1.76$, $p = 0.0806$). The differences are slightly greater as far as intrusive vocalic segments are concerned, as they reached the significance level with $p = 0.0471$ ($df = 9$; $F = 1.97$) and $p = 0.0339$ ($df = 9$; $F = 2.09$) for V1 and V2 respectively.

[8] A one-way ANOVA test is a standard statistical tool when several groups of scores are compared with respect to a single variable (Howitt and Cramer 2005: 187).

Table 2

Mean duration of the closure phases (C1 and C2) and vocalic intervals (V1 and V2) of word initial trills

	Male participants				
	S1	S2	S3	S4	S5
C1	17.1 ± 3.1	16.8 ± 3.2	18.5 ± 2.8	18.7 ± 2.6	18.5 ± 3.0
C2	16.3 ± 2.7	16.1 ± 2.5	16.1 ± 2.8	16.8 ± 4.3	17.1 ± 2.5
V1	19.8. ± 3.2	21.5 ± 3.0	19.7 ± 3.2	20.2 ± 3.8	20.8 ± 3.2
V2	22.5 ± 2.5	22.7 ± 3.4	20.1 ± 3.2	23.0 ± 3.5	22.4 ± 3.8
	Female participants				
	S6	S7	S8	S9	S10
C1	18.6 ± 2.5	16.8 ± 2.8	18.9 ± 3.0	20.0 ± 3.2	19.5 ± 2.4
C2	17.4 ± 2.3	18.0 ± 3.0	17.6 ± 2.4	17.7 ± 2.7	19.3 ± 2.1
V1	19.9 ± 3.0	21.6 ± 3.5	20.5 ± 3.6	18.3 ± 2.5	19.4 ± 2.2
V2	20.7 ± 3.5	21.7 ± 3.5	22.1 ± 3.2	20.8 ± 4.1	20.3 ± 3.3

These findings differ, to a certain extent, from the data reported by other authors, e.g. Blecua (2001), Lindau (1985), Ladefoged and Maddieson (1996), Recasens and Pollarès (1999), with respect to the duration of constrictions and vocalic elements. According to the above-mentioned sources, in the case of vowel-adjacent apical trills, the duration of both the closure phases and the vocalic intervals is on the order of 25 ms. The considerably shorter closure phases obtained in this study may be atributed to the fact that the examined trills are either adjacent to a consonant or flanked by two consonants. Needless to say, the differences may also be attributed to speaker-specific factors.

5.2. Inter-consonantal, onset position

Polish phonotactics allows for three-segment onset clusters involving an interconsonantal rhotic, in which the first slot is occupied by one of the plosives /b t d k g/, whereas the third slot can be filled by: (i) /t/, /d/ or /g/, (ii) /f/, /v/ or /ʒ/ or (iii) the nasal /n/. The collected data includes 197 tokens of the phoneme /r/ in this environment, 64.5 % of which were clas-sified as voiced trills, 11.7 % as voiceless trills, 17.2 % as fricatives and 4 % as affricated taps. Only five of the tokens (2.5 %) met the articulatory criteria of a tap sound (see Table 1). As in the case of word-initial, pre-consonantal sequences, the physical realisation of a rhotic segment appears to be dependent on the following segment. More specifically, trilled variants tend to occur between stops, while fricated allophones are usually produced when immediately followed by fricatives, especially the voiceless /f/.

With regard to voiced trills, their physical properties do not seem to differ considerably from those of their word-initial counterparts. However, the duration of the constriction phases (typically two, less frequently three) is slightly shorter and falls within the range of 12.8 to 22.6 ms (see Table 3 for details). As in the case of pre-consonantal onset trills, a series of one-way ANOVA tests were conducted to determine whether the acoustic parameters of trills vary from speaker to speaker. In fact, the level of statistical significance was reached with respect to the duration of C1 ($df = 9$, $F = 2.0$, $p = 0.0454$), but not with regard to C2 ($df = 9$, $F = 1.92$, $p = 0.0552$). As in the previous context, the first constriction tends to be longer than the following one(s). The same tendency is also visible in the data regarding intrusive vocalic elements. V1 and V2 exhibit a fair amount of inter-speaker variation as, in both cases, the statistical tests yielded significant results, with ($df = 9$, $F = 2.06$, $p = 0.0386$) and ($df = 9$, $F = 2.28$, $p = 0.0213$) for V1 and V2 respectively.

As noted above, 33 of the tokens in CrC onset clusters underwent spirantisation. This type of phonetic reduction is de-

finitely facilitated by a following fricative. In the group of target words meeting this requirement, 29 of the r-sounds (29 %) were articulated as fricatives. This percentage is considerably higher than in the case of initial, pre-consonantal rhotics (section 5.1). The difference may be accounted for by referring to the segmental make-up of the clusters in question. Unlike initial, pre-consonantal rhotics, the ones in the CrC context can be followed by the sound /f/, the only voiceless fricative allowed in this position. In inter-consonantal onset clusters, 55 % of the r-sounds adjacent to the labio-dental /f/ underwent spirant-isation, compared with only 11.7 % of those followed by a voiced spirant, either /v/ or /ʒ/.

Table 3

Mean duration of closures (C1; C2) and vocalic intervals (V1; V2) of inter-consonantal onset trills

	Male participants				
	S1	S2	S3	S4	S5
C1	16.5 ± 3.4	15.8 ± 3.7	16.6 ± 4.0	17.1 ± 3.5	16.8 ± 3.6
C2	16.3 ± 3.7	16.1 ± 2.5	16.0 ± 3.9	17.2 ± 4.0	16.4 ± 3.4
V1	22.3 ± 4.6	20.5 ± 4.4	20.3 ± 5.1	20.8 ± 4.7	19.7 ± 4.3
V2	23.2 ± 4.9	21.7 ± 4.8	20.3 ± 4.9	21.4 ± 4.2	20.4 ± 4.3
	Female participants				
	S6	S7	S8	S9	S10
C1	17.3 ± 3.8	16.9 ± 3.5	17.1 ± 4.0	16.4 ± 4.2	17.6 ± 3.3
C2	16.7 ± 3.8	16.1 ± 3.3	16.8 ± 4.0	16.8 ± 3.7	17.4 ± 4.4
V1	20.9 ± 4.4	19.9 ± 5.1	20.5 ± 4.9	20.3 ± 4.3	21.1 ± 5.2
V2	20.7 ± 4.5	20.1 ± 4.7	21.0 ± 4.6	20.5 ± 5.0	22.9 ± 4.9

5.3. Heterosyllabic Cr.C clusters

In the Polish language, inter-consonantal coda rhotics can only be encountered in word medial clusters where the r-sound and the following consonant are heterosyllabic. Since coda positions are prosodically weak, constituents of such clusters should be more susceptible to phonetic reduction than onset segments. This prediction has been confirmed by the results as trilled realisations are not attested in this environment and instances of deletion occur occasionally. The 193 tokens fall into one of the following categories: (i) fricatives (62.6 %), (ii) affricated rhotics (33.6 %) and (iii) instances of deletion (3.6 %).

The large number of spirantised rhotics in this context is hardly surprising, given that the rhotic is placed between two voiceless stops in three quarters of the target words. The most frequent variant, produced in *kontrkandydat* [kɔnt̪ɻkandʲdat] 'opponent', is presented in Figure 6. The section of the spectrogram showing the sequence of the dental plosive /t/ and the post-alveolar rhotic resembles that of an affricate, in that the burst of the former sound blends with the friction of the rhotic.

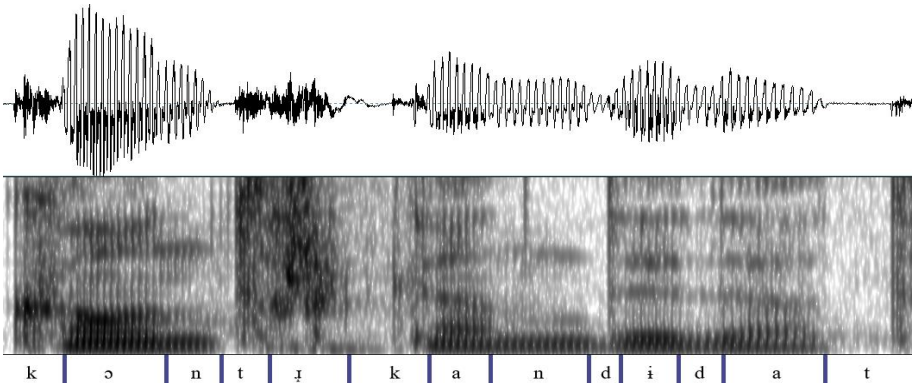


Figure 6
A spirantised /r/ in *kontrkandydat* 'opponent'

Although it needs to be verified by other studies, fricated variants may result from retroflexion of the rhotic segment. After the release of the plosive, rather than moving the apex away from the teeth, speakers probably produce a retroflex gesture by raising the tip of the tongue and moving it towards the alveolar ridge, main-taining a certain degree of contact with the teeth as well as the ridge.

5.4. Word final, post-consonantal position

Word final, post-consonantal rhotics appear to be particularly difficult to pronounce as the phoneme /r/ exhibits the greatest amount of variation in this context. Allophones attested in this position include: (i) voiceless trills (8.6 %), (ii) spirantised rhotics (70.7 %), (iii) taps (12.1 %) and (iv) instances of deletion (3 %). Additionally, in this environment, Speaker 4 produced five tokens (2.5 %) of an idiosyncratic r-sound, whose characteristics bear a striking resemblance to those of an alveolar plosive /t/.[9] The percentages definitely change in casual spontaneous speech where the percentage of deleted segments is rather likely to be higher.

The preponderance of spirantised rhotics in the Cr# position seems to be, at least partially, due to /r/ being preceded either by a voiceless plosive or by a fricative. In this prosodically weak position, even a small amount of aspiration of the stop results in frication of /r/. The likelihood of frication is additionally enhanced by the segmental make-up of such clusters where the post-alveolar rhotic is preceded by one of the dental plosives /t d/. This means that the same part of the tongue articulates both the plosive and rhotic gestures, which further facilitates phonetic reduction.

Tapped word-final rhotics are rather infrequent and, judging from the data, their distribution appears to be limited to those contexts where the phoneme /r/ is preceded by a voiced

[9] These tokens were excluded from the analysis.

consonant, as in *bóbr* [bubr] 'beaver' or kadr [kadr] 'frame'. Tapped variants consist of three elements, i.e. a closure phase flanked by two epenthetic vocoids. The duration of the vocalic element preceding the closure is, on average, 23.1 ms (± 4.14 ms) long, whereas that of the other voicoid ranges between 20.8 ms 28.6 ms, with the average duration of 25.1 ms (± 3.67 ms). In Cr# clusters, the intrusive vocalic element preceding the closure tends to be longer between the dental /d/ and the rhotic than in sequences involving the bilabial /b/ followed by /r/, yet the few tokens present are insufficient for making valid generalisations.

The average duration of the closure phase of a word-final tapped variant lasts 16.3 ms (± 3.1ms), thus the value is comparable with the length of closures produced in trills (section 5.2) and those of taps articulated in the other contexts (Jaworski and Gillian 2011, Jaworski 2014, 2018). However, the data includes five unusual taps produced by S4 in clusters made up of a dental plosive followed by a rhotic. What distinguishes these from typical taps is the duration of the closure phase being approximately three times longer than that of a typical tap and comparable with the hold phase of the dental plosive /t/, with the average value 55.8 ms (± 5.4 ms). They are also followed by a burst of noise rather than a vocalic segment (Figure 9). It can be argued that the burst is a consequence of the prolonged closure which appears to be sufficiently long to increase the air pressure behind the occlusion to such a degree that an abrupt release produces a certain amount of noise. However, given that only one of the participants produced this particular variant, it should probably be regarded as a speaker-specific feature.

As few as 8 % of the word-final r-sounds were pronounced as voiceless trills. The low token frequency of this particular variant implies that the participants had considerable difficulty articulating the [r̥] sound as, in the vast majority of cases, they failed to create and maintain the aerodynamic conditions for trilling. Somewhat surprisingly, none of the trills in the data is voiced, even those preceded by voiced consonants.

Finally, the data also contains six instances of elision, which typically occur in those items where the phoneme /r/ is preceded by a fricative. Word-final rhotics were judged to have been deleted if the friction in the section of the spectrogram that corresponded with the fricative-rhotic sequence did not show any signs of change with respect to intensity or range, nor did it include any of the other allophones described above.

5.5. Intrusive vocalic elements

The acoustic data presented in this section include the mean values of the first two formants of the intrusive vocalic elements that occur between the constrictions of the 287 trilled variants of /e/ encountered in the examined recordings (see Table 4). In order to show how the vocalic elements are distributed in the vowel space in relation to other Polish vowels, the first two formants of 25 tokens of stressed /i a u/ sounds were also measured to provide a frame of reference for the intrusive vocalic elements. All the measurements were made manually at the midpoint of each vowel.

