LINGUISTIC LANDSCAPE AND THE MONOLITHIC NATURE OF THE EU

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Araştırma Makalesi

Abstract

Multilingualism is one of the EU's integrity cornerstones. However, language policy is a matter for each Member State to seek to meet the EU's multilingualism requirements and to ensure the integration of its own society. The purpose of the article is to substantiate that effective communications based on multilingualism development contribute to strengthening the monolithic nature of European states unification within the EU structure. The system of generalized indices, cluster and factor analyses made it possible to prove that the higher the level of the linguistic landscape is, i.e., the higher the level of multilingualism, the higher the level of monolithic nature of the unification. In this article the factors that contribute to the development of the EU Member States linguistic landscape have been identified.

Keywords: linguistic landscape index, multilingualism, the EU integration, centripetal forces.

AB'nin Dilbilimsel Manzarası ve Yekpare Doğası

Öz

Çokdillilik AB'nin bütünlük köşe taşlarından birisidir. Buna karşılık dil politikası her üye devletin AB'nin çokdillilik taleplerini karşılaması ve onları kendi toplumuyla bütünleşmesini sağlaması bakımından önem taşır. Bu makalenin amacı çokdillilik gelişimine dayalı etkin iletişimlerin yekpare doğası olan Avrupa devletlerinin AB yapısı altında birleşmelerinin güçlenmesine katkıda bulunmaktır. Genelleştirilmiş gösterge, küme ve faktör analizi sistemi dilbilimsel manzara ne kadar yüksek düzeyde olursa, yani çokdillilik yüksek düzeyde olursa, birleşmenin yekpare doğasının daha yüksek düzeyde olacağını kanıtlamayı mümkün kılmaktadır. Bu makalede AB üye devletlerinin dilbilimsel manzarasının gelişimine katkıda bulunan faktörler tanımlanmaktadır.

Anahtar Kelimeler: dilbilimsel manzara indeksi, çokdillilik, AB bütünleşmesi, merkezci güçler.

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Introduction

"The development of multilingualism will promote the EU unity and its monolithic nature" – this idea was probably one of the main foundations that gave impetus to development and which underpins the multilingualism policy of the European Community. Initially, the issue of unity arose on economic grounds for the formation of an economic community. Subsequently, the fundamentals expanded and the issue of unity emerged in a much broader sense, but no particular problems were provoked as there was a union of close countries. However, with the involvement of new states, the issue of the European Union monolithic nature became more and more rigid and gradually turned into a problem. This was especially clear on the eve of 2004 when many countries that significantly differed from the founding countries had to join, and a preparatory period for the accession was needed, which in turn reopened the issue of the monolithic nature of the Union. It should be mentioned that not all countries applying for membership have joined. For example, the Eastern Partnership concept has principles that contain elements of precautions as to the EU's monolithic nature.

The development of multilingualism is one of the foundations of the unity, and it is largely the basis of the development of the European Community. This idea is even embodied in the EU's motto "Unity in diversity". In the EU they define "multilingualism" as "the ability of communities, groups and individuals to use more than one language on a regular basis in their daily activities"[1].

Multilingualism has been part of the EU's policies, its laws and practices since the 1957 Treaty of Rome and is fully associated with the linguistic regime of the European institutions, their contacts with the authorities and citizens of the Community. Following the 1992 Maastricht Agreement, to promote language learning and individual multilingualism, combined with linguistic diversity, has become an important task of the EU educational policy. Linguistic diversity has become more evident as contacts with foreigners (exchange of students, resettlement or business in Europe, tourism, etc.) have increased[2]. The 1992 European Charter for Regional or Minority Languages is one of the basic documents that support Europe's multilingualism; it refers to languages traditionally used within a national territory but it does not cover languages associated with the recent migratory

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[1] Commission of the European Communities, *Final Report. High Level Group on Multilingualism (2007).,* accessed February 12, 2020, http://biblioteca.esec.pt/cdi/ebooks/docs/High_level_report.pdf

[2] Nataliia *Karpchuk, Fundamentals of the Communication Policy: the Experience of the European Union Member State: Monograph* (Lutsk: Vezha-Druk, 2015), 197 – 211 [in Ukrainian]

movements or dialects of official languages. Art. 22 of the 2000 EU Charter of Fundamental Rights requires respect for linguistic diversity, and Art. 21 prohibits language-based discrimination[3]. Under the 2007 Lisbon Treaty, the EU respects the rich cultural and linguistic diversity, guarantees the protection and enhancement of Europe's cultural heritage[4]. All this makes the EU a place where linguistic diversity is considered a value rather than a "melting pot" like the US. L. Orban, the first Commissioner to take charge of multilingualism policy on 1 January 2007, stressed that multilingual Europe should be a platform for intense exchange and progress; multilingualism should become a tool for social cohesion and for strengthening links with the rest of the world[5].

At the same time, there are some caveats in the language of politicians. A. Vassiliou, Commissioner for Culture, stressed that although multilingualism promoted a common European identity, it did not in any way replace the national identity of the EU citizens[6] F. Fink-Hooijer, Director of the Directorate-General for Interpreting, and R. Martikonis, Director of the Directorate-General for Translation, emphasize that multilingualism underpins the EU decision-making, brings the EU closer to citizens and promotes trust to its institutions[7]. Dr M. Gazzola, assessing the EU's multilingualism in terms of its possible decline, believes that it will have a significant impact on the poor who are less educated and usually speak only one language; it will be difficult for them to understand not only politics but also key EU messages, which will provoke misunderstanding of politicians[8]. And this will inevitably weaken the EU's monolithic nature.

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[3] Official Journal of the European Communities, *Charter of Fundamental Rights of the European Union. (2000, 18.12),* accessed February 12, 2020, https://www.europarl.europa.eu/charter/pdf/text_en.pdf

[4] Official Journal of the European Communities, *Treaty of Lisbon* (2007, *17. 12),* accessed February 12, 2020, https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2007:306:FULL:EN:PDF

[5] Leonard *Orban*, "Translation, the language of Europe". *European Commission Press corner (2008)*, accessed February 12, 2020, https://ec.europa.eu/commission/presscorner/detail/en/SPEECH_08_587

[6] Androulla *Vassiliou*, "Cultural diversity, global politics and the role of Europe", *European Commission Press corner (2014),* accessed February 12, 2020, https://ec.europa.eu/commission/presscorner/detail/en/SPEECH_14_165

[7] Knowledge Centre for Interpretation, *IAMLADP: Directors General of Interpretation and Translation discuss multilingualism* (2019).*,* accessed February 8, 2020, https://ec.europa.eu/education/knowledge-centre-interpretation/news/iamladp-directors-general-interpretation-and-translation-discuss-multilingualism_en

[8] Sophie *Hebden*, "Multilingualism is vital for an inclusive EU – researchers", Horizon. The EU Research & Innovation Magazine, 30 August, 2016, accessed February 8, 2020, https://horizon-magazine.eu/article/multilingualism-vital-inclusive-eu-researchers.html

Increasingly, there is a growing emphasis on the multilingualism issues that are rooted in the EU foundations. As early as September 2006, the High Level Group on Multilingualism was set up on the basis of a European Commission decision which was to consider providing support and advice in initiatives and ideas to develop an approach to multilingualism in the EU. Therefore, all the subsequent EU multilingualism policies have focused on uniting Europeans and shaping European identity which is important at the supranational level. However, in the EU the language policy is a matter for each Member State, which, on the one hand, should be guided by the calls of the EC and the EP to support multilingualism but, on the other, should seek to preserve the unity of its own society. Moreover, even at the EU level, there are contradictions: the policy of multilingualism sets national strategic goals, but it also proclaims the right of each country to set its own priorities. At the same time, there is a common desire for all the EU Member States to ensure inclusion, citizens' engagement, and integration, which is highly dependent on the ability to receive information in a language they understand / prefer.

Although the EU has proposed a definition of "multilingualism" and outlines the directions for its development, not all Member States understand multilingualism equally, and each country develops its components differently. The influx of migrants into the EU has demonstrated the diverse attitudes of Member States towards multiculturalism and multilingualism. The negative attitude of the Visegrad Group to the reception of migrants as a reaction to the multilingual uncertainty in the EU is a clear evidence. Even the Nordic countries resort to certain restrictive measures of previously promoted multilingualism and try to displace migrants' languages.

It is clear that these controversies have affected the results of multilingualism policies, including the monolithic nature of the EU community.

With the development of the policy of multilingualism, much research is being done in this area. These explorations can be broadly divided into three groups: 1) studies of multilingualism in the EU (J. Bloomaert[9] (1998), M. Gazzola[10] (2006), J. Kruse, U. Ammon[11] (2013), J. De Vries[12] (2014), C.

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[9] Jan *Blommaert* , Jef *Verschueren*, "The role of language in European nationalist ideologies", *Language Ideologies. Practice and theory,* ed. B. Schieffelin,   K. A. Woolard, P. V. Kroskrity (Oxford : Oxford University Press, 1998), 189–210.

