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CHILD LANGUAGE MIXING: COGNITIVE AND LINGUISTIC CRITERIA FOR EARLY LANGUAGE DIFFERENTIATION

This theoretical article investigates code-mixing in early bilingual development, with a particular focus on the linguistic behavior of children navigating two or more language systems simultaneously. Drawing on both classical and contemporary frameworks, the paper challenges outdated deficit-based perspectives and reframes code-mixing as a systematic, cognitively grounded process that reflects the developing executive functions and linguistic competence of young bilinguals. The phenomenon is examined as a developmental strategy used by children to compensate for lexical gaps, incomplete grammatical knowledge, or to negotiate meaning in complex sociolinguistic environments. Key cognitive and linguistic triggers — such as dual language activation, metalinguistic awareness, and the influence of interactional context — are critically analyzed to identify criteria for language differentiation in early childhood. The article highlights the difference between child and adult code-mixing, emphasizing its developmental role in forming

functionally distinct language systems. Special attention is devoted to Ukrainian-Russian bilingualism as an understudied context of typologically related languages, where language mixing often occurs at subtle morphological and syntactic levels. The article also draws on insights from EU language integration policies and U.S. bilingual education to illustrate how language mixing is linked not only to cognitive processes but also to identity construction and social adaptation. In conclusion, the study argues for the recognition of child code-mixing as an indicator of linguistic creativity and bilingual competence, calling for further research and the development of diagnostic and pedagogical tools to support bilingual children in multilingual contexts.

Key words: bilingualism, code-mixing, language development, language differentiation, executive function, Ukrainian-Russian bilingualism, metalinguistic awareness.

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ЗМІШУВАННЯ МОВ У ДІТЕЙ: КОГНІТИВНІ ТА ЛІНГВІСТИЧНІ КРИТЕРІЇ РАНЬОЇ МОВНОЇ ДИФЕРЕНЦІАЦІЇ

У статті теоретично осмислюється феномен мовного змішування в умовах раннього білінгвального розвитку, з особливим акцентом на мовленнєву поведінку дітей, які одночасно опановують дві або більше мовні системи. На основі класичних і сучасних лінгвістичних підходів проаналізовано когнітивно вмотивовану природу мовного змішування як системного процесу, що супроводжує формування мовної компетентності в дітей-білінгвів. У статті критикуються застарілі дефіцитарні уявлення про білінгвізм, згідно з якими змішування мов трактується як відхилення, натомість авторка пропонує розглядати це явище як адаптивну стратегію, що компенсує лексичні прогалини, граматичну незавершеність або складнощі соціальної взаємодії в багатомовному середовищі. Проаналізовано основні когнітивні та лінгвістичні чинники, які зумовлюють мовне змішування в дітей: подвійна мовна активація, виконавчі функції, металінгвістична свідомість, вплив соціального контексту. Визначено критерії розмежування мов у ранньому віці, а також окреслено відмінності між дитячим і дорослим мовним змішуванням. Особливу увагу приділено українсько-російському білінгвізму як недостатньо дослідженому типологічно близькому мовному поєднанню, де мовне змішування часто відбувається на морфологічному та синтаксичному рівнях. Залучено досвід політик мовної інтеграції в ЄС та концептуальні підходи білінгвальної освіти у США, що дозволяє розглядати мовне змішування не лише як когнітивне явище, а і як інструмент конструювання ідентичності та адаптації дитини в новому соціумі. У підсумку мовне змішування визначається як індикатор

лінгвістичної креативності та білінгвальної компетентності, а також обґрунтовується потреба в подальших міждисциплінарних дослідженнях та розробці діагностичних і педагогічних інструментів підтримки білінгвального розвитку дітей у багатомовних середовищах.

Ключові слова: білінгвізм, мовне змішування, розвиток мовлення, розмежування мов, виконавчі функції, українсько-російський білінгвізм, металінгвістична свідомість.

Statement of the Problem. Despite decades of scholarly interest in bilingualism, code-mixing in early childhood remains one of the most misinterpreted and underexplored phenomena in the field of language development. It has frequently been viewed through the lens of language interference and linguistic deficit, particularly when involving typologically related languages. However, contemporary linguistic and cognitive studies have demonstrated that code-mixing in children is not a reflection of disorder or confusion, but rather a systematic, developmentally appropriate strategy that accompanies the acquisition of two or more language systems.

This issue becomes especially salient in the case of Ukrainian-Russian bilingualism, where structural proximity between the languages presents unique challenges in distinguishing language boundaries. In recent years, due to large-scale migration caused by war, thousands of Ukrainian children have been exposed to multilingual environments — often simultaneously acquiring Ukrainian, Russian, and a third language such as Polish or English. For instance, informal observations and pilot assessments in Ukrainian Saturday schools in Poland suggest that children aged 4 to 7 frequently engage in intra-sentential code-mixing, even when communicating with monolingual peers or teachers. These behaviors are often misinterpreted by educators or parents as speech delay or disordered development, leading to unnecessary concern and, at times, inappropriate intervention.