The data presented in Table 4 indicates that the vocalic elements occurring in trilled variants ought to be classified as mid-central vowels as their acoustic characteristics do not differ significantly from those of the schwa sound. The schwa vowel, also referred to as a vowel of undetermined quality, has one resonance at 500 Hz, another one at 1500 (Ladefoged 1996: 121). In the case of the male speakers, however, one might argue that they should rather be described as mid-high and central on account of their F1 being slightly lower than that of /u/. This claim is further supported by the evidence in Figure 7 that shows the distribution of the vocalic elements, marked [ə], in relation to the peripheral vowels /i a u/ produced by S1. In his speech, the mean F1 value of the vocalic elements is 442 Hz (± 37 Hz), while that of the second formant is 1612 Hz (± 71 Hz).

Table 4
The mean F1 and F2 values of vocalic elements produced in voiced trills

	Male participants				
	S1	S2	S3	S4	S5
No	24	26	33	18	39
F1	442 Hz (± 37 Hz)	461 Hz (± 44 Hz)	437 Hz (± 51 Hz)	483 Hz (± 47 Hz)	454 Hz (± 41 Hz)
F2	1612 Hz (± 71 Hz)	1621 Hz (± 73 Hz)	1582 Hz (± 68 Hz)	1499 Hz (± 76 Hz)	1567 Hz (± 67 Hz)
	Female participants				
	S6	S7	S8	S9	S10
No	31	27	36	38	15
F1	573 Hz (± 43 Hz)	549 Hz (± 51 Hz)	538 Hz (± 39 Hz)	498 Hz (± 46 Hz)	486 Hz (± 54 Hz)
F2	1622 Hz (± 83 Hz)	1617 Hz (± 73 Hz)	1589 Hz (± 58 Hz)	1454 Hz (± 71 Hz)	1654 Hz (± 67 Hz)

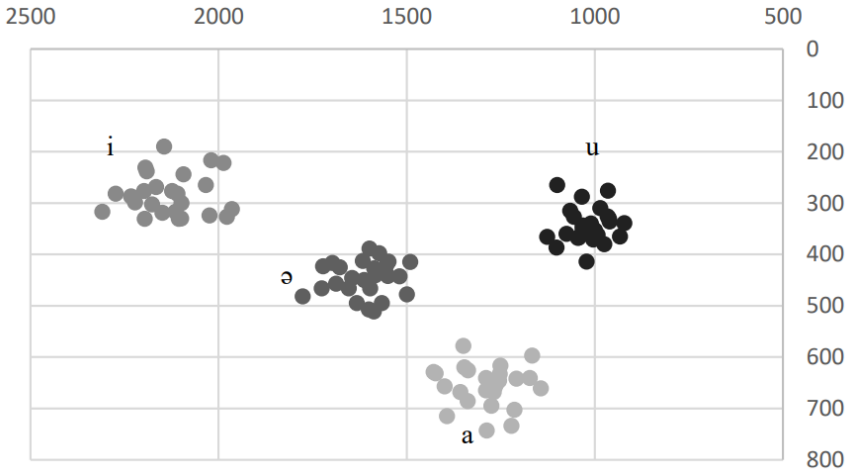


Figure 7
Distribution of vocalic elements in the vowel space (S1)

6. Conclusion

The acoustic analysis examined the susceptibility of the Polish obstruentised rhotic to phonetic change with respect two factors: (i) the position within the syllable and (ii) the manner of articulation of the adjacent segment(s). With regard to (i), the general conclusion that can be drawn from the data is that trilled variants predominate in prosodically strong onset positions (#_C and C_C), while in the two coda positions (C_# and C_.C) the sound is very likely to be reduced to a fricative. The results also indicate that the physical realisation of the rhotic segment, irrespective of the context, depends on the amount of muscular effort and articulatory precision, as evidenced by the different variants of /r/ produced in clusters that have the same phonological make-up, e.g. *rdza* [r͡dza] 'rust' and *rdzeń* [r͡dzɛɲ] 'core'. The significant number of trilled realisations of /r/ definitely has to do with the research methodology that facilitated accurate, or hypercorrect, pronunciation. As far as factor (ii) is concerned, the production of a trilled variant appears to be facilitated by an adjacent stop, plosive, affricate or nasal. In sound combinations involving fricatives, especially in coda clusters, the rhotic regularly undergoes frication.

The temporal characteristics of trilled allophones, i.e. the duration of their closure phases and vocalic intervals, differ substantially from the data presented by other authors, e.g. Ladefoged and Maddieson (1996), Recasens and Pallarès (1999), Blecua (2001), Solé (2002), yet none of the above-mentioned works is concerned with non-vowel-adjacent rhotics, so the discrepancies may have resulted from the consonantal environments in which the obstruentised rhotic was found.[10]

The results presented in the paper raise a number of questions that should be addressed in follow-up studies. For

[10] The comprehensive analysis of Slavic rhotics presented in Jaworski (2018) does not provide an answer to the question. Surprisingly enough, the Polish subjects whose speech was analysed in that study did not produce a sufficient number of vowel-adjacent trills to draw conclusions.

instance, it would be interesting to analyse samples of spontaneous speech to determine the extent to which the obstruentised rhotic of Polish is susceptible to phonetic change. An experiment could also be designed to establish whether or not the acoustic properties of the intrusive vocalic elements in obstruentised trills are dependent on the quality of the nearest phonological vowel. Finally, similar investigations of obstruentised rhotics in other languages that have them (Russian, Ukrainian), would undoubtedly provide more insight about the characteristics of these unusual sounds.

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APPENDIX

Target words used in the study

#_C	C_C	C_.C	C_#
rtęć	*drgać*	*Piotrka*	*Piotr*
rdest	*Brda*	*mędrca*	*wiatr*
rdza	*krtań*	*kontrwywiad*	*litr*
rtęciowy	*grdyka*	*kontrkandydat*	*metr*
rdzeń	*drganie*	*kontrdesant*	*kilometr*
rdzawy	*brnąć*	*mędrka*	*bóbr*
rdzenny	*krnąbrny*	*Jędrka*	*dóbr*
rdzewieć	*drgawki*	*Piotrkiem*	*tembr*
rtęciówka	*drgnąć*	*mędrcem*	*żubr*
rdestnica	*Brno*	*Pietrka*	*kadr*
rżenie	*trwonić*	*kontrkultura*	*manewr*
rwa	*drwal*	*kontrmanifestacja*	*cyfr*
rżysko	*drwić*	*kontrmarsz*	*Luwr*
rwetes	*krwisty*	*Piotrkowi*	*szyfr*
rżnąć	*brwi*	*mędrcowi*	*gofr*
rwać	*drżenie*	*mędrkowi*	*cyfr*
rwący	*drwina*	*Pietrkowi*	*Luwr*
rwany	*drwoga*	*kontrpropozycja*	*szyfr*
rwowy	*krwotok*	*kontrprojekt*	*manewr*
rwanie	*Drwęca*	*kontrrewolucja*	*gofr*

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The declining use of medical eponyms associated with the Nazi regime: A case study of changes in the International Classification of Diseases of the World Health Organization

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Abstract

This work focuses on a specific type of terminological variants, i.e. medical eponymous terms gradually replaced by alternative, non-eponymous terms. This descriptive study is conducted on a controlled medical terminology set – the International Classification of Diseases (ICD) of the World Health Organization (WHO). The focus of the study is on the eponymous terms named after physicians associated with the Nazi regime. The aim is to analyse if these eponyms were included in ICD-10 and if they were transferred into the new, 11th version of the Classification. Of all the eponymous terms presented in the paper, seven were found in ICD-10. The overall result of this study indicates that the eponymous terms associated with the Nazi regime have been replaced with alternatives or removed from the 11th version of the International Classification of Diseases in all cases, except for *Creutzfeldt-Jakob disease*.

Keywords

medical eponyms, medical terminology, eponymous terms, ICD

Wypieranie eponimów medycznych związanych z reżimem nazistowskim na przykładzie zmian w Międzynarodowej Klasyfikacji Chorób Światowej Organizacji Zdrowia

Niniejsza praca poświęcona jest specyficznemu typowi wariantów terminologicznych – medycznym terminom eponimicznym, które są stopniowo zastępowane alternatywnymi terminami nieeponimicznymi. Przedstawiono badanie deskryptywne, prowadzone na kontrolowanym zbiorze terminologii medycznej – Międzynarodowej Klasyfikacji Chorób (ICD) Światowej Organizacji Zdrowia (WHO). Badanie koncentruje się na terminach utworzonych od nazwisk lekarzy związanych z reżimem nazistowskim. Celem jest prześledzenie, które z tych eponimów zostały włączone do ICD-10 i czy zostały przeniesione także do nowej, 11. wersji klasyfikacji. Spośród wszystkich terminów eponimicznych przedstawionych w pracy, siedem zostało znalezionych w ICD-10. W 11. wersji Międzynarodowej Klasyfikacji Chorób terminy związane z reżimem nazistowskim zostały usunięte lub zastąpione alternatywnymi terminami we wszystkich przypadkach z wyjątkiem terminu *choroba Creutzfeldta-Jakoba*.

Słowa kluczowe

eponimy medyczne, terminologia medyczna, terminy eponimiczne, ICD

1. Introduction

Although variation is present in all natural languages, including domain-specific ones, traditional terminology theory placed terminology variation in specialised communication within the area of anomalies, claiming that terms should be fixed and thus variation should be avoided (see Kerremans, De Baer, Temmerman 2010: 185, Wüster 1979). The approaches which developed later resulted in a shift towards accepting variation as one of the central phenomena in descriptive terminology research (Kerremans, De Baer, Temmerman 2010: 185). This work focuses on a specific type of terminological variants, i.e. medical eponym-

ous terms gradually replaced by alternative, non-eponymous terms. This descriptive study is conducted on a controlled medical terminology set developed in an "in vitro" environment – the International Classification of Diseases (ICD) of the World Health Organization (WHO). The focus of the study is on eponymous terms named after physicians associated with the Nazi regime and their replacement with non-eponymous terms in the newest version of ICD.

2. The International Classification of Diseases (ICD) of the World Health Organization (WHO)

In May 2019, the World Health Assembly adopted the eleventh version of the International Classification of Diseases, ICD-11, which is expected to come into force on 1 January 2022 (WHO n.d., Porta 2014). ICD-11 is "the global standard for health data, clinical documentation, and statistical aggregation" (WHO n.d.) It is scientifically up-to-date and contains 17,000 categories, 80,000 concepts, 120,000 terms and more than 1.6 million clinical terms. Additionally, its proposal platform is open to stakeholders' suggestions on updates to the Classification. The previous version, ICD-10, was endorsed in May 1990 and since then has been used in more than 150 countries, translated into more than 40 languages, and cited in over 20,000 research papers. ICD is a controlled and standardised terminology set:

> ICD is the foundation for the identification of health trends and statistics globally, and the international standard for reporting diseases and health conditions. It is the diagnostic classification standard for all clinical and research purposes. ICD defines the universe of diseases, disorders, injuries and other related health conditions (WHO n.d.).

The history of ICD dates as far back as 1893, when the first international Classification, the International List of Causes of Death (Bertillon Classification), was adopted by the Inter-

national Statistical Institute (Porta 2014, WHO n.d.). The World Health Organization was entrusted with the ICD in 1948 and published ICD-6, the sixth version of the Classification but the first to include morbidity. As of 1967, under the WHO Nomenclature Regulations, WHO Member States should "use the most current ICD revision for national and international recording and reporting mortality and morbidity statistics" (WHO n.d.).

3. Eponymous terms and terminology variation

Even though medical terminology is controlled and regulated to an extent, term variation is one of its characteristic features – as is the case in other domain-specific languages (*cholelithiasis = gallstone disease*, *atrioventricular bundle = bundle of His*). One of the undeniably prominent types of variants of medical terms is the category of eponymous terms, that is, terms named after people, places etc. These seem to carry the history of medicine (see Matteson and Woywodt 2006: 1328), since they commemorate researchers who discovered, described or studied diseases and their symptoms, or developed treatments and tools (*Parkinson's disease*, *Down syndrome*, *Babinski sign*, *Heimlich manoeuvre*, *Babcock forceps*). In fact, eponymous terms can be formed not only on the basis of the names of famous researchers but also toponyms, i.e. place names (*Zika virus*) or names of mythical characters (*Othello syndrome*, *Achilles tendon*). Eponyms may be used internationally (*Alzheimer's disease*) or not (*choroba Leśniowskiego-Crohna* in Polish vs *Crohn disease* in English or *odczyn Biernackiego*, a Polish eponymous term for *erythrocyte sedimentation rate*).