[10] Michele *Gazzola*, "Managing multilingualism in the European Union: language policy evaluation for the European Parliament", *Language Policy 5 (2006)*:393–417, accessed January 17, 2020, http://www.michelegazzola.com/attachments/File/Papers/LP_06.pdf

Lapresta-Rey, A. Huguet[13] (2019), O. Tarasenko[14] (2010), T. Kozak[15] (2014), N. Karpchuk[16] (2015); 2) multilingualism / monolingualism in EU countries (I. Buchberger[17] (2008), N. Davidsen-Nielsen[18] (2008), C. M. Glen[19] (2010), R. Kemppainen[20] (2000), F. Kuiken[21] (2013), C. W. Pfaff[22] (2011), K. Yagmur[23] (2012)); 3) implications of the implementation of

[11] Jan *Kruse*, Ulrich *Ammon*, "Language competence and language choice within EU institutions and their effects on national legislative authorities", *Exploring the Dynamics of Multilingualism. The DYLAN project,* ed. A.-C. Berthoud, F. Grin and G. Lüdi (Amsterdam: John Benjamins, 2013) : 157-177.

[12] John *De Vries*, "New European Commission: no place for multilingualism", *Network to Promote Linguistic Diversity (NPLD) Latest News*, 22 September 2014, accessed January 17, 2020, http://www.npld.eu/news-and-events/latest-news/103/neweuropean-commission-no-place-for-multilingualism/.

[13] Multilingualism in European Language Education, ed. by Cecilio Lapresta-Rey, Ángel Huguet (2019), 240 p., accessed February 10, 2020, http://www.multilingual-matters.com/display.asp?K=9781788923316

[14] Olha *Tarasenko*, "Language policy in a multilingual society: the experience of the European Union", *Economics and State*, Issue 9, 2010 : 104-106 [in Ukrainian].

[15] Tamara *Kozak*, "Features of the European Union Language Policy: a Multilingual Context", *Visnuk of the Lviv University. Series Philos. - Political Studies,* Issue 5 (2014) : 301–306, accessed February 10, 2020, https://intrel.lnu.edu.ua/wp-content/uploads/2015/10/Vlu_fps_2014_5_34.pdf [in Ukrainian].

[16] Nataliia *Karpchuk*, *Fundamentals of the Communication Policy: the Experience of the European Union Member States: Monograph* (Lutsk: Vezha-Druk, 2015), 197 – 211 [in Ukrainian]

[17] Irina *Buchberger*, *A Multilingual Ideology in a Monolingual Country : Language Education in Finland* , accessed March 1, 2020, http://cvc.cervantes.es/literatura/cauce/pdf/cauce25/cauce25_11.pdf

[18] Niels *Davidsen-Nielsen*, Danish language policy in comparison with the language policy of the European Union, accessed March 1, 2020, http://www.efnil.org/documents/conference-publications/riga-2007/Riga-14-Davidsen-Nielsen-Mother.pdf

[19] Carol M. *Glen,* "The Politics of Language Policy in Scotland", *The Annual of Language & Politics and Politics of Identity,* Vol. IV (2010) : 45–58, accessed March 2, 2020, http://alppi.eu/wp-content/uploads/2011/02/3.-Glen-Language.pdf

[20] Raija *Kemppainen*, Language Policy in Estonia : A Review, accessed December 12, 2019, https://ojs.lib.byu.edu

[21] Folkert *Kuiken*, Elizabeth *van der Linden*, Language policy and language education in the Netherlands and Romania, accessed February 2, 2020, http://dare.uva.nl/document/2/139201

[22] Carol W. *Pfaff* , Multilingual Development in Germany in the Crossfire of Ideology and Politics: Monolingual and Multilingual Expectations, Polylingual Practices, accessed December 15, 2029,   https://escholarship.org/uc/item/9gp0f163

[23] Kutlay *Yagmur,* Language policy in the Netherlands, accessed December 15, 2019, http://www.amarauna-languages.com/orokorra/artikuluak/eu/Bilbao_Yagmur.pdf

multilingualism policy at the EU level (R. Phillipson[24] (2009), P. Leech[25] (2018), S. Rinder, E. Vetter[26] (2012)). The latest group of studies on the implications of multilingualism policies at the EU level is scarce and the issues remain poorly studied.

We refer our research to the latter group. It seeks to supplement existing knowledge on this issue and to provide a generalized answer to the question of whether multilingualism really contributes to the European Union's monolithic nature.

The monolithic nature of the European Union in terms of the dilemma "monolingualism – multilingualism" is the subject of the study. We treat this dilemma not as a juxtaposition of two pole opposites, but as the extremes of some continuum only. Therefore, in our opinion, each EU Member State is at different stages of the "monolingualism – multilingualism" dichotomy, and our aim is to assess the degree of development of multilingualism in each EU country.

From a theoretical perspective, the purpose of the study is to test the theoretical assumption of K. Deutsche's concept[27] (1963) who argues that effective communications, which in our interpretation are possible due to the development of multilingualism, contribute to the strengthening of the unification of European states within the EU.

We used the concept of "linguistic landscape" as a basic idea that should help achieve the goal. In studies related to language policy, the language / linguistic landscape is generally understood as "the the visibility and salience of languages on public and commercial signs in a given territory or region"[28]. L. Beley (2010) claims that there are several other meanings of the term linguistic landscape, namely, "the list of languages used in the country as a whole"; "an area comprising the territory of several

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[24] Robert *Phillipson*, "Is there any unity in diversity in language policies national and supranational? English as an EU lingua franca or lingua frankensteinia?", *National and European Language Policies. Contributions to the Annual Conference of EFNIL in Riga,* ed. Gerhard Stickel (Frankfurt: Peter Lang, 2009) : 145-154.

[25] Patrick *Leech,* European policy on multilingualism: unity in diversity or added value? Accessed February 8, 2020, https://www.cultusjournal.com/files/Archives/Cultus-_10_Patrick-Leech.pdf

[26] Rosita Rinder *Schjerve*, Eva *Vetter*, *European Multilingualism. Perspectives and Challenges*. Bristol: Multilingual Matters, 2012.

[27] Karl Wolfgang *Deutsch*, The nerves of government: models of political communication and control. New York: Free Press, 1963 : 316 p.

[28] Rodrigue *Landry*, Richard Y. *Bourhis,* "Linguistic Landscape and Ethnolinguistic Vitality: An Empirical Study", *Journal of Language and Social Psychology, № 1, 1997 :* 23-49.

countries with different languages of communication"; "dialect continuum of one language"; "state marking of place names"[29].

In our case, we interpret the concept of "linguistic landscape" as a general picture of the languages spoken and used in the country, that is, in fact, we will associate the linguistic landscape with multilingualism. Therefore, the main components (peculiar "pillars") of the linguistic landscape comprise the following: the development of national / regional languages of the country; study and level of knowledge of foreign languages in the country; study of the languages of the country by foreigners staying in the territory of the country; use of languages in the functioning of the activity of the state, state institutions, business; international communications provided by citizens of the country.

While analyzing the EU language policy in general and the language policies of the Member States, we can see that, in fact, the main directions of these policies, if not completely, are at least adequately designed for the structure of the linguistic landscape in this interpretation. This gives reason to believe that by studying the structure of the linguistic landscape, we will in fact have a picture of the consequences of the EU's and its participants' multilingualism policies.

We believe that the linguistic landscape changes within two extreme levels: 1) the level of monolingualism, when the state rigidly protects and maintains one national language at the official level (e.g., France or the United Kingdom) without prohibiting the use of other languages, but strictly at the everyday level; 2) the level of multilingualism, when the use of several languages in practice and in communication with others is formally encouraged (e.g., the EU multilingualism policy calling on citizens to speak their mother tongue plus two others, usually a regional language plus English or the language of the nearest neighbouring state). However, it is natural that in most countries the linguistic landscape acquires some intermediate status, for example, when it is the case of being monolingual, governments promote the increase of foreign language proficiency.

I. Theoretical Perspective of the Study

In shaping the policy of multilingualism, policymakers and practitioners relied on the principles of the theory of communicative action by J.

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[29] Les' *Beley*. Sociolinguistic coverage of the term "linguistic landscape", *Scientific Bulletin of Uzhgorod Univ. Series: Philology. Social Communications*, Uzhgorod: Hoverla, Issue. 23 (2010) : 36-40 [in Ukrainian]

Habermas and on the concepts of K. Deutsch, T. Parsons, A. Etzioni and others.

