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Lexical-semantic group in contrastive analysis based on the material of Ukrainian, English, and German languages

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ABSTRACT

Cross-linguistic research on lexical-semantic groups (LSGs) often remains predominantly qualitative and fragmented, which makes it difficult to compare universal and culture-specific patterns across languages in a systematic way. This study examines four LSGs emotions, colours, verbs of motion, and kinship terms in Ukrainian, English, and German in order to clarify how their core and periphery are structured in contemporary language use. Conceptually, the study is situated within cognitive semantics and prototype theory, treating core–periphery structure as a frequency-based approximation of shared prototypes and peripheral extensions. The empirical basis consists of a questionnaire survey of 300 respondents (100 per language group), combining frequency ratings with choices among near-synonymous items. Quantitative analysis (core ≥ 75% of respondents) is complemented by qualitative interpretation of polysemy and cultural associations. The results show that in the emotional domain Ukrainians most frequently actualize радість ‘joy’, whereas English and German speakers foreground negative emotions such as anger/Ärger and fear/Angst. In the colour group, a shared core is formed by red, blue, and green, with minor differences in the salience of yellow. For verbs of motion, йти/go/gehen constitutes a universal core, while English and German display higher frequencies of transport-related verbs (ride/fahren). Kinship terms (mother, father, brother, sister) form the most stable core across all three languages. Overall, the study demonstrates how LSGs simultaneously reflect universal cognitive categories and culturally conditioned profiles of salience and contributes to cognitive and contrastive semantics by offering an empirically grounded, frequency-based core–periphery model with applications for contrastive semantics, translation, and intercultural language pedagogy.

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1. Introduction

Comparative studies of vocabulary make it possible to identify both universal patterns of world categorisation and language-specific features. Lexical-semantic groups (LSGs) are a productive locus for examining such structural and semantic differences, as they reflect speakers' cultural and cognitive characteristics. Accordingly, a comparative examination of LSGs in Ukrainian, English and German has both theoretical relevance for cognitive and contrastive semantics and practical value for translation, intercultural communication and foreign language pedagogy.

Modern research integrates cognitive-semantic methodologies with corpus-based approaches: cognitive theories leverage extensive corpora, while corpus analyses validate their hypotheses (Dilay et al., 2021). Within the realm of cognitive semantics, this synergy is evident in investigations of metaphors, polysemy, and prototypes. In the domain of natural language processing (NLP), automated comparative methods are being developed, particularly contextual vector models that assess the congruence of translation pairs (Karidi et al., 2024), alongside the construction of shared semantic spaces and profiles for modeling polysemy. At the same time, the significance of cultural specificity is underscored: for instance, while the metaphor of "modesty" possesses common cognitive foundations across various languages, its verbal expression and prevalence sufficiently diverge (Shevchenko & Shastalo, 2021).

Despite these advances, there is still no unified, quantitatively grounded account of how core and periphery are distributed in basic lexical-semantic groups across languages. Most studies either focus on a single language or a single semantic domain, or they rely on qualitative examples and raw frequencies without an explicit threshold for the "core" of a group. As a result, the debate on universal versus culture-specific organization of LSGs remains under-specified empirically, especially for Slavic–Germanic comparisons that include Ukrainian.

From a theoretical perspective, the triad Ukrainian–English–German offers a focused but informative test case for this problem. All three languages belong to the Indo-European family yet differ in typological profile, historical contact, and contemporary sociocultural context. Comparing LSGs across a Slavic (Ukrainian) and two Germanic languages (English, German) makes it possible to probe how far putative universals extend across related but distinct branches and to what extent culture-specific profiles of salience emerge within broadly shared conceptual domains.

The aim of this study is to delineate the similarities and differences in the structure and functionality of the LSGs across the Ukrainian, English, and German languages, utilizing empirical data gathered through a survey conducted with native speakers. In particular, we ask to what extent basic semantic domains (emotions, colours, motion verbs, kinship) are shaped chiefly by universal cognitive constraints and to what extent they exhibit culture-specific profiles of salience across the three languages. The study objectives are as follows:

1. To construct a comparative list of lexical units in the three languages for the four selected LSGs.
2. To determine the frequency of use of these lexemes according to the survey findings and to identify the core and periphery of each group.
3. To construct comparative tables (Ukrainian – English – German) and interpret the results in the context of universal and culture-specific characteristics of linguistic systems.

The study combines traditional contrastive analysis of lexical-semantic groups with survey-based empirical data on speakers' perceptions in three languages. This comprehensive approach makes it possible to trace how actual usage frequencies and core–periphery structure interacts in shaping cross-linguistic similarities and differences, and it provides a more explicit empirical basis for interlingual comparison of lexis. Against this background, the present study operationalizes a frequency-based core–periphery distinction and applies it in parallel to four LSGs (emotions, colours, motion verbs, kinship) in Ukrainian, English, and German.

1.1. Cognitive-semantic Foundations and Semantic Fields

Cognitive semantics is an anthropocentric theory of meaning that investigates how human perception and cognition shape the significance of linguistic units. Within this framework, word meaning is treated as a conceptual structure grounded in experience and organised through cognitive

models such as frames, schemas and concepts (Shevchenko, 2020; Melnychuk, 2021). Consequently, the significance of linguistic signs is intrinsically linked to how speakers perceive and comprehend reality.