Terminology variation may depend "on the social and ethnic criteria in which communication among experts and specialists can produce different terms for the same concept and more than one concept for the same term" (Faber Benítez 2009: 113), while the development of terminology policies involves the participation of its stakeholders in the process (Drame 2015: 507-519). A case in point, as much as eponyms both facilitate com-

munication and are part of status negotiations in the medical community, medical journal editors and medical colleges are advising against using some, though not all of them (Matteson and Woywodt 2006: 1328). Eponymous terms are criticised for failing to meet the rigours of controlled terminology, for incorrectly crediting the researcher who should be remembered for a given finding (see the Discussion section for examples), and for bearing the names of researchers who have violated the principles of medical and universal ethics, or have committed crimes against humanity while conducting their research (Matteson and Woywodt 2006: 1328, Thomas 2016: 295). These infamous eponyms are discussed in this paper.

This study focuses on the eponymous variants of medical terms, and specifically on the eponymous terms named after the perpetrators of Nazi crimes against humanity or individuals who were enthusiastic supporters of the Nazi regime. Its aim is to analyse if these eponyms were included in ICD-10 and if they were transferred into the new 11th version of the Classification. To this end, I conducted a literature review and compiled a list of eponymous terms, which are presented below together with alternative terms and brief accounts of the researchers' involvement in forced sterilisation and euthanasia under the T4 project or other unethical research to illustrate the scale of their transgressions. In the next step, I searched for these eponyms in ICD-10 in the English, Spanish, French, German and Polish versions and in the ICD-11 version in English, as other language versions had not yet been published at the time of this study.

4. Medical eponyms associated with the Nazi regime

4.1. Hans Reiter

Eponymous term: Reiter syndrome (Reiter's syndrome, Reiter's disease)
Alternative terms: reactive arthritis, infectious uroarthritis

The disease "Reiter's syndrome" was named after the German physician and scientist, Hans Conrad Reiter. During the inter-war period, Reiter's research in the Weimar Republic earned him great respect from the international scientific community. The primary source of controversy around the eponymous term named after Reiter is his further career in Germany. In 1933, two years after joining the Nazi Party (NSDAP), he was appointed head of the Kaiser Wilhelm Institute of Experimental Therapy, and later became Director of the Ministry of Hygiene, and President of the Reich Health Office which was responsible for the forced sterilisation and euthanasia of thousands of psychiatric patients (Wallace and Weisman 2003: 208–230, Weisz 2011: 91–93). He participated in deadly experiments on Jewish, Russian and British prisoners in the Buchenwald concentration camp. Reiter was sentenced to prison at the Nuremberg trials (Wallace and Weisman 2003: 208–230, Weisz 2011: 91–93), but the eponymous term formed after his name has remained in use and its replacement with an alternative is still in progress. In 1999, the American College of Rheumatology issued guidelines for the treatment of the disease, referring to it as *reactive arthritis* (Cheeti, Chakraborty and Ramphul 2020, Weisz 2011: 91–93, Wallace and Weisman 2003: 208–230, Kwiatkowska, Filipowicz-Sosnowska 2009: 1). The use of the eponymous term now seems to be in a rather undynamic decline (see the Discussion section).

4.2. Hans Eppinger

Eponymous terms: Cauchois-Eppinger-Frugoni syndrome; Eppinger's spider naevus
Alternative terms: portal vein thrombosis; star (spider) angioma (see Sand et al. 2010, Thomas 2016: 296)

Hans Eppinger (1879–1946) was an Austrian internist, professor, and director of an internal medicine clinic in Vienna. He conducted seawater potability experiments on Gypsy prisoners

in the Dachau concentration camp. The inmates were forced to drink only seawater before severe dehydration developed, which resulted in the prisoners' deaths (Cohen Jr 2010: 694, Strous and Edelman 2007: 207–208).

4.3. Julius Hallervorden

Eponymous term: the Hallervorden-Spatz disease
Alternative terms: pantothenate kinase-associated neurodegeneration (Zeidman and Pandey 2012: 1310), neuroaxonal dystrophy, MarthaAlma Disease (Strous and Edelman 2007: 208)

As of 1 January 1938, Julius Hallervorden was a professor and the head of the neuropathology department at the Kaiser Wilhelm Institute for Brain Research (Kondziella 2009: 56–64, Strous and Edelman 2007: 208), and he worked for the Brandenburg State Hospital, which was one of the six elimination centres established under the T4 project, as a result of which "over 70,000 patients with various brain diseases were killed by barbiturate injections or gassing with carbon monoxide" (Kondziella 2009: 57). According to his own accounts, during the Nazi regime, Hallervorden investigated 697 brains of euthanasia victims. There are also reports that he removed brain material himself from the victims and allegations that "he was present at the killing of more than 60 children and adolescents in the Brandenburg Psychiatric Institution on 28 October 1940" (see Kondziella 2009: 56–64, Strous and Edelman 2007: 208). The victims „were selected according to the diagnoses which were of interest to the senior physicians – in the case of Hallervorden, for example, 'idiocy', cerebral palsy, epilepsy and infantile cerebral atrophy" (Martin, Fangerau and Karenberg 2016: 240).

4.4. Hugo Spatz

Eponymous term: the Hallervorden-Spatz disease

Descriptive term: pantothenate kinase-associated neurodege-ne-ration (Zeidman and Pandey 2012: 1310), neuroaxonal dystrophy, MarthaAlma Disease (Strous and Edelman 2007: 208)

Hugo Spatz was a prominent German psychiatrist (1888–1969), and the director of the Kaiser Wilhelm Institute for Brain Research in Berlin-Buch. He hired Julius Hallervorden, who was, in turn, appointed director of the central morgue of the psychiatric hospitals in Berlin-Brandenburg (Martin, Fangerau and Karenberg 2016: 238–239) and, as previously mentioned, chair of the neuropathology department of the Kaiser Wilhelm Institute for Brain Research (Shevel 1992: 2214). In the early 1920s, Spatz and Hallervorden worked together and documented a brain "with excessive iron deposits in the pallidum and reticulate zone of the substantia nigra, causing progressive rigidity" (Strous and Edelman 2007: 209). This was later called the Hallervorden-Spatz disease. As of the late 1930s, Hugo Spatz and Julius Hallervorden conducted research on children killed under the T4 project. Spatz was the director of the Kaiser Wilhelm Institute, and under his direction, „the brain research institute collaborated with the killing institute at Brandenburg-Gorden, obtaining hundreds of brains from the mentally ill of all ages" (Strous and Edelman 2007: 209). Spatz was never charged with the crimes he had committed. In addition to Hallervorden-Spatz syndrome, there is another eponymous term named after Spatz – the Spatz-Stiefler reaction (Kondziella 2009: 56–64, Strous and Edelman 2007: 209).

4.5. Murad Jussuf Bey Ibrahim

Eponymous term: Beck-Ibrahim disease (Strous and Edelman 2007: 208)

Murad Jussuf Bey Ibrahim (1877–1952) was an Egyptian professor of paediatrics, educated in Berlin, who specialised in neonatal gas-trointestinal disorders and central nervous system

disorders in children. According to reports, he became actively involved in killing sick and mentally ill children in 1941 (Strous and Edelman 2007: 208).

4.6. Eduard Pernkopf

Eponymous title: Pernkopf Anatomy (atlas)

Pernkopf (1888–1955) was a professor of anatomy at the University of Vienna and a member of the Nazi Party. In 1938, following Hitler's invasion of Austria, he was promoted to dean of the medical school at the University of Vienna. Pernkopf was involved in the expulsion of the school's Jewish staff, which resulted in the dismissal of 153 out of 197 faculty members, including three Nobel laureates (Strous and Edelman 2007: 208–209). During this period, he started writing the anatomy atlas, which was later widely and highly valued for its exceptionally detailed mapping of the human body. In his work on the atlas, Pernkopf used the bodies of over a thousand people executed by the Gestapo (Strous and Edelman 2007: 208–209).

4.7. Hans Joachim Scherer

Eponymous term: Van Bogaert-Scherer-Epstein syndrome
Descriptive term: cerebrotendineous xanthomatosis (Strous and Edelman 2007: 208, Kondziella 2009: 57, Thomas 2016: 296), cerebrotendinous cholesterosis (ICD-10), bile acid synthesis defect with cholestasis (ICD-11)

Scherer (1906–1945) was a German neuropathologist involved in the Nazi euthanasia project at the Neurology Institute in Breslau, Silesia, where he participated in investigating the brains of over 300 Polish and German children euthanised in the Loben Psychiatric Clinic for Youth (Strous and Edelman 2007: 208–209).

4.8. Walter Stoeckel

Eponymous terms: Goebell-Stoeckel-Frangenheim operation, Schauta-Stoeckel operation, Stoeckel's operation, Kelly-Stoeckel suture (Strous and Edelman 2007: 208–210)

Walter Stoeckel (1871–1961) was a renowned German gynaecologist and obstetrician, professor and chair of the Berlin Charite Hospital's gynaecology department. Stoeckel supported the Nazi regime, for instance, by not assisting his Jewish colleagues and was personally responsible for the expulsion of Jewish doctors from the German Society of Gynecology while he was its president (1933–34). He was very friendly with the Nazi regime, and he delivered one of Magda Goebbels' children. Stoeckel was not, however, directly or actively involved in the Nazi crimes against humanity (Strous and Edelman 2007: 210).

4.9. Friedrich Wegener

Eponymous term: Wegener's granulomatosis
Descriptive term: granulomatosis with polyangiitis

Friedrich Wegener (1907–1990) was a German pathologist and a dedicated Nazi. He joined the Sturmabteilung as early as 1932, then a year later, he joined the Nazi party. He was a pathologist in the Lodz ghetto. There is a suspicion that Wegener may have been involved in unethical activity at that site, but there is no conclusive evidence (Strous and Edelman 2007: 210). The only evidence that was found points to him performing autopsies on prisoners who died in transport (Woywodt and Matteson 2006: 1303–1306). After the war, his case was investigated, and he was imprisoned, but he was not judged in a trial and continued to work for years. The term *Wegener's granulomatosis* remains in use (Strous and Edelman 2007: 210).

4.10. Franz Joseph Kallmann

Eponymous term: Kallmann syndrome

Franz Joseph Kallmann was a psychiatrist born in 1897 in Neumarkt, Silesia, Germany. His connection with the Nazi regime is more of an influence or instigation rather than the direct perpetration of physical acts on patients or prisoners:

> The law stipulated that 200 Genetic Health Courts be established nationwide where teams of lawyers and doctors would review medical records and select individuals with heritable diseases (defined as congenital feeble-mindedness, schizophrenia, manic depression, hereditary epilepsy, Huntington's chorea, hereditary blindness, hereditary deafness, and serious physical deformities) for voluntary or forced sterilisation. [...]. Kallmann proposed that the program be extended to relatives of individuals with schizophrenia in order to identify also non-affected carriers (that is, those with minor anomalies) for compulsory sterilisation (Benbassat 2016: 2).

4.11. Max Clara

Eponymous term: Clara cells
Alternative terms: bronchiolar exocrine cell (exocrinocytus bronchiolaris or club cell) (Buttner, Lee and Cadogan 2020: 30)

Max Clara (1899-1965) was an active supporter of Hitler's party. Clara himself admitted that he conducted his study on samples obtained from a prisoner (Buttner, Lee and Cadogan 2020: 30) or prisoners (Winkelmann and Noack 2010: 274) executed by the Nazis. He presented a new cell type in the terminal bronchiole in a paper he published in 1937. Clara reported that he used material specially preserved after the executions, which "had given him an advantage over previous researchers" (Winkelmann and Noack 2010: 274).

4.12. Franz Seitelberger

Eponymous term: Seitelberger disease (sudanophilic leukodystrophy of the Seitelberger type)

Franz Seitelberger was not involved in the planning or execution of the Nazi euthanasia programme, however, he was its beneficiary. His PhD, written in 1954 under the supervision of Julius Hallervorden, was based on a study of the brains of three euthanasia victims from the Landesanstalt Görden in Brandenburg. Sudanophilic leukodystrophy of the Seitelberger type was reported in the dissertation (Kondziella 2009: 60).

4.13. Hans Gerhard Creutzfeldt

Eponymous term: Creutrzfeldt-Jakob disease
Alternative term: subacute spongiform encephalopathy

Hans Gerhard Creutzfeldt was a German neurologist and neuropathologist whose relationship with and attitude toward the Nazi regime could be described as ambivalent: he had made it clear that he disliked Nazi policies, but he became an associate member of the SS. What is more:

> during the Second World War, he was director of the Clinic for Psychiatry and Neurology in Kiel, Germany, from which over 600 patients were transported to provincial hospitals in Schleswig-Holstein where many of them – predictably – lost their lives as part of the T4 operation. Creutzfeldt prevented the transportation of patients, however, much less frequently than previously thought (Kondziella 2009: 62).

Creutzfeldt's scientific contribution to the description of Creutzfeldt-Jakob disease has been disputed.