In particular, the theory of communicative action by J. Habermas[30] (1985) emphasizes that the ways to build a democratic, civilized society, characterized by the expansion of social equality and freedom and democratization, as well as to create open communication space between the authorities and the public are based on the process of open discussion and the equitable exchange of arguments on fundamentally important societal issues. Multilingualism is capable of ensuring the effectiveness of such communication. T. Parsons[31] (1966), a theorist of the functional concept of integration, argued that in order to deepen the processes of integration, apart from the universal legal system, the extension of the rights and privileges of the participants of this process, so called symbolic mediators are required as well, namely, language, emotions, money, etc. A. Etzioni's (1968) unifying concept identifies cultural homogeneity among the factors that promote integration, which is also facilitated by multilingualism[32].

The theory we have used in our study is K. Deutsche's communication concept, which explains the integration of states through enhanced communication between them. The basic idea of the communication concept is that effective communication leads to unity, because the expansion, change, functioning of the political system and the political behavior of people depend on and are largely governed by various communication networks. It is communication, rather than political power, coercion or threat, that is an effective instrument of influence and unity[33]. From these positions, the phenomenon of European integration is partly explained[34]. Claiming that peace can be achieved through a mutual, pacifist expectation and a shared sense of community that results from increased communication, K. Deutsche's concept provokes a challenge to political realism and paves the way for the ideas of J. Burton's World Society (Burton 1972)[35], and B.

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[30] Jurgen *Habermas*, "Theory of Communicative Action", *Reason and the Rationalization of Society, Vol 1,* Boston : Beacon Press, 1985.

[31] Talcott *Parsons*, "The Concept of Society: The Components and Their Interrelations", *T.Parsons. Societies: Evolutionary and Comparative Perspectives.* Englewood Cliffs (NJ): Prentice-Hall, 1966 : 5 – 29.

[32] Amitai *Etzioni*, The Active Society: A Theory of Societal and Political Processes, N. Y.: Free Press, 1968.

[33] Karl Wolfgang *Deutsch*, The nerves of government: models of political communication and control. New York: Free Press, 1963 : 316 p.

[34] *Political dimensions of European integration processes*, Chernivtsi: Bukrek, 2013 : 564 p. [in Ukrainian]

[35] John W. *Burton*, *World Society,* Cambridge University Press. Online publication date**:** December   2009   https://www.cambridge.org/core/books/world-society/3D069F566176F35EB835E6771A0C61BF

Russett's Democratic Peace (Russett 1993)[36] and Critics of Anarchy in International Relations by A. Wendt (Wendt 1999)[37]. In the context of our study, we believe it is possible to interpret K. Deutsche's communication concept as follows: communication integrates and facilitates understanding if the languages that recipients understand are used. Therefore, the more languages a community uses, i.e., the higher the level of multilingualism, the higher the level of communication efficiency and, consequently, the higher the level of the unification.

This concept has theoretically substantiated the hypotheses of our study. *The main hypothesis* is that the EU's multilingual policy helped strengthen the unity of the Community, and today the unification of European states within the EU forms a rather monolithic integrity. *The alternative hypothesis* is that despite efforts made by central EU bodies to implement language policy plans, centrifugal trends are palpable and in the structure of the Community its division into parts is clearly visible in particular from the point of view of the linguistic landscape.

Hence the *research objectives* are the following:

- to assess the level of multilingualism as a result of the implementation of the relevant EU policy in the Member States and to identify which countries have achieved significant progress in this regard and which have not had such a success;

- to try to group the EU Member States on the basis of an analysis of the components of the countries' linguistic landscape;

- to identify the most influential factors on the development of multilingualism in the EU.

II. Research Methodology

To complete the first task, we have decided to build a system of generalized indices as one of the most popular approaches to ranking countries in the case of complex and multicriteria situations. The available statistical base and expert assessments constitute the basis.

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[36] Bruce *Russett*, *Grasping the Democratic Peace*, Princeton: Princeton University Press, 1993.

[37] Dario *Battistella*, "Karl Deutsch's Contribution to the Theory of International Relations", *Revue internationale de politique comparée.* 2003/4, Vol. 10, accessed February 9, 2020, https://www.cairn-int.info/article-E_RIPC_104_0567--karl-deutsch-s-contribution-to-the.htm

Taking into account the structure of the linguistic landscape, we have constructed a system of indices, presented in Fig. 1.
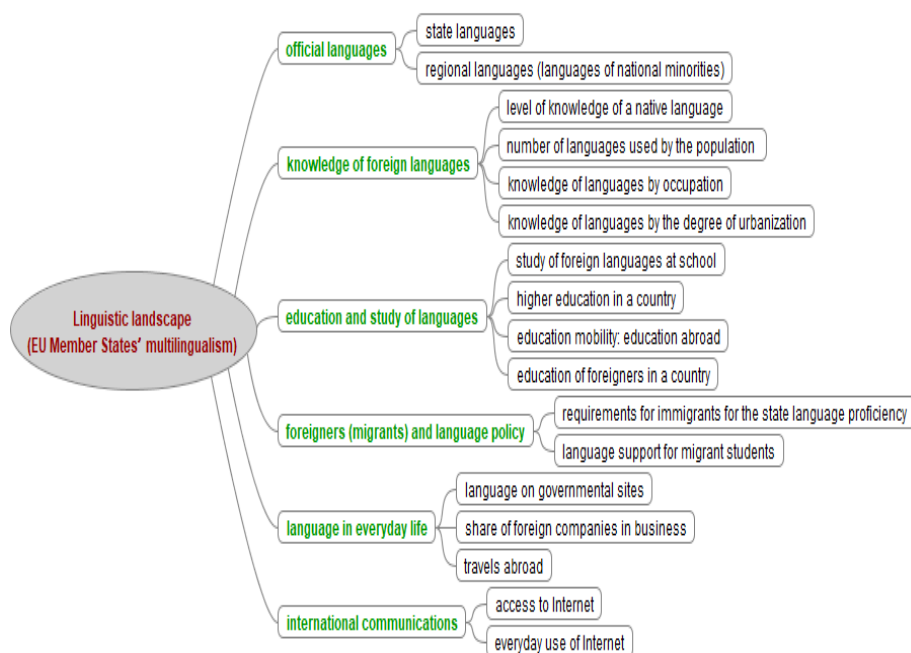
Fig. 1. The system of indices of the linguistic landscape

It is suggested to use the multilingualism index as a measure of the overall level of development of the linguistic landscape. It is defined as the geometric mean of six sub-indices according to the structure of the linguistic landscape. Each sub-index, in turn, is calculated on the basis of the specified Fig. 1 statistics and language policy implementation practices in Member States. The multilingualism index and the sub-indices are relative values that vary from 0 to 1. The higher level of multilingualism in the country corresponds to the higher value. Ranking of Member Countries is carried out on the basis of their ranking in the order of increasing values of the multilingualism index and sub-indices. Formulas for calculations and information sources from which the data have been taken are given in the Table A.1 of the Appendix.

The second task is to attempt to group the EU countries on the basis of a common linguistic picture, which is defined by the components of the linguistic landscape in each country. That is, it is an attempt to assess the

multidimensional impact of multilingualism policy directions. To solve this problem, a cluster analysis was performed using the method of minimum dispersion by J. H.Ward (Ward 1963)[38]. This is a hierarchical clustering method that uses the idea of aggregation, i.e., the consistent unification of individual objects / groups of objects into larger groups. As a result of this algorithm, a dendrogram is obtained, i.e., a tree-like graphical structure that integrates objects in terms of proximity. In our case, the EU countries are the objects, and the investigated properties (the components of the linguistic landscape of these countries) they possess determine their placement on the chart. On the dendrogram close objects are allocated on adjacent "branches" of this tree while dissimilar objects are placed on distant branches. At each node formed by clusters, one can read the distance from which the corresponding elements make up another cluster of objects.

To check the reliability and robustness of the results, a non-hierarchical cluster control test was performed. In the case when both clustering algorithms produce similar results (at least 70% similarity), the assumption of clustering stability is not rejected. Control clustering was performed by decomposing the studied objects into k predefined groups (clusters) using the MacQueen k-means method (MacQueen 1967)[39]. The algorithm of this method searches for centroids, i.e., the most distant centers of clusters of objects with the least scatter of objects within each cluster. To determine the number of clusters, known methods are used such as the elbow method, and the average silhouette width method.

The third objective of the study - to identify the most influential factors in the development of multilingualism in the EU countries - is based on factor analysis. The Principal Components Analysis (PCA) method with orthogonal varimax rotation was used for its implementation. The factor analysis method is applied to the sub-indices that represent the linguistic landscape rather than to the output data. Factor analysis is intended to evaluate the factor structure of multilingualism, to move to a new smaller number of independent (uncorrelated) factors and to identify the latent factors among them that can explain the similarities and differences between the countries studied.

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[38] Joe H. *Ward*, "Hierarchical Grouping to Optimize an Objective Function", *Journal of the American Statistical Association.* Vol. 58 (1963) : 236–244.

[39] James B. *MacQueen*, "Some Methods for classification and Analysis of Multivariate Observations", *Proceedings of 5-th Berkeley Symposium on Mathematical Statistics and Probability"*, Berkeley: University of California Press. Vol. 1 (1967) : 281-297.