At the core of numerous discussions lies the inquiry into the universality versus language specificity of conceptual frameworks. Valente (2022) advocates for the notion that preverbal messages are encoded by distinct conceptual structures unique to each language. Conversely, Gaskins and Rundblad (2023) substantiate the universality of fundamental metaphors ("Heart – Life," "Love – Warmth"), which manifest across various cultures. Taken together, these studies illustrate the tension between language-specific conceptual structures and cross-linguistic regularities, but they do not quantify how these tendencies are distributed across several semantic domains in parallel.

The significance of linguistic units is cultivated not solely at the level of individual lexemes but also within complex conceptual scenes. Falck and Okonski (2022) propose the PIMS procedure for identifying metaphorical scenes, underscoring that meaning is contingent upon context and is activated in particular situations.

Scholars also draw attention to the function of metaphors and metonymies. Morras and Barcelona (2023) consider metonymy as a sophisticated cognitive mechanism that interlinks experience with meaning. This resonates with the observation that the semantics of movement verbs diverge across languages; for instance, the German term *laufen* encompasses both "to run" and "to function," thereby rendering it more frequent.

The matter of contextual meaning is corroborated by Barseghyan (2020) and Syrett (2024), who maintain that semantic groups indeed exhibit patterns only when discourse is considered. This finding is crucial for our core-periphery methodology, as frequency alone fails to elucidate disparities without cultural context.

1.2. Universals and Culture-specificity in Lexical Semantics

In the realm of emotional vocabulary, Díaz et al. (2022) demonstrated that emotions in Spanish cluster around three affective axes, while Bąk and Altarriba (2023) have found distinctions in valence and activation between English and Polish. Together with studies such as Valente (2022), which argues that preverbal messages are encoded by language-specific conceptual structures, these findings caution against treating emotional categories as straightforward universals. While the basic positive–negative dimension appears robust, the specific core emotions and their relative salience vary across languages and cultures. Our study follows this more cautious line of work: we treat cross-linguistic universals as hypotheses to be tested rather than presupposed, and explicitly model both shared core patterns and divergent profiles of salience across the three LSGs.

Particular emphasis in cognitive semantics is also accorded to synonymy as a mechanism for lexicon organization. Basile (2022) highlights the contextual dependency of meaning, while Tilavova (2023) posits synonymy as a fundamental unit of vocabulary. Diachuk (2024) distinguishes between lexical and contextual synonymy, elucidating their roles in delineating the core and periphery of semantic fields. These concepts directly support our approach, whereby core units possess a stable meaning, and the periphery is activated in response to situational contexts. These insights motivate our choice of a core–periphery approach, but they are rarely operationalised through an explicit frequency threshold applied uniformly across languages.

This study addresses that gap by applying a uniform, frequency-based core–periphery threshold to four LSGs (emotions, colours, motion verbs, kinship) in Ukrainian, English and German, and by combining quantitative measures with qualitative interpretation of polysemy and cultural associations. Given the vastness of the literature, we focus on studies that directly inform our core–periphery model and the four domains under investigation.

2. Method

2.1. Research Procedure

The investigation was conducted within the framework of cognitive semantics, which posits that language serves as a tool for conceptualizing the world. The foundational concepts of core and periphery are employed in our analysis in alignment with the tradition of semantic fields (Trier, 1931) and prototypical semantics (Rosch, 1975; Lakoff, 1987), wherein the most typical and frequently

encountered elements of a category are regarded as central, while the periphery encompasses less utilized and marginal units. The focus of the research is on four lexical-semantic groups (LSG): emotion vocabulary, color designations, movement verbs, and vocabulary related to kinship. The selection of these groups is predicated on their universal spheres of categorization (Lakoff, 1987), which at the same time reveal national-specific variations.

2.2. Stages of the Research

This study was designed to systematically explore the research problem through a sequence of interrelated methodological stages. Accordingly, the research was conducted in three main stages.

a) Formation of a comparative lexical inventory. Through an exhaustive analysis of explanatory dictionaries, frequency corpora (BNC, DWDS, Leipzig Corpora), and scholarly articles, 10–12 key lexemes were identified within each group. The selection criteria encompassed frequency, cultural significance, and the presence of cross-linguistic equivalents.

b) Developing a questionnaire. A comprehensive questionnaire comprising 40 questions was devised using Google Forms (10 questions within each LSG). The tasks encompassed both evaluating the frequency of usage (on a scale from "never" to "very often") and selecting the most synonymous options available to respondents. The questionnaire was drafted in English and then translated into Ukrainian and German using a translation–back-translation procedure. A small pilot (10–12 respondents per language) was used to check clarity; minor adjustments were made before the main data collection.

c) Conducting a survey. A total of 300 respondents participated, consisting of 100 native speakers of Ukrainian, English, and German. The survey was conducted online.

Processing the results. The frequency of responses facilitated the identification of the core (≥75% usage) and the periphery (<75%). Furthermore, a qualitative analysis was performed (examining polysemy, gaps, and cross-linguistic equivalents). Tools from corpus linguistics were utilized to verify and visualize the data, particularly Voyant Tools, which enabled the construction of frequency and collocation graphs.

The study employed a range of complementary methods:

a) Survey was the principal empirical method. Examples of questions included:

   1) Among the given synonymous options *(happy, glad, joyful / щасливий, радий, веселий / glücklich, froh, fröhlich*), choose the one that you use most frequently in everyday speech.