4.14. Hans Asperger

Eponymous term: Asperger's syndrom

Hans Asperger, according to Daniel Kondziella, "was accused on uncertain grounds of harbouring sympathy for Nazi politics. Cautiously defended mentally disabled children" (2009: 59). Although he was portrayed as a defender of his patients, his role in the T4 euthanasia project was problematic (Czech 2018: 9–29). He referred a number of children with mental disabilities to Am Spiegelgrund, a clinic in Am Steinhof, a major psychiatric hospital in Vienna. At least 789 children died in that clinic between July 1940, when the clinic was established, and the fall of the Third Reich, and many of them were killed with:

> a barbiturate, frequently dissolved in cocoa. […] Those who survived were given repeated doses of the drug and denied food, and died slowly from starvation or infections such as pneumonia (Slagstad 2019).

Except for classified, top-secret documents, the official hospital records did not explicitly mention the euthanasia of the mentally disabled patients, so there is no direct evidence that Asperger knowingly referred patients to death. However, he must have not only been aware of euthanasia but also seen it "as an acceptable last resort for children with severe disabilities" (Slagstad 2019: 8).

5. Eponymous terms associated with the Nazi regime in ICD-10

Of all the eponymous terms presented above, seven were found in ICD-10. Of course, such terms as *Clara cells* or *Kelly-Stoeckel suture* or the title *Pernkopf Atlas* could not have been included, as they are not the names of diseases. Only one of the eponymous terms presented above is included as a disease named in

ICD-11, and that is Creutzfeldt-Jakob. Table 1 lists the seven eponymous terms in ICD-10 with their alternative variants and counterparts in the Spanish, French, German and Polish versions of the Classification. As mentioned before, only the English version of the eleventh edition has been published to date. The eponymous variants are used quite consistently in different language versions. What can be noticed, however, is that the French version of ICD-10 includes the term *syndrome oculo-urétro-synovial* with the addition "Fiessinger-Leroy-Reiter" in parenthesis, which reflects the contributions of Noel Fiessinger and Edgar Leroy to research into reactive arthritis (see the Discussion section). A trace of the trend of departing from eponyms in ICD-10 is seen in the case of cerebrotendinous cholesterol – a non-eponymous term is listed with its eponymous variant provided in parenthesis in all language versions of ICD-10. In ICD-11, a search for the eponymous term *Van Bogaert-Scherer-Epstein syndrome* leads to *bile acid synthesis defect with cholestasis*. Consequently, the eponymous term can be used as a search word but it is not listed as the name of the disease. The same is observed for „Reiter", „Hallervorden", "Spatz", "Wegener", "Kallmann", and "Asperger" – the user can type them in and obtain search results which will not, however, be eponymous terms (see Figure 1). This feature is also active in searches for non-eponymous terms which were used in ICD-10 but are no longer listed in ICD-11, for instance: *childhood disintegrative disorder*. The overall result of this study indicates that the eponymous terms associated with the Nazi regime are replaced with alternatives or removed from the 11th version of the International Classification of Diseases in all cases, except for the *Creutzfeldt-Jakob disease*.

Table 1

Eponymous terms related to the Nazi regime in ICD-10 versus ICD-11

Eponym	**Hallervorden-Spatz syndrome/ disease**	**Reiter's disease/ syndrome**	**Van Bogaert-Scherer-Epstein syndrome**
Descriptive term	Neuroaxonal dystrophy or "Martha Alma Disease	Reactive arthritis or infectious uroarthritis	Cerebrotendinous xanthomatosis
ICD-10 EN	G23.0 Hallervorden -Spatz disease	M02.3 Reiter disease	Cerebrotendinous cholesterosis [van Bogaert-Scherer-Epstein] (in section E75.5 Other lipid storage disorders)
ICD-10 ES	Enfermedad de Hallervorden–Spatz	Enfermedad de Reiter	Colesterosis cerebrotendinosa [van Bogaert-Scherer-Epstein]
ICD-10 FR	Maladie de Hallervorden-Spatz	Syndrome oculo-urétro-synovial [Fiessinger-Leroy-Reiter]	Cholestérose cérébro-tendineuse [van Bogaert-Scherer-Epstein]
ICD-10 GER	Hallervorden-Spatz-Syndrom	Reiter-Krankheit	Zerebrotendinöse Xanthomatose [van-Bogaert-Scherer-Epstein-Syndrom]
ICD-10 PL	Choroba Hellervordena-Spatza	Choroba Reitera	Cholesteroloza mózgowo-ścięgnowa [van Bogaerta-Scherera-Epsteina]
ICD-11 EN	5C64.10 Iron overload diseases	FA11.2 Arthropathy following genitourinary infection (parent term: FA11 Reactive arthropathies)	5C52.11 Bile acid synthesis defect with cholestasis

Eponym	**Wegener's granulomatosis**	**Kallmann syndrome**	**Asperger syndrome**	**Creutzfeldt Jakob disease**
Descriptive term	Granulomatosis with polyangiitis	—	see discussion	subacute spongiform encephalopathy
ICD-10 EN	M31.3 Wegener granulomatosis	Kallmann syndrome (in section E23.0 Hypopituitarism)	F84.5 Asperger syndrome	A81.0 Creutzfeldt-Jakob disease
ICD-10 ES	Granulomatosis de Wegener	Síndrome de Kallmann	Síndrome de Asperger	Enfermedad de Creutzfeldt-Jakob
ICD-10 FR	Granulomatose de Wegener	Syndrome de Kallmann	Syndrome d'Asperger	Maladie de Creutzfeldt-Jakob
ICD-10 GER	Wegener-Granulomatose	Kallmann-Syndrom	Asperger-Syndrom	Creutzfeldt-Jakob-Krankheit
ICD-10 PL	Ziarniniakowatość Wegenera	Zespół Kallmana	Zespół Aspergera	Choroba Creutzfeldta-Jakoba
ICD-11 EN	4A44.A1 Granulomatosis with polyangiitis	—	see discussion	Creutzfeldt-Jakob disease

Figure 1
ICD-11 browser screen captures with eponyms used as search words leading to non-eponymous terms

6. Discussion

According to the results of studies focusing on the use of the term *Hallervorden-Spatz disease* used "in vivo", the eponymous variant seems to be in decline, especially when we consider its unqualified use, defined as not referring to "the eponym's disfavoured use", both in articles and in textbooks (Zeidman and Pandey 2012: 1310). There is also a trend in departing from the

unqualified use of the eponymous term *Reiter syndrome*, but it can still be found in textbooks, curricula and journals (Keynan and Rimar 2008: 256-258). The problem with that term is multifaceted: first, the name commemorates a scientist who was engaged in the Nazi forced sterilisation and euthanasia programmes, and second – it does not really take into account the contribution of other researchers to the description of this disease. It was characterised not only by Hans Reiter in his publication of 16 December 1916, describing a study that began in August earlier that year, but also by Noel Fiessinger and Edgar Leroy in their paper of 8 December 1916, presenting the results of studies conducted between July and October 1916. Both publications focused on the characteristic triad of symptoms which was observed on both sides of the WWI front (Matteson and Woywodt 2006: 1328, Weisz 2011: 91-93). Nearly a century earlier, Sir Benjamin Brodie had described five cases of the same triple syndrome with accurate clinical details (Weisz 2011: 91-93). The disease was named *Reiter('s) syndrome* after Hans Conrad Reiter, who most likely could not have known about the publication of the French researchers, but could (but did not have to) have access to and get acquainted with the reports of Brodie, for example, when he was conducting his research in London (Weisz 2011: 91-93). So, the eponymous term is problematic because it does not credit all researchers adequately, and the person who is credited, violated ethical rules, including the *primum non nocere* principle, which supposedly shapes the attitudes toward medical practice and research.

In the case of the term *Asperger('s) syndrome*, the ICD-11 has updated the diagnostic criteria of autism to comply with the DSM-5 (Diagnostic and Statistical Manual of Mental Disorders) published in 2013 by the American Psychiatric Association, which is why it includes Asperger's Syndrome, along with Childhood Disintegrative Disorder and certain other generalised developmental disorders, within the category of *Autism spectrum disorder without disorder of intellectual development and with mild or no impairment of functional language* (Autism Europe

2018). Consequently, the change in this case is dictated by the change in diagnostic criteria.

It is worth noting that none of the eponymous terms listed in ICD-10 as discussed above were coined as a direct result of Nazi crimes against humanity. In fact, the *Clara cell*, (not listed in ICD since it is not a name of a disease),

> is the only "Third Reich eponym", for which not only the person but the discovery itself is clearly linked to the Nazi system. In the cases of Reiter's disease and Hallervorden-Spatz disease, the eponymous discovery was made long before the Nazi era while Wegener's first description of "his" granulomatosis in 1939 had no connection to Nazi atrocities (Winkelman and Noack 2010: 725).

Additionally, in all likelihood, the eponym *Clara cell* was first used after the war, in 1947 (Winkelman and Noack 2010).

There are conflicting approaches to eponymous terms, ranging from favourable to calling for their complete abolition:

> Because of the extensive use of English as an international language of medicine, English language *publications* have a particular responsibility to eliminate eponym use and standardise medical terminology. It is time to leave eponyms behind and confine them to their deserved places in the archives of medical history (Matteson and Woywodt 2006: 1329).

The opponents of eponymous terms mention three problem areas: a lack of scientific accuracy, a failure to reflect scientific discoveries and, connected with the subject of this paper, a commemoration of war criminals (Woywodt and Matteson 2007: 424). The revelations of Hans Reiter's active involvement in the Nazi crimes have led to the declining use of the term "Reiter's disease". Other eponymous terms may also be subject to this trend:

> Prompted by our revelations about Friedrich Wegener, the Vasculitis Foundation of North America stated: "As patients and family members, we would prefer a different name for our disease" (unpublished letter to Lancet 2006 in Woywodt and Matteson 2007: 424).

Eponymous terms may be considered imprecise as they are usually named after one person (sometimes two or three), while scientific findings are, in fact, the result of a group effort, quite often over a period of time:

> Behçet's disease serves as an example: Hulushi Behçet recognised the disease in 1937, but Benedictos Adamantiades described a case of the disease in 1930. [...] To acknowledge everyone who discovered facets of the disorder, we would have to name it Hippocrates-Janin-Neumann-Reis-Bluthe-Gilbert-Planner-Remenowsky-Weve-Shigeta-Pils-Grütz-Carol-Ruys-Samek-Fischer-Walter-Roman-Kumer-Adamantiades-Dascalopoulos-Matras-Whitwell-Nishimura-Blobner-Weekers-Reginster-Knapp-Behçet's disease (Woywodt and Matteson 2007: 424).

Eponymous terms are not particularly convenient in interlingual communication, not only due to their varying range (with some used internationally, while others are known and used in one country only) but also due to the grammatical differences in the forms of eponymous terms, which may prove to be inconvenient in the translation and editing process:

- in English with or without Saxon genitive depending on the convention adopted by a journal or Classification;
- in Latin, *Accusativus singularis: ligamentum Bertini, fractura Collesi, tuberculum Listeri, os Vesali* but also *Canalis facialis Fallopiae*;
- in German, the nominative case (singular): *His'sches Bundel,*
- in Spanish: *cuerpos de Shiller-Duval, tumor de Koenen, celulas de Hodgkin, enfermedad de Wilson*;
- in French: *Line de Damoiseau* (Pilarz, Bajor and Bulska 2013: 339).

Although the use of eponyms may be inconsistent and sometimes controversial, they are valued for adding colour to medicine and serving as a convenient form of "medical shorthand" (Whitworth 2007: 245). They also embed medical traditions and culture into history. Judith Whitworth (2007: 245) deems replacing all eponymous terms with descriptive ones as being an unrealistic goal and shares other concerns related to replacing or even abolishing eponymous terms:

> Who would determine acceptability? […] Would the heinous behaviour need to be proved in a court of law or merely rumoured? […] Can we still use them in the sciences that enable medicine? Do we get rid of Avagadro's number, Boyle's law, the joule, the kelvin, the hertz?

Medical eponymous terms are still quite common, although the number of scientific papers in which they are used is decreasing, which may be related not so much to their waning popularity, but to the changes in trends of the popularity of various subjects in medical research (Thomas 2016: 297). The most common eponyms, (salmonella, Alzheimer's disease, Parkinson's disease, Escherichia) are likely to remain in use, as they are well-established and seem too widespread to be removed from both specialised and general language. Moreover, such an undertaking would not actually bring any benefits in terms of communication efficiency (see Thomas 2016: 297). The variety of eponyms used in scientific works is also decreasing. The frequency of eponymous terms named after perpetrators who engaged in unethical research, sterilisation or euthanasia programs during the Second World War, has definitely decreased (Thomas 2016: 297).

7. Conclusion

The results of the comparison between ICD-10 and ICD-11 point to the declining presence of eponymous terms associated with

the Nazi regime in the World Health Organization's Classification. This is in line with the attitudes of a number of scholars and journal editors who have called for the abolition of such terms on the grounds that

> it is the essence of medical practice that it exists solely for the benefit and health of the patient; and if no such benefit is to be derived it should be withheld. Primum non nocerer – first do no harm – is the fundamental principle taught to all physicians for centuries. […] Indeed, codes of ethics – all addressing the primary importance of care to the benefit of patients – are nearly universal among medical societies (Rosner 2008: 296).