Thus, the implementation of the first and the second tasks allow us to statistically test the null hypothesis of the study, while the third one enables to identify hidden factors that can explain the content of potential differences between the EU countries.

III. Research Results

The indices and sub-indices, as well as the rankings of the EU countries are presented in the Table A. 2 of the Appendix.

First of all, we should specify that the integral index of countries varies from 0.2 to 0.6. The range of change of the integral index is small, i.e., the EU countries linguistic landscape difference, even if it exists, is insignificant. Concerning sub-indices, the situation is quite the opposite. Their values vary over much wider ranges. In addition, in many countries, the values of some sub-indices are the highest, while others are in the group of the smallest. This is the case, for example, in Luxembourg, where the "official language" sub-index is very low, while the "language and education" and "foreign language proficiency" indices are the highest.

In terms of countries, Luxembourg, Germany, Finland, Sweden, the Netherlands, of which the integral index is greater than 0.5, occupy the leading position. The countries with an integral index greater than 0.4 – Belgium, Denmark, Austria, Latvia, Cyprus, Estonia, France show similar results. It is worth mentioning that most of these countries are developed countries of Western and Northern Europe, which are among the first members of the Community, and have a very high level of GDP per capita. Latvia, Estonia and Cyprus appear to be anomalous in their background as they fall behind all of the above parameters.

Another anomaly is the United Kingdom, which "leads" the third group of countries with an integral index of less than 0.4. This group mainly consists of countries that became members of the Community during the last and penultimate waves of the EU enlargement. The fourth group of countries with the lowest integral index value – less than 0.3 – includes Greece, Spain, Romania, Portugal and Bulgaria.

Although the integral indices do not give clear clues as to what factors determine the magnitude of the index and the specificity of the linguistic landscape, even here the relations of the two parameters "index – regions of Europe" (Fig. 2) are clearly distinguished: the five leaders and the second group are composed of Western and Northern Europe countries (with the exception of the United Kingdom, Ireland, Lithuania), the low integral index

characterizes the Southern countries (with the exception of Cyprus), and especially Eastern Europe. Regarding the link between the integral index and GDP per capita, there is no clear ground for claiming that the level of multilingualism is higher in countries with higher GDP per capita and vice versa (correlation is 0.60).
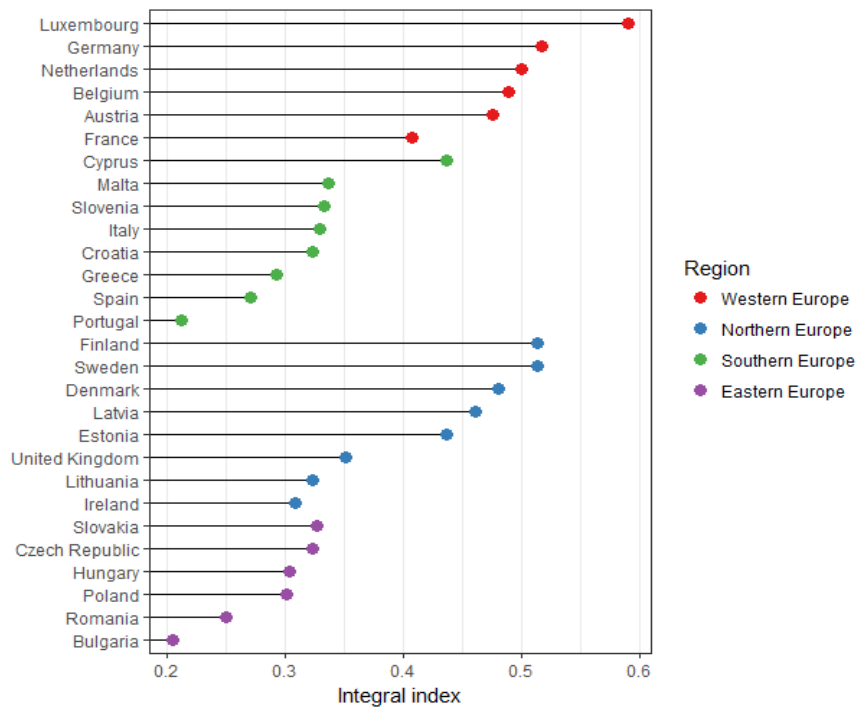

Fig. 2. Dependence "integral indices – regions of Europe"

The following important conclusions are drawn from the significant interpretation of the cluster analysis results.

Cluster Dendrogram

dist_rling
hclust (*, "ward.D2")
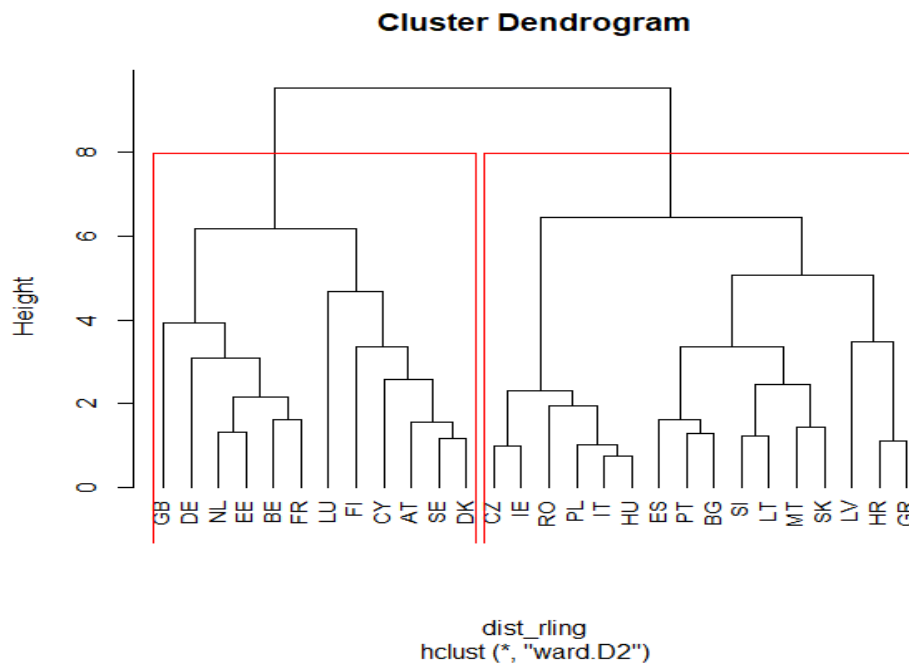
Fig. 3. Dendrogram of the EU countries by sub-indices of linguistic
landscape

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--------Summary descriptives table by 'groups'---------
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	1 N=12	2 N=16	p.overall
Region:			<0.001
Eastern Europe	0 (0.00%)	6 (37.5%)	
Northern Europe	5 (41.7%)	3 (18.8%)	
Southern Europe	1 (8.33%)	7 (43.8%)	
Western Europe	6 (50.0%)	0 (0.00%)	
In_EU:			0.011
1952	5 (41.7%)	1 (6.25%)	
1973	2 (16.7%)	1 (6.25%)	
1981	0 (0.00%)	1 (6.25%)	
1986	0 (0.00%)	2 (12.5%)	
1995	3 (25.0%)	0 (0.00%)	
2004	2 (16.7%)	8 (50.0%)	
2007	0 (0.00%)	2 (12.5%)	
2013	0 (0.00%)	1 (6.25%)	
GDP_cap	52.9 (19.3)	36.1 (13.0)	0.018
INX	0.48 (0.06)	0.31 (0.06)	<0.001
OLG	0.31 (0.10)	0.33 (0.11)	0.625
KFL	0.60 (0.24)	0.52 (0.18)	0.381
SFP	0.58 (0.15)	0.38 (0.08)	0.001
MNL	0.36 (0.11)	0.13 (0.20)	0.001
LVL	0.32 (0.20)	0.17 (0.10)	0.034
INT	0.79 (0.14)	0.38 (0.15)	<0.001

Fig. 4. Descriptive statistics of the EU Member States clusters allocated on the basis of hierarchical clustering

Hierarchical clustering of the EU countries is presented in the dendrogram (Fig. 3).

Based on the analytical calculations and the principles of analytical clarity and content of results, it was decided to settle on two clusters. In Fig. 3 countries belonging to each cluster are framed in red; in the Table A. 3 of the Appendix the characteristics of each country are given; and in Fig. 4 descriptive statistical characteristics of clusters are presented. The above information will enable to find out what unites the countries belonging to each cluster, as well as what distinguishes the clusters from each other.