   2) How often do you use the word *щасливий / happy / glücklich* in everyday speech? (measured on a scale from "never" to "very often")

   3) Which of the proposed colors do you consider to be the most prevalent in your speech?

The survey allowed for obtaining statistically significant frequency indicators. At the same time, self-reported frequency ratings inevitably involve metalinguistic awareness and may be influenced by respondents' subjective impressions of their own usage. To mitigate this, the questionnaire items were formulated in everyday terms, the tasks were anchored in familiar communicative situations, and the resulting profiles were checked against frequency corpora to ensure that the most frequently chosen lexemes are broadly compatible with high-frequency items in contemporary usage. We therefore treat the questionnaire data as an approximation of relative salience in speakers' mental lexicons rather than as a direct measurement of actual token frequency.

b) Quantitative analysis – calculating percentages of usage and constructing tables and diagrams. The threshold of ≥ 75% was used as the boundary for the core. Drawing on prototype theory (Rosch, 1975; Lakoff, 1987), we treat items used by at least three quarters of respondents as central instances of a category, while less frequent items constitute its periphery. The 75% cut-off thus serves as a practical operationalisation of the idea of a shared prototype rather than a theoretically fixed constant.

c) Comparative analysis – identifying similarities and differences between Ukrainian, English, and German. In particular, core lexemes (universals) and peripheral units (culturally specific) were compared.

d) Semantic modeling – analysis of synonymy, polysemy, and lacunae. For example, for the German *laufen*, an extended meaning of "to function" has been recorded, which increases its frequency compared to the Ukrainian *бігти*.

2.3.Sampling

A total of results from 450 questionnaires were collected, yielding a selection of 300 for final analysis (100 from each language group). The filtering was conducted based on criteria including the completeness of responses, affiliation with the target demographic (native speakers or active users), and age (18–35 years).

Selection was predicated on the following criteria:

a) Age: 18–35 years (young professionals and students, representing the most mobile and digitally active demographic).

b) Gender: approximately balanced (50% , 50% male).

c) Educational attainment: secondary specialized education or higher.

d) Selection criteria: permanent residency within the country corresponding to the relevant language; daily use of Ukrainian/English/German in everyday life (Table 1).

Table 1. Sample Profile

Language	Number	Women (%)	Men (%)	Average age	Education level
Ukrainian	100	52	48	24.5	Students / young professionals
English	100	50	50	25.1	Students / young professionals
German	100	49	51	24.8	Students / young professionals

Source: Consolidated by the authors

It was duly noted that all respondents are either native speakers or were immersed in the pertinent cultural environment, thereby mitigating the potential influence of foreign language factors. The sample comprising individuals aged 18–35 was deliberately chosen: this demographic is the most mobile, actively engages with digital communications and social networks, and participates in cross-cultural interactions, thus most vividly embodying contemporary language behavior.

At the same time, restricting the sample to 18–35-year-olds necessarily limits the generalizability of the findings to other age cohorts. Younger speakers are typically more digitally literate and more immersed in online and hybrid communication, which may increase the salience of certain lexemes (e.g., emotion terms circulating in social media discourse) and downplay others that are more characteristic of older speakers or traditional genres. For this reason, the patterns reported here are best interpreted as reflecting contemporary usage among younger, relatively highly educated speakers rather than the full sociolinguistic spectrum of each language community.

2.4. Tools

To support systematic data collection and analysis, this study employed a set of tools.

a) Google Forms were utilized for creating and distributing questionnaires.

b) MS Excel, SPSS were utilized for quantitative analysis and chart construction.

c) Threshold formula (≥75% = core, <75% = periphery) was applied for classifying the results.

d) Cognitive semantics methods were utilized for qualitative interpretation (analysis of figurative schemes, cultural associations).

e) χ^2-criterion was applied for checking interlingual differences in the frequency of emotional lexemes usage.

f) One-way ANOVA for three language groups was used to test the statistical significance of identified interlingual differences.

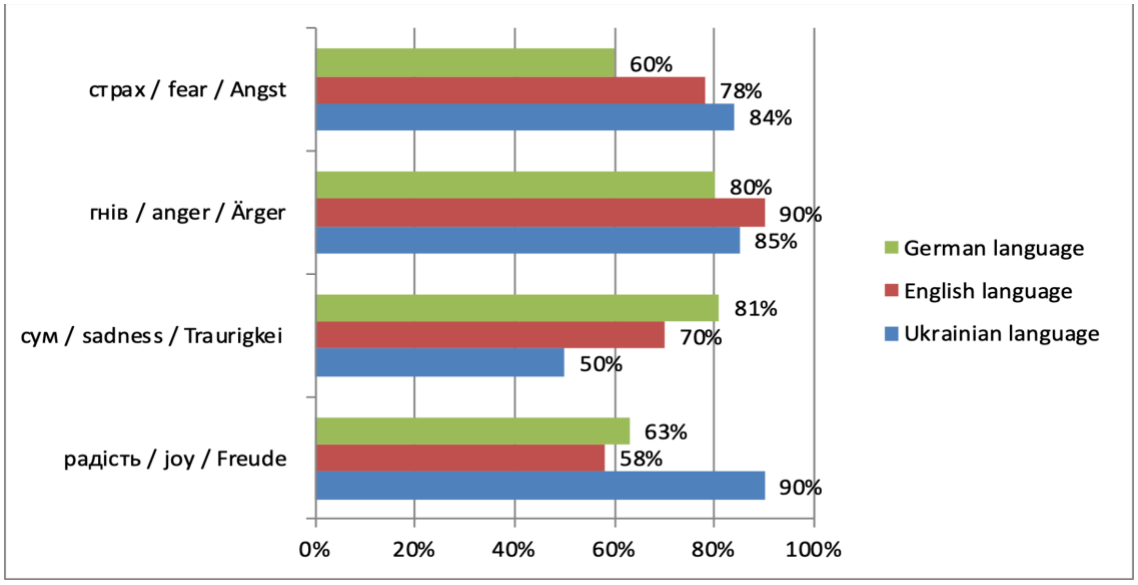
χ^2 tests were used to check whether the distribution of lexemes across languages differed significantly, and one-way ANOVA was applied to compare mean frequencies at the domain level. Importantly, the present design does not control for specific registers or discourse domains (e.g.,