The process of replacing controversial eponymous terms with alternative variants is complicated and disputed. It seems that it is progressing, and we can expect that the changes in the International Classification of Diseases may contribute to the further decline in the use of the discussed medical eponymous terms. This process showcases how terminology variation is connected with a broader context: the social, historical and even ethical dimensions in which stakeholders in forming terminology policies operate.

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The speech act of gratitude in contemporary Polish: A pragmalinguistic study

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Abstract

The aims of this paper are the following: defining gratitude as a speech act and placing it in the group of other speech acts as well as presenting the specificity of its functioning in terms of pragmalinguistic methodology. The analyzed material includes contexts of the speech act of gratitude, with examples coming from contemporary Polish.

Keywords

pragmalinguistics, speech acts, speech act *gratitude*, semantics, lexis

Podziękowanie jako akt mowy we współczesnym języku polskim: Aspekt pragmalingwistyczny

Abstrakt

Celem artykułu jest próba zdefiniowania aktu mowy podziękowanie i usytuowania go w grupie innych aktów mowy oraz przedstawienia specyfiki jego funkcjonowania w ujęciu metodologii pragmalingwistycznej. Podstawę materiałową stanowią konteksty występowania aktu

mowy podziękowanie, które zaczerpnięte zostały ze współczesnego języka polskiego.

Słowa kluczowe

pragmalingwistyka, akty mowy, akt mowy podziękowanie, semantyka, leksyka

> "Showing gratitude is one of the simplest yet most powerful things humans can do for each other".
>
> Randy Pausch

1. Introduction

The subject of this study is the speech act of gratitude. The aim of the study is to define this speech act in reference to other speech acts as well as to present the specificity of its functioning in pragmalinguistic terms. Pragmalinguistics offers a research method that focuses on various types of communicative activities, known as speech acts. The analyzed material includes contexts of the speech act gratitude taken from the contemporary Polish language. The considerations presented here – due to space limitations – will only be an attempt to signal selected pragmatic aspects of the functioning of the speech act of gratitude in contemporary linguistic communication.

In Polish linguistics, speech acts have been studied by numerous scholars, including Krystyna Pisarkowa (1975, 1976), Maria Honowska (1984), Anna Wierzbicka (1973, 1987), Kazimierz Ożóg (1984, 1990, 1992, 2001), Aleksy Awdiejew (1987, 2004), Renata Grzegorczykowa (1995), Ewa Komorowska (1997, 1999, 2002, 2003, 2006, 2008, 2020a, 2020b), Ryszard Lipczuk (1999), Jolanta Antas (2000), Małgorzata Marcjanik (2002, 1993), Beata Drabik (2004), Aleksander Kiklewicz (2006, 2009), Izabella Prokop (2010), Michał Post (2013), Artur Czapiga (2017)

and others. Some linguists propose a cognitive approach to speech acts, e.g. Roman Kalisz (1994, 2006), also in collaboration with Wojciech Kubiński (Kalisz and Kubiński 1993), and Olga Sokołowska (2001).[1]

2. Linguistic politeness

Gratitude is a speech act that belongs to the polite speech acts. The word *grzeczność* 'courtesy' in Polish comes from the prepositional phrase *k rzeczy* 'to things', meaning 'appropriate, suitable, fitting'. According to Dubisz (2003), politeness includes, among others, words, gestures, forms of behavior which are an expression of kindness, a sign of good manners; polite, flattering words; compliments. Marcjanik (1992: 27) characterizes linguistic politeness as a set of polite strategies. She also defines two basic indicators of politeness, namely, showing respect to the partner (especially the elderly and women, superiors etc.), including downplaying the role of the Sender, and showing interest in the matters of the partner and his/her family, mainly the spouse (especially in matters of health, professional activities, current family events and facts from professional life). The model of linguistic politeness in Polish linguistics was proposed by Ożóg (2001: 75–78). By the model of linguistic politeness, Ożóg understands "a system of socially approved and commonly accepted rules and norms in a given community or a group" (Ożóg 2001: 75, translation mine). "These rules define a certain sanctioned manner of behavior, including verbal communication between people. Nowadays, it is a manner of behaviour described as appropriate, cultured-approved, polite, kind [...] and it stands in clear opposition to inappropriate, unsuitable, impolite" (Ożóg 2001: 75–76, translation mine).

Ożóg distinguishes two main principles that the socially accepted model of politeness is based on and further implemented

[1] See also the volume edited by Kubiński and Stanulewicz (eds.) (2001), as well as the introduction to it (Kubiński and Stanulewicz 2001).

by the use of polite phrases. The first principle assumes the autonomy, dignity and importance of every human being as a person. "Every person deserves respect and this fundamental principle maintained in contacts with other people. One should respect them and demand respect for yourself" (Ożóg 2001: 77, translation mine).

The second principle is the principle of kindness, which Ożóg expresses in the words: "Treat your interlocutor, even a stranger, kindly" (Ożóg 2001: 77). Other rules of politeness are presented by Ożóg as follows:

- showing modesty while enhancing the appreciation for the partner; diminishing one's own merits, raising the merits of another person;
- expressing a request politely, showing gratitude for the favour/service;
- declarations of help, expressing readiness to do a favour;
- showing remorse in the case of committing a breach of etiquette or misconduct;
- empathizing with the interlocutor, sharing joy and sorrow with him/her;
- being tactful towards others – avoiding topics that are unpleasant for them or bringing unpleasant news/information in a delicate way;
- showing special respect to certain members of the group – in our culture – women, the elderly, parents etc. (Ożóg 2001: 77–78).

Geoffrey N. Leech (1983), in his *Interpersonal Theory*, distinguished two basic rules of linguistic politeness. The first rule is the rule of courtesy. It says that the meaning of the utterance should be acceptable to the interlocutor and conveyed so that the statement does not cause any unpleasant emotional state. The second rule involves the approval of the interlocutor. This rule assumes that the participants of the conversation should express mutual kindness and acceptance for their utterances and interpersonal contacts as well as satisfaction with the

conversation. These rules, assigned by Leech to different categories, are the following ones:

- the rule of modesty (the utterance should avoid emphasizing one's "strengths" and successes, which, in a way, could evoke a feeling of inferiority in the recipient);
- the rule of compliance (whenever possible, approval and consent should be expressed with the opinions of the interlocutor);
- the rule of cooperation (one should express the will to continue the conversation and look for the most appropriate ways to organize one's contribution to the conversation);
- the rule of irony (jokes and mockery should be expressed in a clear and legible way, allowing for proper interpretation);
- content attractiveness rule (the Sender and Recipient should express interest in the topics of the conversation and propose topics that are interesting not only to themselves but also to the interlocutor);
- Pollyanna's rule (avoiding topics unpleasant for the interlocutor and those that may bring unpleasant associations).

According to Leech, adherence to all these rules is an indicator of linguistic politeness.

3. The speech act of gratitude in the classification of speech acts

The speech act of gratitude is found in various classifications of speech acts. The first classification was proposed by John Langshaw Austin (1993). Austin defined speech acts according to their corresponding performative verbs, that is, verbs in the 1st person singular or plural of the present indicative mood, which, in his opinion, constituted the basis of explicit performative utterances. As a result, Austin distinguished five basic types of speech acts:

- *verdictives* including acts of giving a verdict, estimation or appraisal, e.g. acquitting, reckoning, assessing, diagnosing;

- *exercitives* including acts of exerting powers, rights or influence, e.g. appointing, voting, ordering, warning;
- *commissives* including acts that commit the speaker to doing something, e.g. promising, undertaking, consenting, opposing, betting;
- *behabitives* including acts that clarify reasons or arguments, e.g. affirming, denying, stating, describing, asking, answering;
- *expositives* including acts having to do with attitudes and social behaviour, e.g. apologizing, congratulating, commending, thanking.

In the above classification, gratitude belongs to the class of behabitives, i.e. socially conventionalized linguistic behaviours, showing attitudes (next to congratulations, greetings, expressing sympathy etc.). The exponent of the speech act of gratitude is the verb *dziękuję* 'thanks' in the performative function, i.e. in the 1st person singular or plural of the present indicative mood.

Another classification of speech acts was proposed by John Rogers Searle (1969). According to it, classes differ in the type of illocutionary force, that is, the intention behind the communication.

Similarly, Ryszard Lipczuk writes that the departure from the pragmatic criteria when describing speech acts is certainly more correct than the interpretation of performative verbs, because "it is difficult to talk about a one-to-one correspondence between verbs and illocutive types, and they are the central part of acts of speech" (Lipczuk 1999: 169–176, translation mine). The same approach, i.e. starting from the pragmatic criteria in the classification of speech acts, is also presented by Dieter Wunderlich (1976) and Inger Rosengren (1979). I also support this point of view because, in my opinion, the contextual analysis of speech acts shows that a performative verb does not always express an illocution contained in a performative verb, e.g. *Gratuluję Ci takiego zachowania* 'I congratulate you on this behavior' (irony), *Obiecuję, że będziesz tego żałował* 'I promise you will regret it' (threat), *Proszę w końcu się uspokoić* 'Please calm down at last' (command).

Searle (1969) distinguishes the following speech acts:

- *assertives* including acts that commit the speaker to something being the case, e.g. swearing, doubting, boasting
- *directives* including acts that try to make the addressee perform an action, e.g. asking, ordering, requesting;
- *commisives* including acts that commit the speaker to doing something in the future, e.g. promising, betting, vowing;
- *expressives* including acts that express how the speaker feels about the situation, e.g. thanking, apologizing, congratulating;
- *declaratives* including acts that immediately change the state of affairs, e.g. firing, appointing.

In this classification, Searle placed *gratitude* in the group of *expressives*. The purpose of these acts is primarily to express one's own attitudes and emotional states.

As indicated above, gratitude is classified as a behabitive by Austin and as an expressive by Searle. On the other hand, Edda Weigand includes gratitude in declaratives, whereas Habermas (1971) and Wunderlich (Wunderlich 1978) classify it as satisfaction. Regardless of terminological differences, researchers include *gratitude* in the group of speech acts whose illocutionary goal is to express certain emotional attitudes.

4. An attempt to define the speech act of gratitude

Gratitude is initiated by Sender who expresses their feelings/emotions in response to the positive action done previously by the Recipient. Thus, I propose the following definition of the speech act of gratitude:

> The speech act of gratitude is a polite reactive act. It is a response to a positive situation which has occurred, to which the Recipient contributed and for which the Sender expresses his/her gratitude.

For each type of illocution there is a certain set of necessary conditions that Searle names *preparatory conditions*. They must

be met in order for the illocution to take effect. In the case of an act of gratitude, as a preparatory condition, we can accept the positive situation that has arisen. The situation is caused by the Recipient and in connection with which the Sender may submit a gratitude message. Gratitude is a speech act expressing an attitude, a positive emotional state towards the Recipient. It can be an act that is a reaction to the gift, kind behaviour, acting in the interest of the Sender, for their benefit or the benefit of his/her relatives. The illocutionary purpose of gratitude is to express a positive attitude towards the person who performed an activity beneficial for the Sender. The psychological orientation of the speech act in question is the intention to express the state of satisfaction and/or joy of the Sender in connection with the help etc. received from the Recipient.

5. Basic structure of the speech act of gratitude

"Sender (participant(s) in communication) expresses thanks to Recipient (participant(s) in communication) for X (action helpful to Sender)"

The linguistic structure of the speech act of gratitude may vary. The Sender chooses a speaking strategy that suits him/her. Thus, the order of the components may vary and not all of them may be used. Examples:

- Sender (*Dziękuję/dziękujemy*) + Recipient (*ci/wam*) + X (*za pomoc*)
  'Sender (I/we thank) + Recipient (you) + X (for your help)'
- X (*Za zorganizowanie nam wspaniałego przyjęcia urodzinowego*) + Sender (*serdecznie dziękuję/dziękujemy*)
  'X (For organizing a wonderful birthday party for us) + Sender (I/we thank you very much)'
- Sender (*Dzięki*) + X (*za wparcie finansowe naszej inicjatywy*
  'Sender (Thanks) + X (for the financial support of our initiative)'
  etc.

6. The speech act of gratitude in explicit and implicit speech acts

In linguistic communication, the speech act of gratitude can be expressed through explicit or implicit speech acts.

6.1. Explicit speech acts of gratitude

The basic lexical exponent of the speech act *gratitude* – as I have already remarked – is the performative verb *dziękować* 'thank you', in the 1st person singular or plural: *dziękuję* / *dziękujemy*. Gratitude is one of the few speech acts in which the performative exponent can be used in isolation or in conjunction with an intensifying adverb and still fully implement the illocutionary meaning, e.g.:

- *Dziękuję!*
  'Thank you!'
- *Dziękuję bardzo/ogromnie/strasznie.*
  'Thank you very much/so much.'