Cluster 1 includes Luxembourg, Germany, Finland, Sweden, the Netherlands, Belgium, Denmark, Austria, Cyprus, Estonia, France, and the

United Kingdom. Cluster 2 is formed by Latvia, Malta, Slovenia, Italy, Slovakia, the Czech Republic, Croatia, Lithuania, Ireland, Hungary, Poland, Greece, Spain, Romania, Portugal, Bulgaria. Thus, the cluster analysis once again confirmed the regional division of the leading countries and countries lagging behind in the development of the linguistic landscape: cluster 1 includes six countries in Western Europe (50.0%), five countries in Northern Europe (41.7%) , one Southern European country (8.33%) and no Eastern European country; cluster 2 consists of seven countries in Southern Europe (43.8%), six from Eastern Europe (37.5%), three from Northern Europe (18.8%) and none from Western Europe.

Such indicators as the year of accession to the EU and GDP were not used in the clustering process, but the analysis showed some dependencies: cluster 1 includes five founding members of the European Community (1952, 41.7%), two countries that joined the EU in 1973 (16.7%), three – in 1995 (25.0%) and two – in 2004 (16.7%); their average GDP per capita is 52.9 thousand international current $. Cluster 2 consists of one country at a time in the years of accession in 1952, 1973 and 1981 (6.25% for each indicator), two – in 1986 (12.5%), eight – in 2004 (50.0%), two – in 2007 (12.5%) and one – in 2013 (6.25%); their average GDP per capita is 36.1 thousand international current $.

The average score of the integral multilingualism index for cluster 1 is 0.48, while for cluster 2 it is only 0.31. The visualization of the components of the clusters linguistic landscape (Figs. 5 and 6) clearly shows that both in terms of the integral index and the sub-indices, cluster 1 countries are ahead of cluster 2 countries in the development of the linguistic landscape:

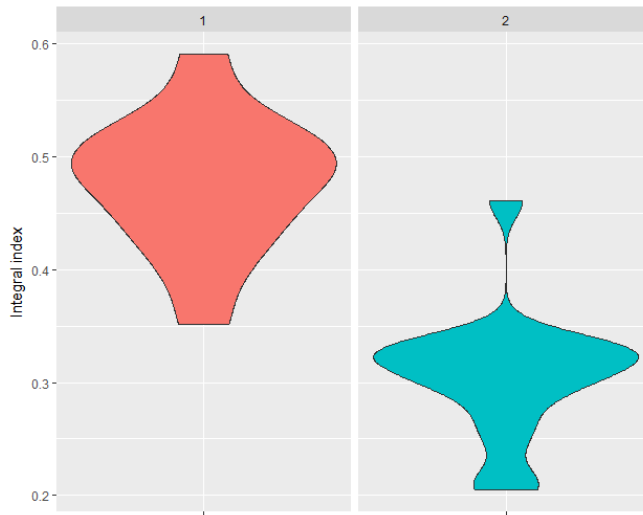**Fig. 5.** Violin plot of integrated indices of the EU Member States clusters, allocated on the basis of hierarchical clustering
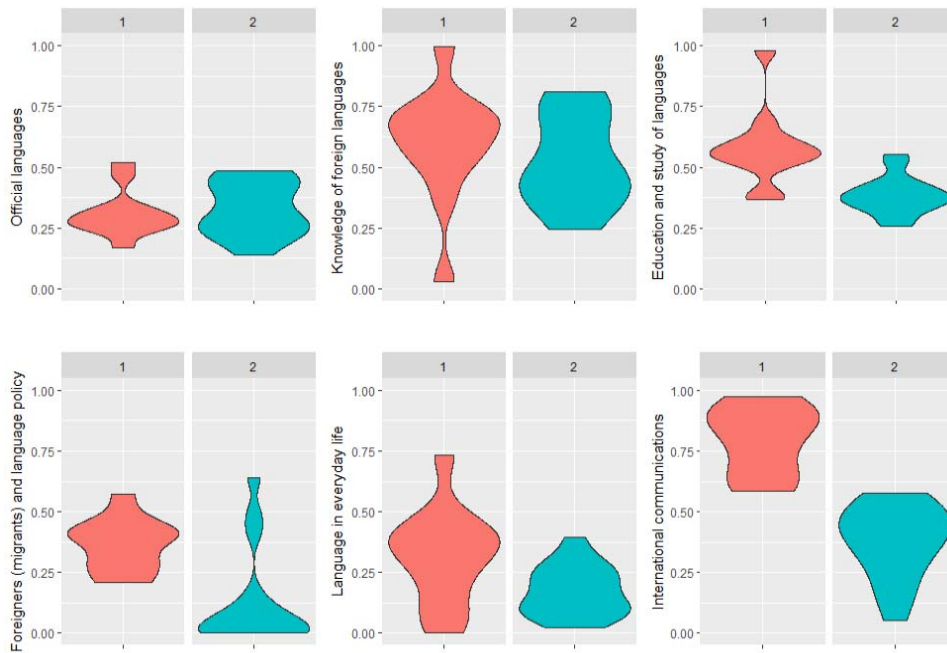

Fig. 6. Violin plot of sub-indices of the EU Member States clusters, selected on the basis of hierarchical clustering

If we analyze the features of clusters from the point of view of the components of the linguistic landscape, then the following picture clearly emerges:

- "official languages" sub-index (number of state languages and number of regional languages having official status) does not differ significantly in both clusters;

- according to the fluency in foreign languages (level of the mother tongue knowledge; number of languages used by the population (one, two, three and more); language skills in terms of occupation (managers, clerks, workers, elementary occupation) and the urbanization degree (cities, towns, suburbs, rural area)) cluster 1 countries, although ahead of the language skills, have a fairly heterogeneous range;

–   in terms of education and language (learning foreign languages at school, tertiary education in the country, mobility in education, teaching foreigners in the country), cluster 2 countries are significantly behind in using foreign languages in educational activities;

– "foreigners and languages" sub-index (language policy on requirements for migrants in the state language proficiency, language support (compulsory / voluntary for schools) for newly arrived migrant students) –   cluster 2 countries demonstrate a low level of the effective language policy oriented towards the integration of migrants;

– "languages in everyday life" sub-index (languages of government sites, share of foreign companies in business, travels abroad) – cluster 1 countries are characterized by high rates of multilingual society;

– "international communications" sub-index (Internet access and daily Internet usage) – cluster 1 countries are significantly ahead of cluster 2 countries in Internet communications.

Thus, cluster analysis shows that the countries that joined the EU later and do not have a large GDP (mainly Eastern and Southern Europe) have not yet been able to develop the linguistic landscape and are at its monolingual level. Instead, cluster 1 countries tend to be multilingual.

To finish the exploration of the results of this phase of the study we should   highlight   that k-means clustering (the Table A. 4 of the Appendix) confirmed the reliability and robustness of the results described above, since the distribution of countries by clusters proved to be identical, with only one difference: Latvia came to cluster 1 and this cluster consists of 13 countries.

In Fig. 7, the coordinate system formed by the two main components clearly shows the distribution of the EU Member States by clusters obtained by the k-means method.
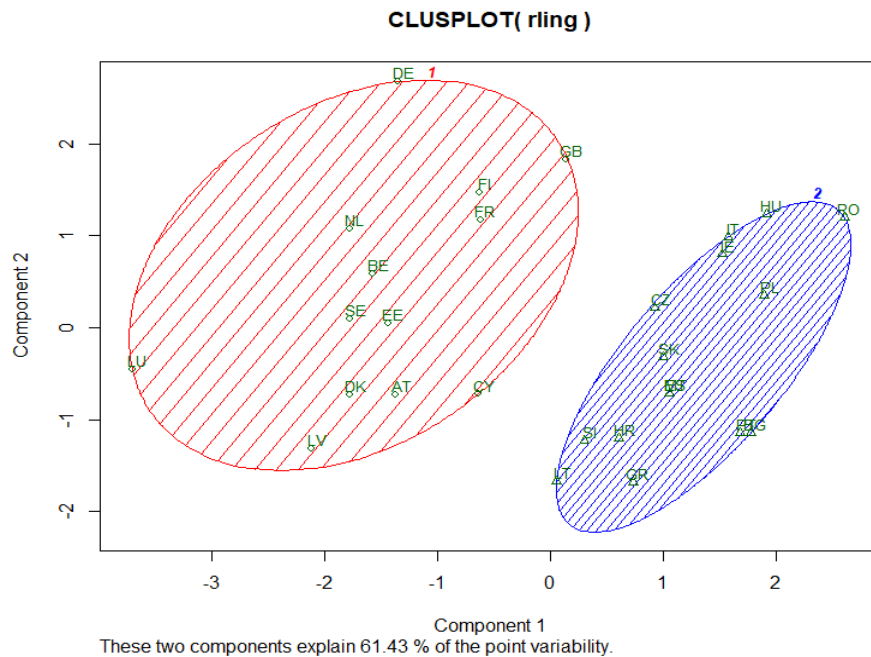
Fig. 7. Clusters of the EU countries formed by the k-means method

The third task began with the use of the principal component method and the application of the Kaiser-Harris rule and the Broken stick method. These procedures have made it clear that to explain variations in variables (sub-indices), the first two components are sufficient, which distribute variations caused by a larger number of variables.