casual conversation vs. institutional communication, online interaction vs. face-to-face dialogue), and the questionnaire prompts were intentionally phrased in broad, everyday terms. As a result, the observed frequency patterns should be interpreted as capturing aggregate, cross-contextual tendencies rather than genre-specific distributions. In the Discussion and Limitations, we explicitly acknowledge that some cross-linguistic contrasts may be modulated by typical discourse domains or register preferences, and not solely by deep conceptual differences. At the same time, we remain cautious not to equate statistically significant effects with qualitative semantic change: they are taken as evidence of probabilistic differences in usage patterns, which are then interpreted within a prototype-based, cognitive-semantic model rather than as direct proof of deep conceptual restructuring.

3. Findings and Discussion

3.1. Findings

Figure 1 presents the results of surveying the respondents regarding the frequency of use of basic emotional lexemes (*радість / joy / Freude*, *сум / sadness / Traurigkeit*, *гнів / anger / Ärger*, *страх / fear / Angst*) in three languages. The visualization allows for comparison of which emotions form the core of the group in each language and which lexemes shift to the periphery.



Source: Elaborated by the authors

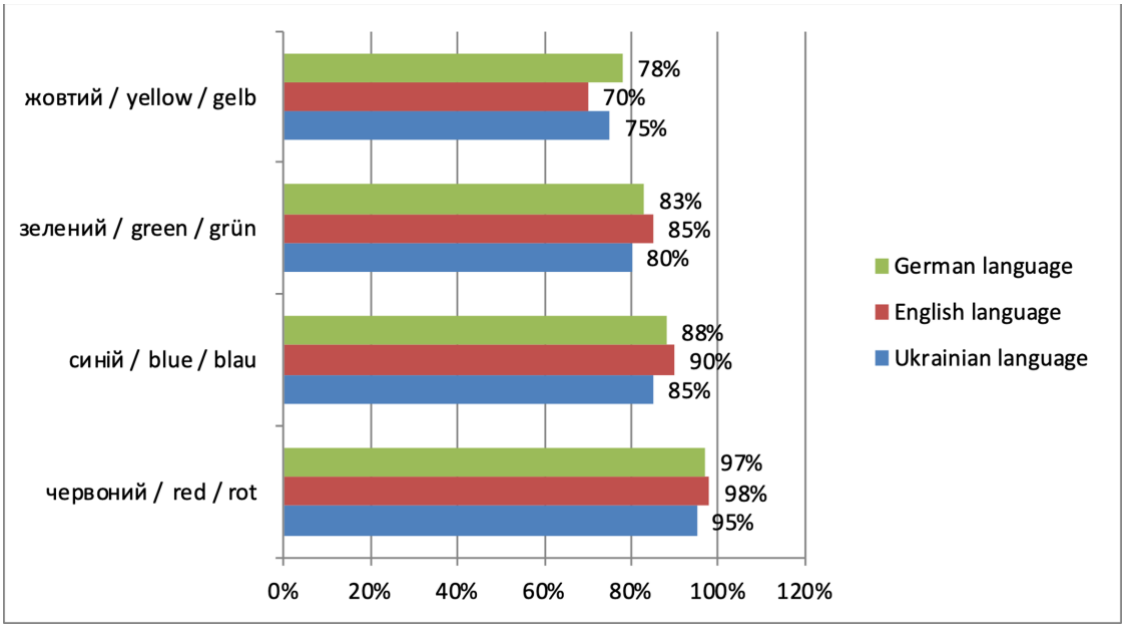
Fig. 1. Frequency of use of emotional lexemes

The results of the analysis reveal clear cross-linguistic differences in the distribution of emotional vocabulary. Among Ukrainian respondents, the lexeme "радість / joy / Freude" shows the highest frequency and forms the core of the group, while *сум / sadness / Traurigkeit*, *гнів / anger / Ärger* and *страх / fear / Angst* remain closer to the periphery. In English and German, by contrast, *anger / Ärger* and *fear / Angst* reach core-level frequencies, whereas "joy" remains less dominant. These patterns indicate that positive and negative emotions occupy different positions in the core of the emotional lexicon across the three languages; their broader semantic and cultural implications are addressed in the Discussion.