The form *dziękuję* 'I thank' may also appear in conjunction with fixed expressions, such as:

- *Dziękuję/dziękujemy Ci z całego serca.*
  'Thank you with all my/our heart/s'.

Along with this type of open, direct thanks, there may be synonyms expressing gratitude, e.g.

- *Jestem/jesteśmy ci/wam bardzo wdzięczni.*
  'I am / we are very grateful to you.'
- *Nasza wdzięczność nie ma końca.*
  'Our gratitude is eternal.'

Acts of this type require full pragmatic interpretation, as the decisive role in reading illocution is played by presupposition, that is, the knowledge Sender and Recipient have (Komorowska 2008). Usually, the act of thanking is combined with expressions that clarify the situation.

Simple clarifications:

- *Dziękuję Ci za pomoc/wsparcie/życzliwość/dobre słowo.*
  'Thank you for your help/support/kindness/kind words.'

Complex clarifications:

- *Dziękuję Ci za to, że świetnie przygotowanie mojej córki do egzaminu z języka polskiego.*
  'Thank you for preparing my daughter to the Polish exam.'
- *Dziękuję Ci za umożliwienie nam spędzenia wspaniałego tygodnia w twoim apartamencie w Maladze.*
  'Thank you for enabling us to spend a wonderful week in your apartment in Málaga.'
- *Dziękuję Ci za wszystko, co dla mnie zrobiłeś.*
  'Thank you for everything you've done for me.'
- *Dziękuję Ci, że stanąłeś w mojej obronie.*
  'Thank you for standing by my side.'

Another explicit way of expressing the act of *gratitude* is phrases with the verb *dziękować/podziękować* 'thank' or with the noun *podziękowania* 'thanks', such as *chciałbym/chcielibyśmy wam/ci podziękować* 'I/we would like to thank you', *pragnę/pragniemy wam/ci podziękować* 'I/we wish to thank you', *przyjmij/przyjmijcie moje/nasze podziękowania/wyrazy wdzięczności* 'Accept my/our thanks'. Examples:

- *Chciałabym Ci podziękować za zapisanie mnie na basen.*
  'I would like to thank you for signing me up for the swimming pool.'

– *Pragnę Wam podziękować za psychiczne wsparcie w tych trudnych dla mnie dniach.*
  'I wish to thank you for your support during these difficult days for me.'
– *Przyjmij moje podziękowania za pomoc w przyjęciu mojej mamy na zajęcia seniorów.*
  'Please accept my thanks for helping with my mother's admission to the activities for seniors.'

In linguistic communication, there are also other types of thanks, with some understatements, e.g. *Dziękuję. Ty wiesz za co* 'Thank you. You know what for'. This type of thanking is a kind of language game between Sender and Recipient, which, as a rule, can be afforded by people who are emotionally close and kind to each other. Due to presupposition, the number of people who can read such thanks in a proper way is limited.

6.2. Implicit speech acts of gratitude

The implicit speech act of gratitude is not expressed on the surface by using the performative verb *dziękować* 'thank'. The basis for determining the illocutionary power of such an act is the inference process, which, taking into account presupposition, allows for the interpretation of a given extra-linguistic situation. Some examples:

– *Nie zapomnę Ci tego do końca życia.*
  'I will not forget it for the rest of my life.'
– *Mam w stosunku do Ciebie tyle ciepła i miłości.*
  'I have so much warmth and love for you.'
– *Jestem twoim dłużnikiem.*
  'I am indebted to you'.

7. Post-positional complemental component in the speech act of gratitude

In my works on speech acts, I introduce the term *post-positional complemental component* (Komorowska 2003: 237–246, 2008: 51–53, 2015: 897–904, 2020: 87–101). It is a phrase that is placed after a speech act. In other words, the *post-positional complemental component* brings additional elements to the content of a given speech act. On the one hand, it shows the emotions and feelings of the Sender, and on the other hand, it defines the conditions under which the situation occurs. Those can fall into different categories:

(1) positive valuation of the Recipient

- *Dziękuję Ci bardzo za pomoc wypielęgnowaniu pięknej zielonej trawy.* ***Bez Twoich cennych rad na pewno by się to nie udało.***
  'Thank you very much for helping me to cultivate the beautiful green grass. **Without your valuable advice, it would not be possible.**'
- *Ogromnie wam dziękujemy za przypilnowanie naszego domku i zaopiekowanie się kotami.* ***Bez waszej pomocy nie moglibyśmy pojechać na wycieczkę.***
  'Thank you very much for taking care of our house and taking care of the cats. **Without your help, we wouldn't have been able to go on the trip.**'

(2) justification

- *Pragnę Ci podziękować za sfinansowanie wyjazdu mojej córki do Francji.* ***Dobrze wiesz, że nie mogliśmy tego sami zrobić, bo nas po prostu nie stać na to.***
  'I would like to thank you for financing my daughter's trip to France. **You know very well that we couldn't do it ourselves because we simply can't afford it.**'

(3) explanation

- *Bardzo Ci dziękuję za wsparcie!* ***Te pieniążki chcę przeznaczyć na doskonalenie moich filmów.***
  'Thank you very much for your support! **I want to spend this money on perfecting my films.**'
- *Bardzo dziękuję za wiadomość, że zostałam przyjęta na iberystykę.* ***Zawsze chciałam uczyć się języka hiszpańskiego.***
  'Thank you very much for the message that I have been admitted to Iberian Studies. **I've always wanted to learn Spanish.**'
- *Ogromne dzięki za pomoc w przygotowaniu uroczystej kolacji.* ***Ten wieczór jest dla mnie bardzo ważny.***
  'Many thanks for your help with the dinner preparation. **This evening is very important to me.**'

(4) satisfaction / emotion

- *Dziękujemy za zaproszenie na ślub twojej córki.* ***Bardzo się cieszymy, że możemy uczestniczyć w tak radosnej uroczystości.***
  'Thank you for inviting to your daughter's wedding. **We are very happy that we can take part in such a joyful celebration.**'
- *Pani Profesor, dziękuję za wiedzę, która mi Pani przekazywała.* ***Jestem bardzo wdzięczna losowi, że mogłam Panią spotkać na swoje drodze.***
  'Professor, thank you for the knowledge you passed on to me. **I am very grateful that the fate brought us together.**'
- *Ogromnie dziękuję kochani za wszystkie gratulacje i ciepłe słowa!* ***Jestem wzruszona.***
  'Many thanks, dear friends, for all congratulations and warm words! **I am touched.**'

8. Concluding remarks

The above analysis, carried out from a pragmalinguistic perspective, is only an introduction to the issue of the act of gratitude in the classification of speech acts. I have defined this

speech act and presented its basic structure as well as its functioning as explicit and implicit acts. In addition, I have highlighted the importance of the *post-positional complemental component* in the contextual perception of the speech act.

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

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Abstract

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

Keywords

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

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

Abstrakt

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

Słowa kluczowe

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

1. Introduction

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

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

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

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

2. Epistemic lexical verbs in academic discourse

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

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

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

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

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

3. Data and methodology

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

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

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

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

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

(a) Judgement verbs:
  - speculative: *argue*, *assume*, *believe*, *consider*, *expect*, *imply*, *indicate*, *predict*, *propose*, *suggest*,
  - deductive: *calculate*, *conclude*, *demonstrate*, *estimate*, *infer*, *suppose*;

(b) Evidential verbs:
  - quotative: *argue*, *claim*, *indicate*, *note*, *propose*, *report*, *show*, *suggest*,
  - sensory: *appear*, *notice*, *observe*, *seem*,
  - narrators: *seek*, *attempt*.

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

4. Results and discussion

4.1. Overall frequency

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

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

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

Table 1
Overall frequency of ELV types in the corpora

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

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

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

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

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

4.2. Most frequent ELVs

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

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

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

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

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

Table 2

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

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

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

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

4.3. Frequencies of ELVs across the rhetorical sections

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

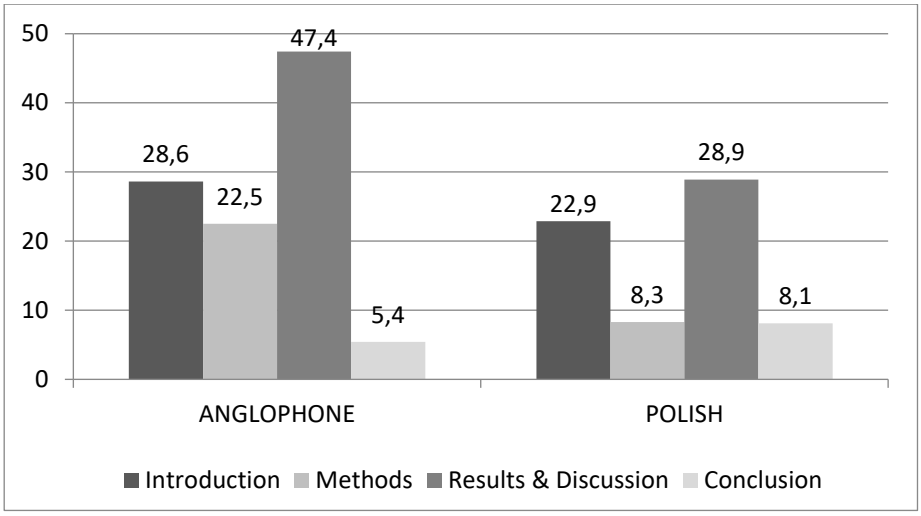

Figure 1
Distribution of ELVs across rhetorical sections

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

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

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

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

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

Table 3
Frequency of judgement and evidential verbs
across rhetorical sections

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

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

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

4.4. Phraseological behaviour of the most frequent ELVs

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

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

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

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

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

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

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

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

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

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

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

5. Conclusions

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

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

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

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IPAcman – or how to gamify introductory phonetics and phonology education

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Abstract

The article introduces a new educational browser-based game named *IPAcman*. The game is a didactic tool which can be used in introductory courses on English phonetics and phonology and teaches the description of conservative RP phonemes with the proper linguistic terminology, pertaining to places of articulation, manners of articulation, and voicing (in consonants) or vowel height, backness and roundedness. A short survey performed on three groups of students who were taught with *IPAcman* reveals that the attitudes towards the use of computer games in university coursework are overwhelmingly positive and that learning through playing a computer game is judged to be both enjoyable and highly effective.

Keywords

gamification, phonetics and phonology, higher education

IPAcman – czyli jak zgrywalizować wstępne kształcenie w zakresie fonetyki i fonologii

Abstrakt

Artykuł przedstawia nową edukacyjną grę przeglądarkową pt. *IPAcman*. Gra ta jest narzędziem dydaktycznym przeznaczonym do użytku we wstępnych kursach angielskiej fonetyki i fonologii. Uczy ona podstawowego opisu fonemów konserwatywnej wymowy brytyjskiej RP za pomocą terminologii lingwistycznej odnoszącej się do miejsca artykulacji, sposobu, artykulacji, i dźwięczności (w wypadku spółgłosek) oraz pozycji języka i kształtu warg (w wypadku samogłosek). Krótka ankieta przeprowadzona w trzech grupach studentów wykorzystujących *IPAcmana* podczas zajęć wykazała, że nastawienie studentów do wykorzystania gier komputerowych jako narzędzi dydaktycznych jest bardzo pozytywne, a nauka poprzez grę jest zarówno przyjemna jak i wysoce efektywna.

Słowa kluczowe

gamifikacja, fonetyka i fonologia, kształcenie akademickie

1. Introduction

In recent years, gamification has been becoming increasingly common in education, including higher education. However, a gamification approach in teaching linguistics appears not to be on record. The aim of this contribution is to attempt to fill this gap. *IPAcman* (2020) is an interactive game, which assists the teacher in conveying basic knowledge about conservative RP phonemes and is perfectly suitable for extensive use in introductory English phonetics and phonology courses taught in departments of English worldwide.

2. Gamification in higher education

According to Kapp (2012: 10), "[g]amification is using game-based mechanics, aesthetics and game thinking to engage people, motivate action, promote learning and solve problems". With these objectives in mind, a significant number of academic teachers have been employing games or game-based activities in their courses (Laskowski and Badurowicz 2014, Wiggins 2016, Varannai, Sasvari and Urbanovics 2017, Subhash and Cudney 2018). Since most of the currently enrolled university students are representatives of *Generation Z*, they were born into a world in which computers and technology are an inextricable part of life. It is customary for representatives of this age group to display interest in gaming and have much experience with diverse types of online and offline games. For students of this kind, the so-called "digital natives" (Prensky 2001), traditional teaching methods may be less effective, and introducing a gamified approach can be much more commensurate with the reality which current students are best familiar with.

3. *IPAcman* – game mechanics

IPAcman is a simple game, the objective of which is to direct the game character, Pacman, towards eating the phoneme which fits the description depicted in the box in the right-side panel.