The following exploratory factor analysis helped to identify this structure of the linguistic landscape, thus explaining the internal correlations between its constituents (which we observe in the form of indices) by two more fundamental (in-depth) latent factors.

Formally, each latent factor is a linear combination of the variables that are observed. As we can see (Table 1), the factor ML1 is very positively correlated with the sub-indices "foreign language proficiency" (R = 0.82)

and "education and languages" (R = 0.71), as well as slightly less with the sub-index "foreigners and languages "(R = 0.40), while the rest of the sub-indices have no particular influence on it. The second ML2 factor associated with another group of factors closely correlates with the sub-indices "international communication" (R = 0.80) and "languages in everyday life" (R = 0.57). The official languages sub-index, which is very weakly correlated with both factors, falls out of the list and, as the data in the last two columns show, is influenced by other factors. These dependencies are visualized in Fig. 8.

Table 1. Structure of latent factors after varimax rotation

Output variables (sub-indices)	Latent factors*		Joint explanation of ML1 & ML2 variations of output variables	Explanation of variations of output variables by other factors
	ML1	ML2		
Knowledge of foreign languages	0,82		0,67	0,33
Education and languages	0,71	0,38	0,66	0,34
Foreigners and languages	0,40	0,37	0,30	0,70
Official languages	-0,29		0,09	0,91
International communication	0,25	0,80	0,70	0,30
Languages in everyday life		0,57	0,33	0,67
Impact on overall variation (%)	0,25	0,21		
Cumulative effect on overall variation (%)	0,25	0,46		

Note *: the table shows only those correlations that are greater than 0.2.
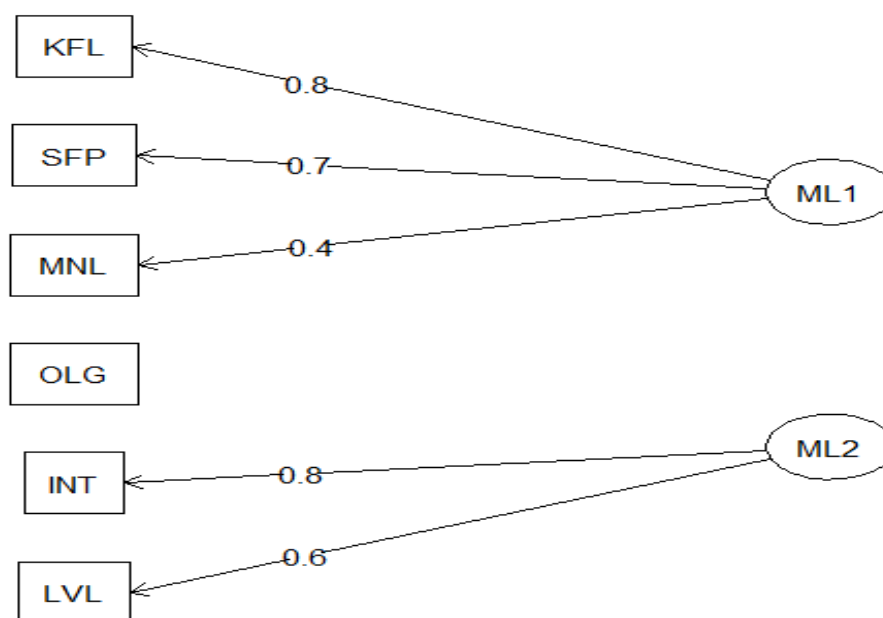
Fig. 8. Latent factors in the structure of factors of the linguistic landscape formation

(ML1 – anthropological factor, ML2 – activity factor, KFL – knowledge of foreign languages, SFP – education and languages, MNL – foreigners and languages, OLG – official languages, INT – international communications, LVL – languages in everyday life)

Given this, it is possible to interpret the newly introduced factors as latent factors affecting the linguistic landscape as follows: ML1 is an anthropological factor (expressing, on the one hand, the influence of citizens who are interested in learning foreign languages, and on the other – foreigners, migrants who learn the state language to assimilate into the society); ML2 is an activity factor (the impact of the use of foreign languages in practical and professional activities and Internet communication). Both cluster and factor analyses showed that such a component of the linguistic landscape as "official languages" did not significantly affect the level of multilingualism.

Conclusion

The level of the linguistic landscape development depends directly on the level of development of multilingualism, which is implemented in: national policies for the development of national / regional languages of the country; practice of studying and level of knowledge of foreign languages in the country; study of the languages of the country by foreigners residing in its territory; the use of languages in everyday life; international communications of citizens of the country.

After having conducted the analysis of the linguistic landscape of the EU Member States, we can conclude that multilingualism is capable of enhancing the EU's monolithic nature because, on the one hand, the widespread use of languages enhances cohesion within the European Community, and on the other, the requirements for migrants to speak the state language do not promote only their integration into a new society, but also enhance interaction at the national and local levels. The study showed that countries with high linguistic landscape index are mainly Western and Northern European countries, five EU founding countries and two countries of the first, three third and two fourth waves of expansion with high GDP. They are leaders in the use of foreign languages in educational activities, effective language policies for the integration of migrants, the use of foreign languages in everyday practice, and international communication through the Internet. The low linguistic landscape index is predominantly typical for the countries of Southern and Eastern Europe, with lower levels of GDP, which later joined the European Community. They are also lagging behind the indicators mentioned above, probably because they have not yet been able to develop effective mechanisms for the implementation of multilingualism.

Thus, statistics support the hypothesis that a high index (level of development) of the linguistic landscape demonstrates the dominance of centripetal forces in individual Member States and promotes the EU monolithic nature; instead, the low index of linguistic landscape, which is inherent in monolingual communities, indicates a weak cohesion and a predominance of centrifugal trends, which weakens the European Community's monolithic character.

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APPENDIX

Table A 1

Components and indicators of the linguistic landscape

Variables (index / sub-index / indicators)	Type of a variable	Title of an indicator	Calculation formulas / data source
0. Integral index	index	INX	$INX = ((1+OLG)*(1+KFL)*(1+SFP)*(1+MNL)*(1+LVL)*(1+INT))^{(1/6)}-1$
1. Official languages	sub-index	OLG	$OLG = ((1+OLG\_gov)*(1+OLG\_reg))^{(1/2)}-1$
1.1. State language / state languages (number)	normalized index	OLG_gov	Data: Europeans and their languages 2012; Key data 2017
1.2. Regional languages and languages of minorities with the official status (number)	normalized index	OLG_reg	Data: Europeans and their languages 2012; Key data 2017
2. Foreign languages proficiency	sub-index	KFL	$KFL = ((1+KFL\_pl)*(1+KFL\_pr)*(1+KFL\_ur))^{(1/3)}-1$
2.1. Knowledge of languages among the working population, 25-64	normalized index	KFL_pl	$KFL\_pl = 1*KFL\_pl\_1 + 2*KFL\_pl\_2 + 3*KFL\_pl\_3 + 4*KFL\_pl\_4$
- one language (%)	indicator	KFL_pl_1	Data: Foreign language skills statistics 2016
- two languages (%)	indicator	KFL_pl_2	
- three languages (%)	indicator	KFL_pl_3	
- more languages (%)	indicator	KFL_pl_4	
2.2. Type of occupation and foreign languages roficienc	normalized index	KFL_pr	$KFL\_pr = 2*KFL\_pr\_mn + 1.5*KFL\_pr\_of + 1*KFL\_pr\_wk + 0.5*KFL\_pr\_el$
- managers (%)	indicator	KFL_pr_mn	Data: Foreign language skills statistics 2016; The European Education Area 2018
- clerks (%)	indicator	KFL_pr_of	
-skilled manual workers (%)	indicator	KFL_pr_wk	
- elementary occupations (%)	indicator	KFL_pr_el	
2.3. Knowledge of foreign languages by the de gree of urbanization	normalized index	KFL_ur	$KFL\_ur = 1.5*KFL\_ur\_ct + 1*KFL\_ur\_cz + 0.5*KFL\_ur\_vl$
- cities (%)	indicator	KFL_ur_ct	Data: Foreign language skills statistics 2016
- towns and suburbs (%)	indicator	KFL_ur_cz	
- rural area (%)	indicator	KFL_ur_vl	
3. Education and languages	sub-index	SFP	$SFP = ((1+HEL)*(1+SFL)*(1+EMB)*(1+SFS))^{(1/4)}-1$
3.1. Level of higher education (%)	normalized index	HEL	Data: The European Education Area 2018
3.2. Study of foreign languages at school (the first / the second)	normalized index	SFL	Points: 0 - optional; 1 - resent Data: Key data 2017
3.3. Mobility in the education space (education / internship / work abroad) (%)	normalized index	EMB	Data: Key data 2017; The European Education Area 2018
3.4. umber of foreigners studying in the country	normalized index	SFS	$SFS = 2*SFS\_dc + 1.5*SFS\_mg + 1*SFS\_bk + 0.5*SFS\_kr$