Figure 2 illustrates the results of the survey conducted among respondents regarding the utilization of fundamental color terms (червоний / red / rot, синій / blue / blau, зелений / green / grün, жовтий / yellow / gelb) across the three languages – Ukrainian, English, and German. The objective is to compare the frequency of actualization of these basic color names, identify core and peripheral units within the lexical semantic group "colors," and reveal differences in linguistic worldviews.

The results show that in all three languages *red* and *blue* belong to the core group and have the highest frequency of use, while *green* and *yellow* are also classified as core items according to the ≥

75% criterion. This confirms the broadly universal status of basic colour terms in the three linguistic communities. Minor differences emerge at the level of relative prominence: in English, *red* and *blue* slightly dominate, whereas in German and Ukrainian the distribution between the four basic colours is more balanced.

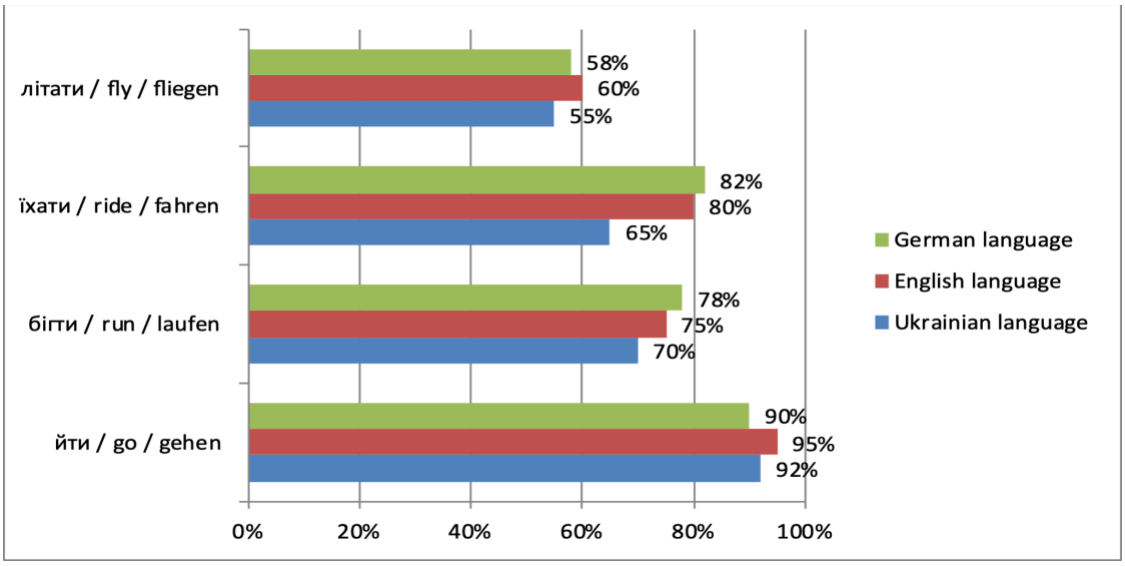


Source: Elaborated by the authors

Fig. 2. Frequency of use of the basic color names

In Figure 3, the results of the survey on the frequency of use of basic motion verbs (*йти / go / gehen*, *бігти / run / laufen*, *їхати / ride / fahren*, *літати / fly / fliegen*) are presented. Motion verbs constitute an important lexical-semantic group, as they reflect both basic spatial schemas and cultural peculiarities of conceptualizing movement and transportation.

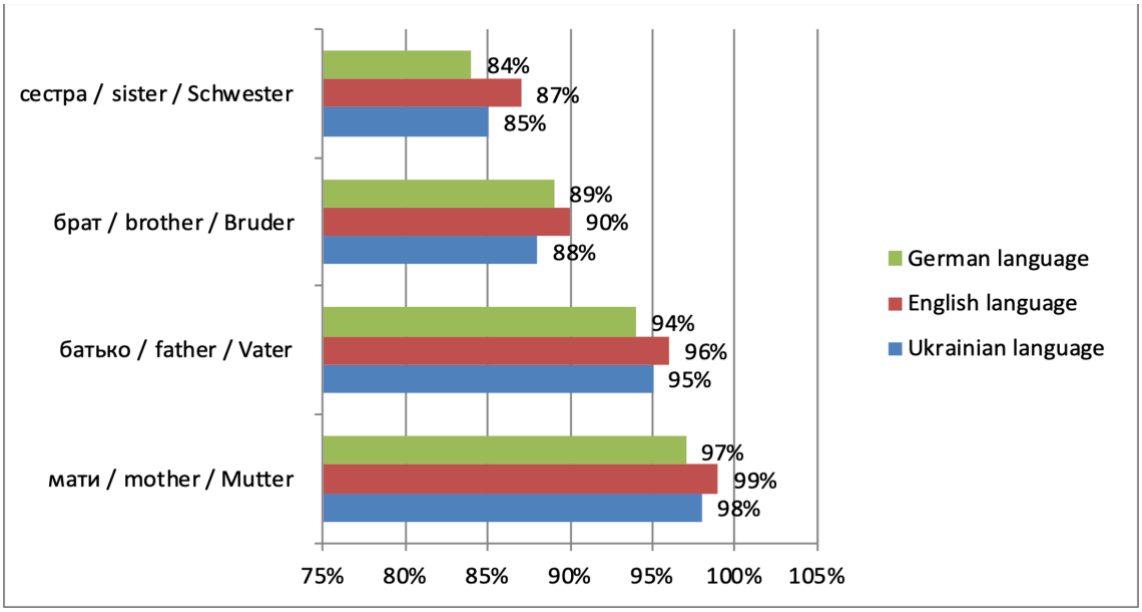
The findings reveal that across all three languages, the predominant motion verb is "йти / go / gehen", which exhibits the highest frequency rates (90% and above) and thus constitutes the core of the group. In English and German, *run / laufen* and *ride / fahren* also reach or approach the ≥ 75% threshold, which places them closer to the core zone, whereas in Ukrainian these verbs remain peripheral. The relatively higher frequency of *laufen* in German correlates with its broader polysemy (including meanings such as "to function"). Overall, the distribution of motion verbs shows a shared core centred on "to go", with variation in how strongly transport-related and dynamic verbs are integrated into the core across languages.