Pacman moves on a two-dimensional board (20x30 units) with the help of arrow keys or, for more advanced users, with Vim keys (h, j, k, l). At each time, there are six randomly selected phonemes on the board, designated with either their IPA (default) or X-SAMPA symbols. Phonemes can either stand still or move at a slow, medium, or fast pace, depending on the settings selected by the user. Each player has three lives at the game outset. After a phoneme description is displayed in the right-side panel, the user is expected to bring Pacman to the matching element. If correct, the user's score is increased. Otherwise, they

lose one of their lives. At any point in the game, the user can display their mistakes and the correct answers.

Users can also create an account and log in with their custom data. As long as they are logged in, all attempts, results, and mistakes are sent to the database and they can be retrieved at each subsequent login. The best results are aggregated in a leaderboard, which makes it possible for students to compete against each other.

Figure 1 depicts the initial state of the game, in which the board is empty and the player selects the alphabet (IPA or X-SAMPA) and the pace of the phonemes.

Figure 2 shows the state of the game after several attempts. The board is filled with six randomly generated phonemes, and the box on the right-side panel specifies that Pacman should aim for *a voiceless obstruent*.

After a player makes a mistake and loses one of their lives, they may click *View your mistakes* in the bottom right corner of the screen. Figure 3 depicts the window which opens afterwards.

Figure 1

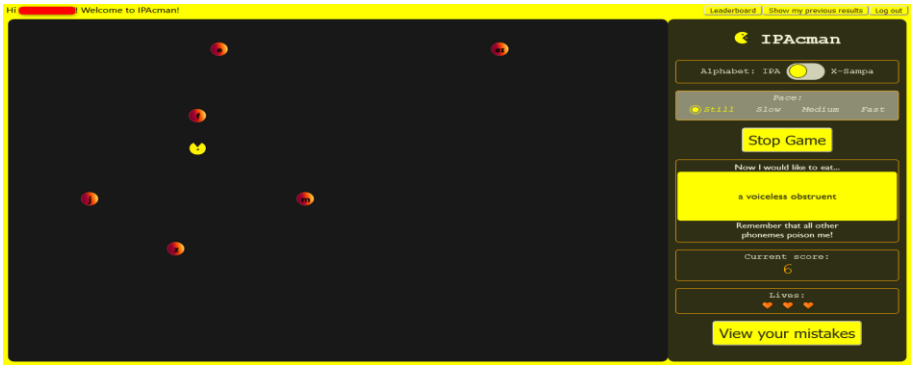

Figure 2

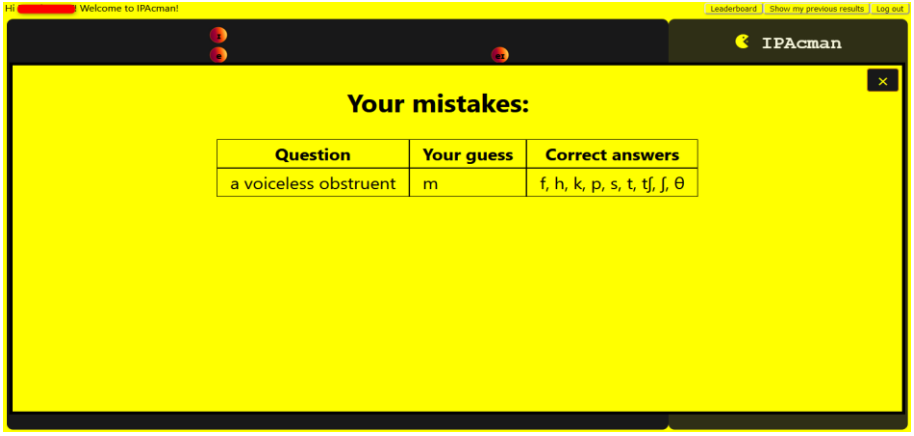

Figure 3

In this way, the game provides the student with a constant feedback loop – the correct answer can be checked immediately after a mistake. This makes the entire learning process very effective and interactive.

The question database of the game consists of 97 predefined questions, each of which can target one or several RP phonemes. Questions can be general (“an obstruent”, “an approximant”) or very precise (“a voiceless bilabial plosive”).

The inventory of phonemes adopted in the game is that of conservative RP as typically taught in introductory courses on phonetics and phonology intended for non-native speakers of English. Symbols in Table 1, adopted from a classic textbook by Roach (2009: x), correspond to the inventory used in *IPAcman*.

Future updates to IPAcman may supplement the above inventory with those of other, more modern approaches to British English phonology, as well as with inventories of other varieties of English.

Table 1

The phonemic inventory used in IPAcman

Consonants	p, b, θ, ð, t, d, s, z, ʃ, ʒ, tʃ, dʒ, h, m, n, ŋ, l, r, j, w
Monophthongs	iː, uː, ɑː, ɔː, ɜː, ʊ, ʌ, æ, ə, ɪ, ɒ, e
Diphthongs	eɪ, aɪ, ɔɪ, əʊ, aʊ, eə, ʊə, ɪə

4. *IPAcman* – technical characteristics

IPAcman is a web-based application, available through a web browser. It was coded with ReactJS on the front-end and connected to Google Firebase as a simple database solution. The database stores user login data and details on player attempts.

5. Survey

In December 2020 and January 2021, a simple survey was conducted in order to determine the attitude of university students towards IPAcman as a didactic tool. The survey was directed at three groups of students (two BA-level groups and one MA-level group) of the Department of English at the University of Gdańsk (Poland). It consisted of eight compulsory closed questions and three optional open questions. Altogether, 41 responses have been gathered.

The first question was demographic and its aim was to specify the ratio of BA and MA students:

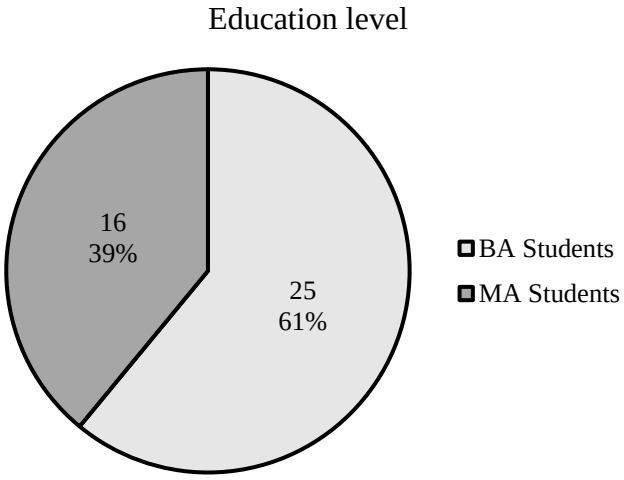

Figure 1
Education level of IPAcman players

According to the survey, 25 students (61 %) were enrolled in a BA programme in English studies (teaching specialization), and the remaining 16 students were MA English studies students (Natural Language Processing specialization).

The next question was about the amount of time spent by the students on playing *IPAcman*.

The majority of students (59 %) spent between one and two hours on *IPAcman*, and 32 % spent between three and five hours. There were also few participants who spent less or more time on the game.

One or two hours may seem to be a short exposure, but in fact, playing for an hour is enough to entail thorough revision of a significant number of examples. By spending more than three hours, a student can make sure that they go through virtually all available questions and possess the skill of describing RP phonemes at a satisfactory level.

In question three, an attempt was made to verify if playing *IPAcman* was considered enjoyable by any students.

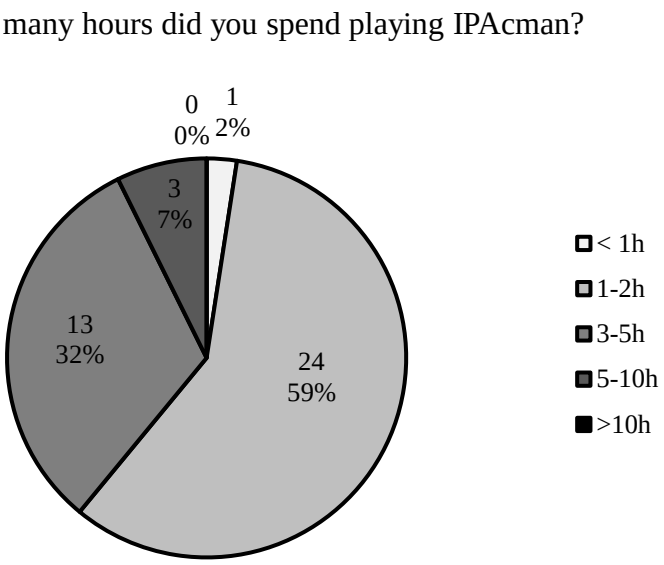

Figure 2
Time spent on playing IPAcman

Next, students were asked to subjectively evaluate the educational value which IPAcman brought to them.

Once again, the results were surprisingly positive and encouraging. Most students (59 %) unambiguously confirmed that *IPAcman* helped them to learn the required material and pass the test. They were followed by a group of 16 students who expressed their approval in a more reserved way ('probably yes'). Again, no single participant directly stated that *IPAcman* was not helpful.

In question five, the issue of competition was addressed. According to many researchers, competition can have a positive impact on the motivation and performance of students (Zimmerman 1989, Burguillo 2010). *IPAcman* implements com-petition-based learning by providing a leaderboard with the ten best results, and to some students, it has become important to secure their place on the board.

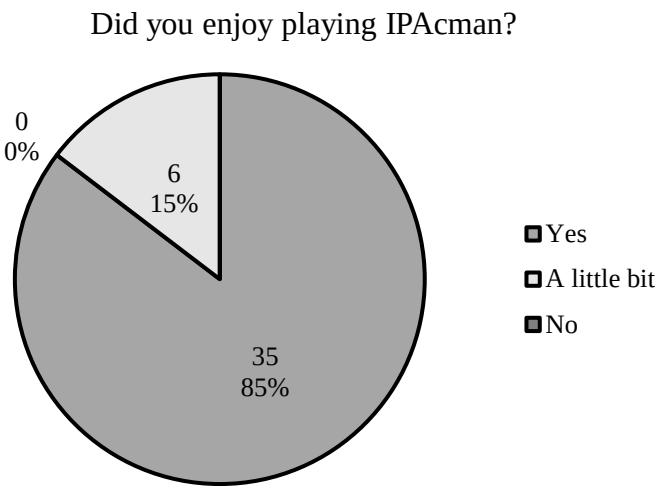

Figure 3
Enjoyment associated with playing IPAcman

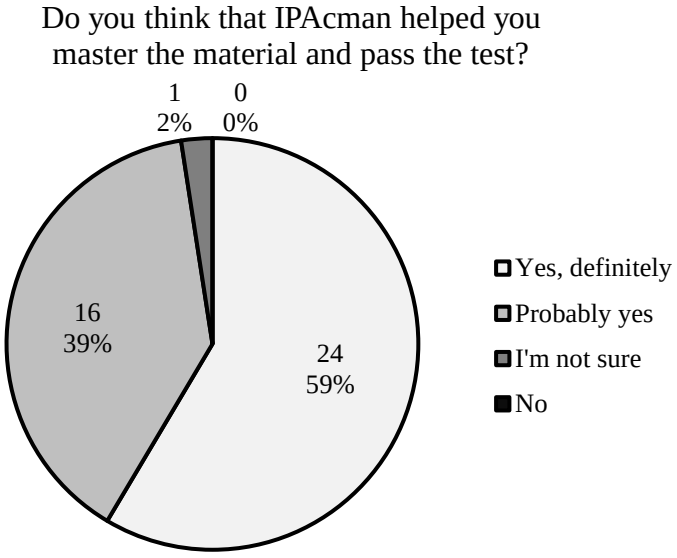

Figure 4
Effectiveness of IPAcman

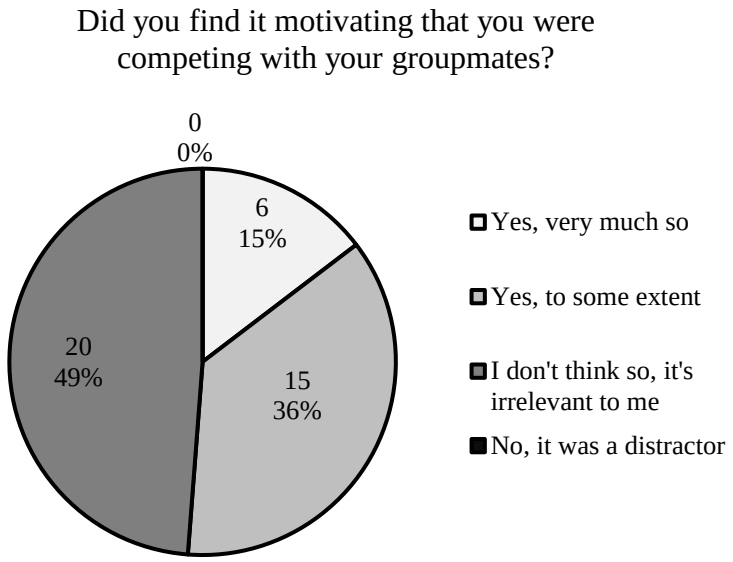

Figure 5
Motivational aspect of competition

Slightly more than half of the participants (51%) admitted that competing against their groupmates did make a difference. The remaining half stated that they were indifferent to this fact. Importantly, no participant believed that competition distracted them from actual learning.