Variables (index / sub-index / indicators)	Type of a variable	Title of an indicator	Calculation formulas / data source
- PhD degree (%)	indicator	SFS_dc	Data: Learning Mobility Statistics 2016
- Master's (%)	indicator	SFS_mg	
- Bachelor's (%)	indicator	SFS_bk	
- short-term cources (%)	indicator	SFS_kr	
4. Foreigners and languages	normalized sub-index	MNL	$MNL = ((1+MOL)*(1+MSL))^{(1/2)}-1$
4.1. Requirements to immigrants to know the state language	normalized index	MOL	$MOL = 1.5*MOL\_bg + 1*MOL\_rs + 0.5*MOL\_ct$
- admission to the country	level	MOL_bg	Level of the state language knowledge (points): 0 – no requirements; 1 - A1; 2 - A2; 3 - B1; 4 - B2; 0 – interview
- permanent residence	level	MOL_rs	Data: Extramoana, Van Avermaet 2011
- citizenship	level	MOL_ct	Points: 0 – school autonomy; 1 – given
4.2. Assistance of migrant children to study the state language	normalized index	MSL	Data: Key data 2017
5. Language in everyday life	Sub-index	LVL	$LVL =((1+LGS)*(1+SFC)*(1+TRA))^{(1/3)}-1$
5.1. Languages on governmental sites	normalized index	LGS	$LGS = 1*LGS\_ol + 1*LGS\_rg + 1*LGS\_en + 1*LGS\_fr + 1*LGS\_gm + 1*LGS\_th$
- state language	indicator	LGS_ol	Points: 0 - no; 1 – present
- regional language	indicator	LGS_rg	Data: data are taken from the governmental site of the EU Member States
- English	indicator	LGS_en	
- French	indicator	LGS_fr	
- German	indicator	LGS_gm	
- other languages	indicator	LGS_th	
5.2. Share of foreign companies (%), 2016	normalized index	SFC	Data: Foreign-controlled enterprises 2019
5.3. Travels (preferences)	indicator	TRA	Points: 0 – within the native state; 1 - abroad; Data: Number of trips by country 2019; Tourism Trips of Europeans
6. International communications	sub-index	INT	$INT = ((1+INT\_ac)*(1+INT\_dl))^{(1/2)}-1$
6.1. Access to Internet, 16-74 aged (%), 2018	normalized index	INT_ac	Data: Digital economy and society statistics 2019
6.2. Everyday Internet usage, 16-74 aged (%), 2018	normalized index	INT_dl	Data: Digital economy and society statistics 2019

Table A 2

EU Member States' indices as of 2016 – 2019

Country	Region	Year of the accession to the EU	GDP per capita (thousand intern. current $)	Integral index		Sub-indices											
						Official languages		Foreign languages proficiency		Education and languages		Foreigners and languages		Languages in everyday life		International communications	
				index	rank	index	rank	index	rank	index	rank	index	rank	index	rank	index	rank
Luxembourg (LU)	Western Europe	1952	110,9	0,59	1	0,26	9	0,99	1	0,98	1	0,30	7	0,41	4	0,77	8
Germany (DE)	Western Europe	1952	52,8	0,52	2	0,29	14	0,50	17	0,39	17	0,40	6	0,73	1	0,87	6
Finland (FI)	Northern Europe	1995	46,3	0,51	3	0,52	1	0,69	10	0,51	12	0,21	9	0,36	7	0,90	4
Sweden (SE)	Northern Europe	1995	53,1	0,51	4	0,32	12	0,74	5	0,57	5	0,41	5	0,25	13	0,88	5
The Netherlands (NL)	Western Europe	1952	56,4	0,50	5	0,26	20	0,60	13	0,56	7	0,30	7	0,41	3	0,97	1
Belgium (BE)	Western Europe	1952	48,3	0,49	6	0,29	15	0,54	15	0,61	4	0,47	4	0,38	6	0,68	9
Denmark (DK)	Northern Europe	1973	51,6	0,48	7	0,30	13	0,74	6	0,62	3	0,41	5	0,07	26	0,90	3
Austria (AT)	Western Europe	1995	51,9	0,47	8	0,34	10	0,70	8	0,57	6	0,57	2	0,13	19	0,63	10
Latvia (LV)	Northern Europe	2004	29,5	0,46	9	0,14	26	0,81	2	0,55	8	0,64	1	0,30	9	0,43	19
Cyprus (CY)	Southern Europe	2004	39,0	0,44	10	0,47	4	0,59	14	0,69	2	0,41	5	0,00	28	0,58	12
Estonia (EE)	Southern Europe	2004	33,8	0,44	11	0,17	25	0,68	11	0,54	9	0,21	9	0,35	8	0,79	7
France (FR)	Western Europe	1952	45,5	0,41	12	0,23	22	0,37	24	0,53	10	0,27	8	0,48	2	0,60	11
The United Kingdom (GB)	Northern Europe	1973	45,6	0,35	13	0,26	18	0,03	28	0,37	22	0,40	6	0,26	11	0,94	2
Malta (MT)	Southern Europe	2004	44,7	0,34	14	0,43	7	0,79	3	0,34	24	0,00	15	0,08	24	0,54	15
Slovenia (SI)	Southern Europe	2004	36,6	0,33	15	0,27	16	0,77	4	0,42	15	0,06	13	0,11	21	0,50	16

Country	Region	Year of the accession to the EU	GDP per capita (thousand intern. current $)	Integral index		Sub-indices											
						Official languages		Foreign languages proficiency		Education and languages		Foreigners and languages		Languages in everyday life		International communications	
				index	rank	index	rank	index	rank	index	rank	index	rank	index	rank	index	rank
Italy (IT)	Southern Europe	1952	39,5	0,33	16	0,45	5	0,37	23	0,35	23	0,11	11	0,29	10	0,44	18
Slovakia (SK)	Eastern Europe	2004	35,1	0,33	17	0,36	9	0,69	9	0,37	20	0,00	15	0,24	14	0,40	20
The Czech Republic (CZ)	Eastern Europe	2004	37,5	0,32	18	0,33	11	0,47	18	0,39	16	0,05	14	0,21	15	0,55	14
Croatia (HR)	Southern Europe	2013	26,2	0,32	19	0,26	19	0,61	12	0,26	28	0,41	5	0,08	23	0,38	21
Lithuania (LT)	Northern Europe	2004	34,6	0,32	20	0,23	23	0,72	7	0,52	11	0,16	10	0,11	20	0,30	23
Ireland (IE)	Northern Europe	1973	79,9	0,31	21	0,41	8	0,36	25	0,37	21	0,00	15	0,21	16	0,58	13
Hungary (HU)	Eastern Europe	2004	31,4	0,30	22	0,48	3	0,25	27	0,38	19	0,06	13	0,26	12	0,44	18
Poland (PL)	Eastern Europe	2004	31,4	0,30	23	0,49	2	0,40	22	0,39	18	0,08	12	0,17	17	0,33	22
Greece (GR)	Southern Europe	1981	29,1	0,29	24	0,26	19	0,54	16	0,34	25	0,49	3	0,03	27	0,18	25
Spain (ES)	Southern Europe	1986	40,3	0,27	25	0,27	17	0,46	19	0,44	13	0,00	15	0,07	25	0,48	17
Romania (RO)	Eastern Europe	2007	26,2	0,25	26	0,45	6	0,28	26	0,28	27	0,00	15	0,39	5	0,16	26
Portugal (PT)	Southern Europe	1986	32,0	0,21	27	0,20	24	0,45	20	0,32	26	0,00	15	0,09	22	0,28	24
Bulgaria (BG)	Eastern Europe	2007	23,2	0,20	28	0,24	21	0,43	21	0,43	14	0,00	15	0,15	18	0,05	27

Table A 3

Clustering of the EU Member States by multilingualism sub-indices (hierarchical clustering method)