Source: Elaborated by the authors

Fig. 3. Frequency of use of the motion verbs

In Figure 4, the results of the survey concerning the frequency of usage of fundamental kinship terms (мати / mother / Mutter, батько / father / Vater, брат / brother / Bruder, сестра / sister / Schwester) across the three languages – Ukrainian, English, and German, are presented. The lexicon of kinship constitutes one of the most stable lexical-semantic categories, as it is intrinsically linked to the family structure, family cultural paradigms, as well as upbringing traditions.



Source: Elaborated by the authors

Fig. 4. Frequency of use of the basic kinship terms

The results elucidate a high and relatively homogeneous frequency of the four basic kinship terms across the three languages. *Mother*, *father*, *brother* and *sister* all meet the ≥ 75% criterion and thus belong to the core in Ukrainian, English and German. Slight differences can be observed in the relative prominence of sibling terms: Ukrainian respondents report somewhat higher usage rates for *брат / сестра* compared to English and German speakers, where parental terms are marginally more dominant. These patterns point to a broadly shared universal core of kinship terminology with minor cross-linguistic shifts, which are further considered in the Discussion.

Table 2 presents a comparison of the core and periphery in four lexical-semantic groups. The division is made according to the criterion of frequency of use (% of respondents who chose the word). Responses from 75% are considered the core, below that is the periphery.

Table 2. Core and periphery of the lexical-semantic groups (by frequency of use)

Group / Lexeme	Ukrainian	English	German
	Emotions		
радість / joy / Freude	Core	Core	Core
сум / sadness / Traurigkeit	Periphery	Periphery	Periphery
гнів / anger / Ärger	Periphery	Core	Core
страх / fear / Angst	Periphery	Core	Core
	Colors		
червоний / red / rot	Core	Core	Core
синій / blue / blau	Core	Core	Core
зелений / green / grün	Core	Core	Core
жовтий / yellow / gelb	Core	Core	Core
	Verbs of motion		
йти / go / gehen	Core	Core	Core
бігти / run / laufen	Periphery	Core	Core
їхати / ride / fahren	Periphery	Core	Core
літати / fly / fliegen	Periphery	Periphery	Periphery
	Kinship		
мати / mother / Mutter	Core	Core	Core
батько / father / Vater	Core	Core	Core
брат / brother / Bruder	Core	Core	Core
сестра / sister / Schwester	Core	Core	Core

Source: Elaborated by the authors

Analysis reveals that colours and kinship constitute the most stable categories: all fundamental lexemes are integral to the core across the three languages. By contrast, the groups of emotions and motion verbs show more cross-linguistic variation. In the emotional LSG, joy occupies the core position in Ukrainian, whereas in English and German anger and fear are the most central items. In the group of motion verbs, йти / go / gehen forms the core in all three languages, while run / laufen and ride / fahren reach core status only in English and German. Thus, the division into core and periphery highlights both shared patterns and cross-linguistic differences in the verbalisation of basic concepts.

To ascertain the statistical significance of the discerned interlingual disparities across four LSGs, a one-way analysis of variance (ANOVA) was conducted. The findings are presented in Table 3. The results of the one-way ANOVA revealed statistically significant disparities among language groups in the domains of emotions ($p < 0.001$) and verbs of motion ($p < 0.01$). This indicates that average frequencies in these domains differ systematically between Ukrainian, English and German. Conversely, for the categories of colours and kinship, the differences proved to be statistically insignificant ($p > 0.05$), which is consistent with the relatively similar core profiles observed in these two domains.

Table 3. Results of the one-way ANOVA for three language groups

Lexical-semantic group	Average frequencies (%)	F-value	p-value	Conclusion
Emotions	Ukr=54 / Eng=74 / De=71	26.7	<0.001	The differences are significant
Colors	Ukr=87 / Eng=85 / De=86	1.8	0.16	The differences are not significant
Verbs of motion	Ukr=70 / Eng=77 / De=73	12.3	<0.01	The differences are significant
Kinship	Ukr=93 / Eng=93 / De=91	0.9	0.41	The differences are not significant