The remaining three closed questions focused on gamification in education in a general sense, rather than on *IPAcman*.

Question six aimed at discovering the extent to which gamification (in the digital form) has been used in the students' past education and contributed to their experience:

The results were disappointing, with 40 students (90 %) claiming that *IPAcman* was the first time they had ever played a computer game in class. It appears that, at least in the Polish context, computer games are never used in university-level education (although it does not follow those other forms of gamifications are not being employed).

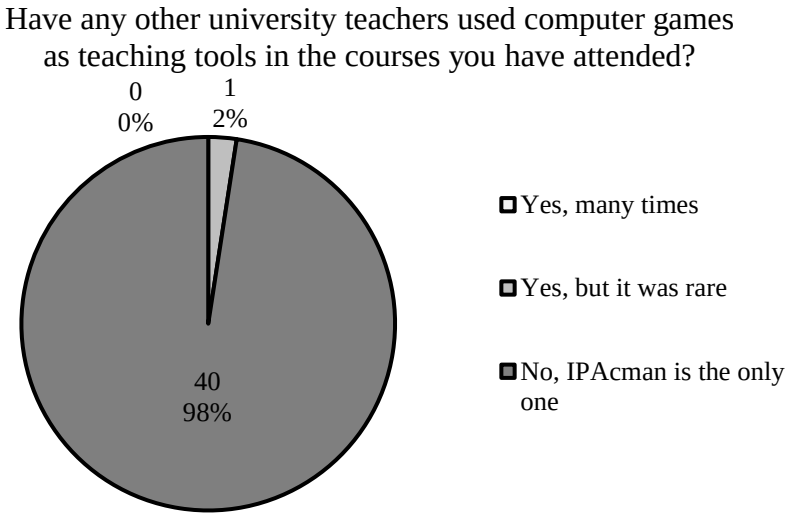

Figure 6
Experience with digital gamification in university education

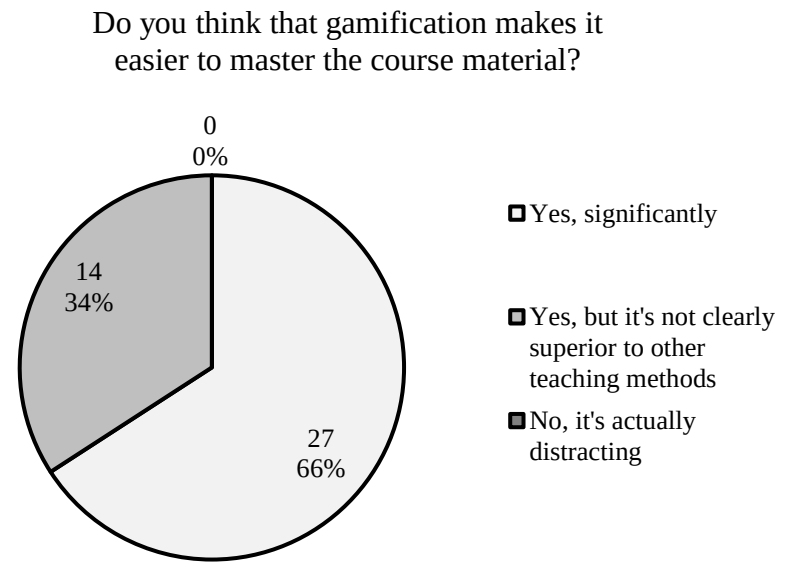

Figure 7
Gamification as a facilitating factor

Question seven investigated the attitude of students towards gamification from the perspective of easing the difficulty of mastering the required course material.

All of the students unanimously agreed that gamification is a great facilitator, although 34 % did not recognize its superiority to more conventional teaching methods.

In the last closed-ended question, the students' opinion was solicited on the potential usage of computer games in university courses.

As many as 98 % of the students indicated that computer games deserve a place in university curricula as fully valid teaching materials. Nonetheless, only 22 % of the survey participants wanted to integrate computer games into each individual course, while the others adopted a more restrained approach and were willing to limit the use of computer games to selected relevant contexts.

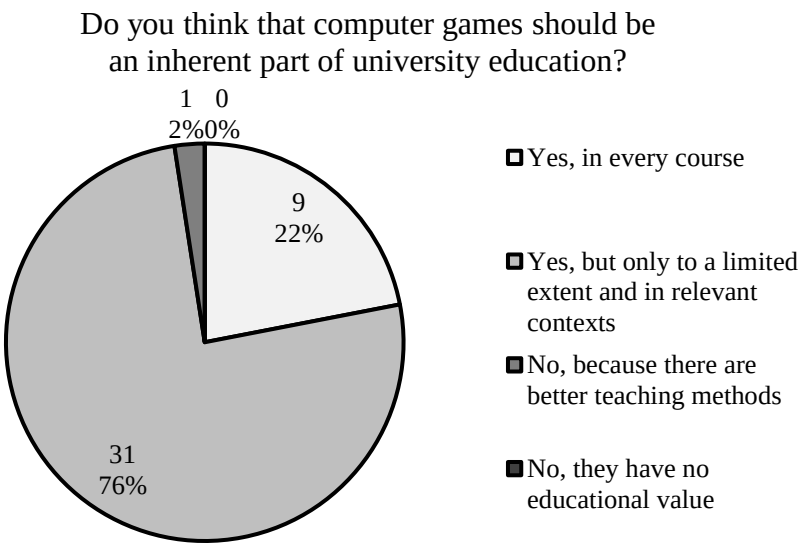

Figure 8
Computer games as part of university education

The remaining three questions were open and optional. As a result, not all participants gave an answer, and some of the answers were very general and superficial. Only a selection of representative answers will be quoted below.

Question nine was 'What did you like best about *IPAcman*?'. Students' answers mostly focused on one of the following features:

- fun combined with educational value,
- clear and simple interface,
- possibility of viewing one's previous mistakes and learn from them.

Other answers included nostalgic associations with the traditional Pacman and competitiveness. The most noteworthy comment is the following example, in which the didactic superiority of *IPAcman* over traditional teaching methods is emphasised:

> *It was fun to play and at the same time repeat* [revise] *the material from the classes, I had hardly learn* [sic] *from the paper sheet - all I know about phonemes is thanks to IPAcman*

In question ten, students were asked about the potential changes which they would introduce to *IPAcman*. The most common answer was 'nothing', but there were a number of issues identified by some participants:

- the colour scheme (especially the saturation of yellow),
- the lack of sound,
- the number of available lives should be modifiable.

Other, more creative, proposals included switching the game to the snake engine, so that all of the eaten phonemes would become part of the character's tail.

The last question of the survey was about the students' potential ideas for other educational linguistic games. This was also the least popular question, with only a few answers. Two ideas are noteworthy:

- a *Tetris* clone which would involve building transcribed words out of blocks of IPA symbols,
- an application displaying mouth animations to aid learning proper pronunciation (potentially with game elements).

To sum up, the results of the preliminary survey are very promising and show how deeply positive the students' attitudes are towards the gamification of university education.

6. Conclusion and future perspectives

The creation of *IPAcman* and gamifying introductory phonetics and phonology courses is an audacious enterprise, especially due to the apparent scarcity of games suitable for teaching linguistics. Nevertheless, the preliminary investigations appear to yield optimistic results, with the students both acquiring the required course material faster and explicitly declaring their full approval for the gamified approach.

Obviously, it must be stated that not all teaching can be relegated to a computer game. One of the lurking disadvantages of this approach is that it may contribute to a dehumanization of education. Even though students quickly learn to select correct answers within the game, they may be less aware that the practised terminology still refers to the *human* vocal ap-paratus and *human* articulation. To emphasise this aspect, there is still a need for a human teacher, who will use the game as only one of the tools in their toolbox of teaching materials.

To sum up, *IPAcman* constitutes a brand new teaching aid which offers unprecedented advantages. It is to be hoped that *IPAcman* is not the last specimen of its kind and that other games facilitating teaching linguistics will follow.

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REVIEWS

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Cognition and Language Learning, edited by Sadia Belkhir (2020)

PARASKEVI THOMOU

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The overall theme of the *Cognition and Language Learning* volume, edited by Sadia Belkhir, is the interaction between cognitive functions and foreign language learning and how this interaction is taking place in the foreign language classroom.

Many different approaches concerning second language acquisition have been developed in the past, i.e., Behaviourist Approach (Skinner 1957), Universal Grammar (Chomsky 2000), Cognitive theories, including Cognitive Linguistics theory. They explore the tight links between knowledge, language acquisition and cognition (Skehan1998, Langacker 2001, Littlemore 2009 etc.). The original contribution of the volume to the prevailing literature on cognition and language learning lies in the fact that it sheds light on the fundamental cognitive processes of thinking, interpreting, strategy use, perception, memorization, etc. The aim of the volume is to indicate how all of these cognitive processes affect the educational activity carried out in different educational settings. The volume seems to fulfill its aim as long as the need inside the linguistic community for studies on the interaction between cognition and language learning is persistent and constant.

The book is organized into nine chapters. Each chapter contains research carried out on foreign language students. The

book is addressed to linguists, language scholars, bilingual class teachers and foreign language students. It attempts to show "how cognitive aspects featuring language are relevant to the field of educational linguistics" with the ultimate goal of improving language teaching (Belkhir 2020: 10).

The first chapter, by the editor Sadia Belkhir, provides an introduction to cognitive linguistics theory and briefly discusses the connection between cognition and language in relation to several theoretical backgrounds (linguistics, psychology and second language acquisition).

In the second chapter, Kamila Ammour discusses the metacognitive awareness of foreign language students during narrative text reading. The research carried out shows that EFL learners use strategies that are limited to word level and confined to the literal meaning of texts. The role of EFL teachers is to raise their students' metacognitive awareness, i.e. to teach them to use metacognitive strategies.

In the third chapter, Fatima Zohra Chalal deals with language attrition. The study in question shows that recalling vocabulary already learned is easier and faster than learning and retaining new vocabulary. In this chapter, the savings paradigm is the proposed method. It assumes that once a word is learned, there are residual traces of knowledge that can be used to reactivate it.

In the fourth chapter, Sadia Belkhir returns to discuss metaphor identification (Metaphor Identification Procedure) within texts. The research carried out shows that participants unconsciously use metaphors in their language production, yet they face difficulty in identifying them as metaphors. However, MIP partially helped learners to identify metaphors in written discourse. Belkhir suggests that supplementary information about metaphors could foster learners' metaphor identification ability.

The fifth chapter, by Georgios Georgiou, deals with L1 influence on the perception of L2 vowels and the role of stress on perception. The Perceptual Assimilation Model features the degree of vowel assimilation by L2 learners. The results of the

assimilation and discrimination test showed the interference of the learners' L1 in the L2 due to phonological and phonetic differences between the vowel inventories of the two languages. The theoretical background of PAM managed to correctly predict the learners' discrimination accuracy over L2 vowel contrasts.

In the sixth chapter, Amel Benaissa reports on research concerned with the use of online quizzes and digital flash cards to enhance students' retention and memorization of vocabulary. The teacher can promote groups of words for teaching. Additionally, vocabulary learning can take place inside and outside of the classroom. Further online activities are recommended as they boost learners' active production of freshly acquired words.

Chapter 7, by Nora Achili, presents EFL learners' perceptions of success and failure in language learning. Success is attributed to internal (motivation, personal effort) factors, while failure is attributed to both internal (lack of effort, poor learning strategies) and external (task difficulty, poor teachers) factors.

In Chapter 8, Katia Berbar deals with the cognitive effects of anxiety in the three phases of language learning: input, processing and output. High levels of anxiety have negative effects on learners' cognitive ability. "Therefore, language teachers should be aware of students' emotional states, determine the most anxiety-provoking events inside the classroom, and take measures to minimize the negative influence of anxiety" (Berbar 2020: 138).

In Chapter 9, Hanane Ait Hamouda covers students' perceptions on the use of code-switching in EFL classes. Most students believe that this method does not improve their level of language learning, but they also view it as an important communicative strategy. Moreover, code-switching does not hinder the students' process of mastering English.

This book is a useful tool in the field of foreign language learning. Both the researcher and the teacher can gain valuable knowledge in relation to cognitive processes "hidden" behind several learning phenomena. Within the chapters and through the data analysis, theoretical tenets of cognitive linguistics are

connected with results of research which was carried out in educational space and time. This gives the reader the opportunity to understand the relationship between cognition and language learning in depth.

The researcher and the teacher of English as a second language will benefit from the content of the book in planning several educational learning strategies which will improve EFL learning. The material included in the appendices provides helpful ideas to the teacher for planning questionnaires and tasks useful for the language student.

Especially noteworthy is the discussion of topics such as metacognitive awareness, learners' perceptions and attitudes, as well as language attrition, all of which are central in foreign language learning research.

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