Country	Region	Year of the accession to the EU	GDP per capita (thousand intern.) current $	Integral index		Sub-indices											
						Official languages		Foreign languages proficiency		Education and languages		Foreigners and languages		Languages in everyday life		International communications	
				index	rank	index	rank	index	rank	index	rank	index	rank	index	rank	index	rank
Cluster 1																	
Luxembourg	WE	1952	110,9	0,60	1	0,26	19	0,99	1	0,98	1	0,30	7	0,41	4	0,77	8
Germany	WE	1952	52,8	0,52	2	0,29	14	0,50	17	0,39	17	0,40	6	0,73	1	0,87	6
Finland	NE	1995	46,3	0,51	3	0,52	1	0,69	10	0,51	12	0,21	9	0,36	7	0,90	4
Sweden	NE	1995	53,1	0,51	4	0,32	12	0,74	5	0,57	5	0,41	5	0,25	13	0,88	5
The Netherlands	WE	1952	56,4	0,50	5	0,26	20	0,60	13	0,56	7	0,30	7	0,41	3	0,97	1
Belgium	WE	1952	48,3	0,49	6	0,29	15	0,54	15	0,61	4	0,47	4	0,38	6	0,68	9
Denmark	NE	1973	51,6	0,48	7	0,30	13	0,74	6	0,62	3	0,41	5	0,07	26	0,90	3
Austria	WE	1995	51,9	0,48	8	0,34	10	0,70	8	0,57	6	0,57	2	0,13	19	0,63	10
Cyprus	SE	2004	39,0	0,44	10	0,47	4	0,59	14	0,69	2	0,41	5	0,00	28	0,58	12
Estonia	NE	2004	33,8	0,44	11	0,17	25	0,68	11	0,54	9	0,21	9	0,35	8	0,79	7
France	WE	1952	45,5	0,41	12	0,23	22	0,37	24	0,53	10	0,27	8	0,48	2	0,60	11
The United Kingdom	NE	1973	45,6	0,35	13	0,26	18	0,03	28	0,37	22	0,40	6	0,26	11	0,94	2
The average score for the cluster				0,48		0,31		0,60		0,58		0,36		0,32		0,79	

Cluster 2

				9		9		26		2		8		1		9	
Latvia	SE	2004	29,5	0,46	9	0,14	26	0,81	3	0,55	24	0,64	15	0,30	9	0,43	19
Malta	SE	2004	44,7	0,34	14	0,43	7	0,79	4	0,34	15	0,00	13	0,08	24	0,54	15
Slovenia	SE	2004	36,6	0,33	15	0,27	16	0,77	23	0,42	23	0,06	11	0,11	21	0,50	16
Italy	SE	1952	39,5	0,33	16	0,45	5	0,37	9	0,35	20	0,11	15	0,29	10	0,44	18
Slovakia	EE	2004	35,1	0,33	17	0,36	9	0,69	18	0,37	16	0,00	14	0,24	14	0,40	20
The Czech Republic	EE	2004	37,5	0,32	18	0,33	11	0,47	12	0,39	28	0,05	5	0,21	15	0,55	14
Croatia	SE	2013	26,2	0,32	19	0,26	19	0,61	7	0,26	11	0,41	10	0,08	23	0,38	21
Lithuania	NE	2004	34,6	0,32	20	0,23	23	0,72	25	0,52	21	0,16	15	0,11	20	0,30	23
Ireland	NE	1973	79,9	0,31	21	0,41	8	0,36	27	0,37	19	0,00	13	0,21	16	0,58	13
Hungary	EE	2004	31,4	0,30	22	0,48	3	0,25	22	0,38	18	0,06	12	0,26	12	0,44	18
Poland	EE	2004	31,4	0,30	23	0,49	2	0,40	16	0,39	25	0,08	3	0,17	17	0,33	22
Greece	SE	1981	29,1	0,29	24	0,26	19	0,54	19	0,34	13	0,49	15	0,03	27	0,18	25
Spain	SE	1986	40,3	0,27	25	0,27	17	0,46	26	0,44	27	0,00	15	0,07	25	0,48	17
Romania	EE	2007	26,2	0,25	26	0,45	6	0,28	20	0,28	26	0,00	15	0,39	5	0,16	26
Portugal	SE	1986	32,0	0,21	27	0,20	24	0,45	21	0,32	14	0,00	15	0,09	22	0,28	24
Bulgaria	EE	2007	23,2	0,20	28	0,24	21	0,43		0,43		0,00		0,15	18	0,05	27
The average score for the cluster				0,31		0,33		0,52		0,38		0,13		0,17		0,38	

Table A 4

Clustering of the EU Member States by multilingualism sub-indices (k-means method)

Country	Region	Year of the accession to the EU	GDP per capita (thousand intern. current $)	Integral index		Sub-indices											
						Official languages		Foreign languages proficiency		Education and languages		Foreigners and languages		Languages in everyday life		International communications	
				index	rank	index	rank	index	rank	index	rank	index	rank	index	rank	index	rank
Cluster 1																	
Luxembourg	WE	1952	110,9	0,59	1	0,26	19	0,99	1	0,98	1	0,30	7	0,41	4	0,77	8
Germany	WE	1952	52,8	0,52	2	0,29	14	0,50	17	0,39	17	0,40	6	0,73	1	0,87	6
Finland	NE	1995	46,3	0,51	3	0,52	1	0,69	10	0,51	12	0,21	9	0,36	7	0,90	4
Sweden	NE	1995	53,1	0,51	4	0,32	12	0,74	5	0,57	5	0,41	5	0,25	13	0,88	5
The Netherlands	WE	1952	56,4	0,50	5	0,26	20	0,60	13	0,56	7	0,30	7	0,41	3	0,97	1
Belgium	WE	1952	48,3	0,49	6	0,29	15	0,54	15	0,61	4	0,47	4	0,38	6	0,68	9
Denmark	NE	1973	51,6	0,48	7	0,30	13	0,74	6	0,62	3	0,41	5	0,07	26	0,90	3
Austria	WE	1995	51,9	0,48	8	0,34	10	0,70	8	0,57	6	0,57	2	0,13	19	0,63	10
Latvia	NE	2004	29,5	0,46	9	0,14	26	0,81	2	0,55	8	0,64	1	0,30	9	0,43	19
Cyprus	SE	2004	39,0	0,44	10	0,47	4	0,59	14	0,69	2	0,41	5	0,00	28	0,58	12
Estonia	NE	2004	33,8	0,44	11	0,17	25	0,68	11	0,54	9	0,21	9	0,35	8	0,79	7
France	WE	1952	45,5	0,41	12	0,23	22	0,37	24	0,53	10	0,27	8	0,48	2	0,60	11
The United Kingdom	NE	1973	45,6	0,35	13	0,26	18	0,03	28	0,37	22	0,40	6	0,26	11	0,94	2
The average score for the cluster				0,48		0,30		0,61		0,58		0,39		0,32		0,77	

Country	Region	Year of the accession to the EU	GDP per capita (thousand interm.) current $	Integral index		Sub-indices											
						Official languages		Foreign languages proficiency		Education and languages		Foreigners and languages		Languages in everyday life		International communications	
				index	rank	index	rank	index	rank	index	rank	index	rank	index	rank	index	rank
Cluster 2																	
Malta	SE	2004	44,7	0,34	14	0,43	7	0,79	3	0,34	24	0,00	15	0,08	24	0,54	15
Slovenia	SE	2004	36,6	0,33	15	0,27	16	0,77	4	0,42	15	0,06	13	0,11	21	0,50	16
Italy	SE	1952	39,5	0,33	16	0,45	5	0,37	23	0,35	23	0,11	11	0,29	10	0,44	18
Slovakia	EE	2004	35,1	0,33	17	0,36	9	0,69	9	0,37	20	0,00	15	0,24	14	0,40	20
The Czech Republic	EE	2004	37,5	0,32	18	0,33	11	0,47	18	0,39	16	0,05	14	0,21	15	0,55	14
Croatia	SE	2013	26,2	0,32	19	0,26	19	0,61	12	0,26	28	0,41	5	0,08	23	0,38	21
Lithuania	NE	2004	34,6	0,32	20	0,23	23	0,72	7	0,52	11	0,16	10	0,11	20	0,30	23
Ireland	NE	1973	79,9	0,31	21	0,41	8	0,36	25	0,37	21	0,00	15	0,21	16	0,58	13
Hungary	EE	2004	31,4	0,30	22	0,48	3	0,25	27	0,38	19	0,06	13	0,26	12	0,44	18
Poland	EE	2004	31,4	0,30	23	0,49	2	0,40	22	0,39	18	0,08	12	0,17	17	0,33	22
Greece	SE	1981	29,1	0,29	24	0,26	19	0,54	16	0,34	25	0,49	3	0,03	27	0,18	25
Spain	SE	1986	40,3	0,27	25	0,27	17	0,46	19	0,44	13	0,00	15	0,07	25	0,48	17
Romania	EE	2007	26,2	0,25	26	0,45	6	0,28	26	0,28	27	0,00	15	0,39	5	0,16	26
Portugal	SE	1986	32,0	0,21	27	0,20	24	0,45	20	0,32	26	0,00	15	0,09	22	0,28	24
Bulgaria	EE	2007	23,2	0,20	28	0,24	21	0,43	21	0,43	14	0,00	15	0,15	18	0,05	27

Country	Region	Year of the acces-sion to the EU	GDP per capita (thousand interm. current $)	Integral index		Sub-indices											
						Official languages		Foreign languages proficiency		Education and languages		Foreigners and languages		Languages in everyday life		International communica-tions	
				index	rank	index	rank	index	rank	index	rank	index	rank	index	rank	index	rank
The average score for the cluster				0,30		0,34		0,51		0,37		0,10		0,17		0,37	