Source: Elaborated by the authors

3.2. Discussion

In this section, we interpret the observed cross-linguistic patterns in terms of the tension between universal prototypes and culture-specific salience in the structure of lexical-semantic groups. Our results substantiate the claim that lexical semantics combines universal structures with culturally specific nuances (Jackson et al., 2020). Across the three languages, the emotional landscape is organised by the universal dimension of valence (positive vs. negative), but the specific content of the "core" differs: in the Ukrainian data, the core of the emotional LSG is oriented towards a positive state (joy), whereas in English and German it is structured primarily around negative states such as anger and fear. This pattern resonates with Jackson et al. (2020), who identify valence as a cross-linguistic organising principle while emphasising cultural variability. Drawing on Mizin et al. (2021), we tentatively suggest that Ukraine and Western Europe may occupy different emotional-cognitive traditions: Ukrainians are closer to a "culture of shame", while English- and German-speaking societies gravitate towards a "culture of guilt". In this perspective, Ukrainian speakers may foreground positive emotional resources, while Anglo-German discourse elaborates negative emotions more finely; however, these interpretations remain hypotheses requiring further empirical testing. More broadly, our valence-based but language-specific emotional cores parallel work showing that lexical semantic structure combines universal scaffolding with culturally contingent refinements (Youn et al., 2015; Xu et al., 2020; Habibi et al., 2020; Majid & Van Staden, 2015).

Absattar et al. (2022) show how emotive lexicon reshapes interpretations of news narratives, while Maslova (2023) examines zoomorphic metaphor in Ukrainian wartime discourse. Both studies underscore that emotional nomenclature and imagery serve as instruments for reframing focus and evaluation. Naamati-Schneider and Gabay (2022) demonstrate that war metaphors in COVID-19 medical management can simultaneously amplify and weaken coping. In light of these findings, we view the "positive core" of emotions among Ukrainians (with joy dominating the core) as a potential element of a broader coping strategy, whereby linguistic resources support resilience in adverse contexts; this remains a hypothesis that calls for qualitative and longitudinal evidence. Related research on multimodal emotional framing in donation-based crowdfunding shows that positive verbal valence can selectively amplify prosocial decisions via distinct empathic mechanisms (Guo et al., 2025), which is compatible with our suggestion that a positively biased emotional core may function as a socio-affective resource rather than a purely lexical artefact. Our data thus complement prior work on emotional concepts that documents cross-linguistic recurrence of joy, anger, sadness, and fear while highlighting differences in cultural salience.

The group of colours proved to be the most resistant to cultural discrepancies: nearly all basic terms (red, blue, green, yellow) were classified within the core (>75%) across the three languages. This corroborates findings in perceptual psychology that primary colours constitute robust categories of perception that typically withstand cultural variation (Kawai et al., 2020, 2023). Xu et al. (2023), for instance, show that basic colours in Spanish varieties are shaped by both universal and cultural factors, mirroring our trilingual sample where the common core consists of red, blue, green, and yellow. Minor shifts are intertwined with symbolic traditions: the reduced frequency of yellow in English may reflect its diminished prominence in Anglo-Saxon symbolism, whereas German *gelb* remains securely in the core, aligning with its visibility in German media codes. Cross-linguistic colour–emotion associations also appear remarkably stable: Milutina et al. (2024) report consistent emotional–colour links among Ukrainian and non-Ukrainian respondents. Computational models of colour-term acquisition likewise derive stable prototypical partitions of colour space from realistic input (Beekhuizen & Stevenson, 2018), reinforcing the view that high-frequency cores of colour LSGs correspond to cognitively privileged regions.

Kazymir (2023, 2024) shows how contextually synonymous nominations are activated across genres (politics, medicine, sports), with genre and communicative context shaping distinct "microfields" of meanings and synonyms. This resonates with our finding regarding the pre-eminence of "pedestrian" terminology in Ukrainian motion verbs: in everyday discourse, *ŭmu* appears as the most prototypical option, while transportation-related verbs occupy more peripheral positions and exhibit greater synonymic variability (in line with Basile's and Diachuk's accounts of contextual synonymy). A distinguishing feature of our work is the cross-linguistic comparison using an explicit core–periphery threshold, which is often absent in genre-based descriptions. Motion verbs display their own logic: all three languages share a core centred on *ŭmu / go / gehen*, which corresponds to the hypothesis of a basic, recurrent understanding of locomotion (Stocker, 2023; Toan, 2025), but

English and German additionally integrate verbs such as *run / laufen* and *ride / fahren* into the core. We tentatively interpret this as reflecting a stronger integration of transport-related schemas into the everyday motion lexicon of English and German speakers, in contrast to the more pedestrian-centred profile observed in Ukrainian. This extension of earlier typological claims is grounded not only in introspective examples, but also in explicit frequency data and prototype thresholds. Notably, Park (2022) observed that language shapes the interpretation of motion events, with English speakers tending towards more agentive descriptions; our findings are consistent with this tendency.

The group "kinship" emerged as the most universally stable. All four terms матір / mother / *Mutter*, батько / father / *Vater*, брат / brother / *Bruder*, сестра / sister / *Schwester* showed consistently high frequencies and formed the core lexicon in the three languages. This aligns with Kanwal et al. (2025), who argue that core kinship terms tend to maintain stability across languages. At the same time, our data suggest subtle cross-linguistic shifts. We hypothesise that the Ukrainian tradition of extended family networks may be related to the relatively strong salience of брат / сестра, whereas in the English context salience appears to cluster more clearly around *mother / father*, with German occupying an intermediate position. These links between lexical frequencies and family models remain interpretive, but they extend the observations by Khalilia et al. (2023) about diversity in kinship terminology by adding a quantitative, cross-linguistic perspective that explicitly includes Ukrainian alongside Western European data.

Although prior publications have illuminated diverse facets of lexical semantics (Carling & Cronhamn, 2023), discursive connotations of colours (Topchyi, 2020), and kinship classifications (Kemp & McDonald, 2021), few studies apply a uniformly quantitative core–periphery criterion across multiple semantic fields and languages. Our study addresses this gap: it corroborates well-established universals (basic colours, core family terms, the verb *to go*), while quantitatively delineating culture-specific shifts (e.g. Ukrainian emphasis on positive emotions and pedestrian movement vs. Western focus on negative emotions and transportation). This methodology helps to identify patterns that might otherwise remain unnoticed, such as the consistently high salience of joy in the Ukrainian data, which we cautiously interpret as a potentially culture-specific emphasis. At the same time, our frequency-based core–periphery profiles are compatible with distributional and vector-space approaches to lexical meaning, which recover human semantic structure and graded sense relatedness from usage patterns (Hollis & Westbury, 2016; Hollis et al., 2017; Beekhuizen et al., 2021; Iordan et al., 2022), and they provide psycholinguistically interpretable targets for models that strive for human-like lexical representations (Stevenson & Merlo, 2022).

In interpreting these patterns, we therefore distinguish between statistical regularities and cognitive-semantic explanation. χ^2 and ANOVA results indicate that certain domains (emotions and motion verbs) exhibit stronger cross-linguistic differentiation in relative salience, but they do not, by themselves, entail deep conceptual divergence. Cultural and sociopolitical references (e.g. war-related coping, mobility habits, family models) are invoked only as tentative interpretive frameworks and are treated as hypotheses bounded by the available data rather than demonstrated causal mechanisms. Our primary focus remains on modelling the observed distributions in terms of prototype structure, semantic fields, and cross-linguistic regularities in LSG organization.

3.3. Limitations

The sample of 300 respondents (comprising 100 individuals from each language group) predominantly reflects contemporary linguistic practices prevalent among youth and educational settings. Consequently, the findings should be regarded as representative of this category of speakers rather than of all age groups. First, the age restriction (18–35) and the recruitment channels (universities and online networks) mean that our data do not capture the lexical profiles of older or less digitally engaged speakers; the salience patterns we report are therefore best seen as characteristic of younger, relatively highly educated users. Second, the core–periphery structure is derived from self-reported frequency and preference judgements rather than from direct observation of usage. While piloting and corpus checks help to anchor these judgements, they cannot fully eliminate biases associated with introspective reporting. Third, the study does not systematically differentiate between registers or genres, so it is possible that some cross-linguistic differences reflect variation in typical discourse domains (for example, social media vs. institutional communication) rather than only broad conceptual contrasts. These constraints do not invalidate the observed patterns but set boundaries on the scope of the generalizations that can be drawn from them.

4. Conclusion

The results support the view that the structure of lexical-semantic groups (LSGs) in Ukrainian, English, and German combines universal tendencies with culture-specific profiles of salience. In our data, emotional vocabulary shows the sharpest contrasts: Ukrainian respondents most frequently actualize the positive emotion радість 'joy', whereas English and German speakers foreground negative emotions such as anger/Ärger and fear/Angst. In the colour domain, a shared core is formed by red, blue, and green, with only minor differences in the salience of yellow. For motion verbs, йти/go/gehen constitutes a universal core, while English and German additionally integrate transport-related verbs (ride/fahren, run/laufen) into the core. Kinship terms (mother, father, brother, sister) are the most stable category across all three languages. These patterns should be interpreted as tendencies observed for four basic LSGs among educated speakers aged 18–35, not as exhaustive descriptions of the full lexical systems.

The study contributes to cognitive semantics and contrastive lexicology in two main respects. First, it operationalizes the core–periphery distinction via an explicit, frequency-based threshold (≥ 75% of respondents) applied consistently across four semantic domains and three languages, offering a transparent, usage-based way of modelling prototype structure in LSGs. Second, by using the same metric across emotions, colours, motion verbs, and kinship terms, it shows that these domains differ in the degree of cross-linguistic divergence: emotions and motion verbs exhibit stronger variation in salience profiles, whereas colours and kinship behave more like shared universal cores. This domain-sensitive picture refines debates on universals versus culture-specific salience by anchoring them in comparable cross-linguistic frequency data.

From an applied perspective, the corpus of frequency profiles and core–periphery mappings can inform contrastive semantics, lexicography, translation, and foreign language pedagogy. Identifying which items are central or peripheral in each language helps to explain asymmetries in translational choices and potential pragmatic or evaluative mismatches in cross-linguistic communication, and it can guide teaching materials towards items that are genuinely salient for speakers. Beyond these empirically grounded implications, the frequency-based profiles may also be useful for future technology-oriented applications in multilingual NLP and educational platforms; such uses, however, should be regarded as prospective possibilities rather than demonstrated outcomes of the present study.

Overall, the research shows that LSGs embody both universal cognitive frameworks and distinctive national-cultural nuances within the methodological constraints of our design (four basic LSGs, self-reported frequency judgements, a relatively homogeneous sample of young educated speakers). The findings thus provide empirically grounded tendencies and hypotheses about how core–periphery organization interacts with universality and cultural salience in Ukrainian, English, and German, contributing to the refinement of cognitive-semantic theory and applied contrastive linguistics. Further research should be expanded to other LSGs and involve larger samples of respondents, taking into account national differences.

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