The lack of an empirically grounded and theoretically nuanced understanding of code-mixing in the Ukrainian context limits both academic inquiry and practical application. This is particularly problematic for speech-language pathologists, teachers, psychologists, and policymakers who must make informed decisions about bilingual children's language needs. While international research has made significant strides in linking early code-mixing to cognitive flexibility, metalinguistic awareness, and executive control, Ukrainian linguistics has not yet developed a robust framework for analyzing the bilingual behavior of children who navigate Ukrainian and Russian simultaneously. Therefore, the problem addressed in this study lies not only in the insufficient attention to the functional and cognitive nature of code-mixing, but also in the urgent need to develop clear criteria for language differentiation and tools for adequate language support. Understanding how children separate, mix, and manage their languages in early childhood is critical for shaping effective and inclusive educational, diagnostic, and policy approaches in multilingual societies — particularly in times of social and linguistic disruption.

Analysis of Recent Research and Publications. The phenomenon of code-mixing in early bilingual development has evolved from being interpreted as a linguistic anomaly to being recognized as a cognitively and socially grounded process. In early linguistic thought, particularly within the structuralist paradigm, code-mixing was considered a form of interference between linguistic systems. Uriel Weinreich's seminal work *Languages in Contact* [14] described interference as the influence of one language upon another, highlighting phonological, morphological, syntactic, and semantic disruptions. This perspective — rooted in the assumption of monolingual normativity — framed bilingualism as a deviation from linguistic stability and code-mixing as a symptom of deficient competence. This deficit-oriented view was gradually replaced in the 1970s and 1980s by a more sociolinguistic interpretation. Scholars such as John Gumperz [9] argued that language alternation in bilinguals reflects strategic, socially meaningful choices rather than linguistic confusion. Code-mixing began to be understood as a pragmatic tool shaped by communicative goals and sociocultural norms. Monica Heller [10] further contributed to this shift by framing mixed language use as a practice of identity negotiation and social role positioning, particularly in multilingual communities. With the turn to cognitive and psycholinguistic frameworks in the 1990s and 2000s, a more nuanced understanding of child bilingualism emerged. Studies by Ellen Bialystok [1, 2] demonstrated that code-mixing in children is not random, but reflects executive functioning, dual language activation, and metalinguistic control. Rather than indicating linguistic deficiency, early code-mixing reveals the child's ability to manage two active linguistic systems. Bialystok's work was complemented by Paradis and Genesee [7], who found that bilingual children maintain distinct grammatical systems and apply morphosyntactic rules appropriately within each language, even during mixed utterances. The syntactic constraints of code-mixing were explored in depth by Yip and Matthews [15], who showed that bilingual children tend to respect the grammatical structures of both languages and avoid violations of core syntactic rules. These findings counter the assumption that young children do not differentiate between languages. On the contrary, empirical data suggest that children apply internalized grammatical systems separately, even when switching between them mid-sentence. A significant contribution to this field is found in Annick De Houwer's work *Bilingual First Language Acquisition* [4], which presents a systematic model of how children simultaneously acquire and differentiate two languages from birth. De Houwer emphasizes that language mixing is most prominent between the ages of 2 and 6 and correlates strongly with vocabulary gaps and developing grammatical systems. Crucially, she introduces the concept of "language separation" as a gradual, multifaceted process that emerges through repeated exposure, stable input, and cognitive maturation. The question of how children distinguish between linguistic systems in early development has been further addressed through experimental studies on phonological differentiation [5], grammatical awareness [7], and contextual language use [8]. These studies show that children begin to demonstrate language-specific patterns in phoneme perception by age 3, context-appropriate language use by age 5, and metalinguistic reflection by age 6-7.

In addition to theoretical frameworks, practical tools have also played a role in capturing early language differentiation. The European Language Portfolio (ELP), developed by the Council of Europe, provides a structured means for documenting children's multilingual experiences and for tracking their ability to use and reflect upon different language systems [3]. It emphasizes a pedagogical approach that encourages a positive view of multilingualism and treats code-mixing as a creative and adaptive form of communication rather than an error to be corrected. Research within European Union projects such as MULTILINGUA and LangTrack has shown that migrant children often use code-mixing not only as a strategy to compensate for lexical gaps, but also as a tool for cultural navigation and peer integration [11, 12]. These findings highlight the dual nature of language mixing — as both a developmental and a sociocultural phenomenon.

While international research has yielded a robust understanding of early bilingual language mixing and differentiation, the Ukrainian context remains underexplored. Most notably, the dynamics of Ukrainian-Russian bilingualism — involving two closely related and socially charged languages — have not yet been sufficiently investigated from either a cognitive or a sociolinguistic perspective. There is a lack of systematic data on how Ukrainian-Russian bilingual children acquire, mix, and differentiate their language systems, particularly in post-migration settings where a third language, such as Polish or German, is introduced. Moreover, Ukrainian educational and clinical frameworks have yet to develop clear diagnostic or intervention models that account for code-mixing as a normative part of bilingual development. The absence of culturally and linguistically appropriate assessment tools further complicates the identification of true language delays versus typical bilingual speech patterns.

This study seeks to address these gaps by drawing upon international theoretical models while situating the analysis within the specific linguistic and social dynamics of Ukrainian-Russian bilingualism. By synthesizing cognitive, linguistic, and sociocultural insights, the article contributes to a more integrated understanding of how young children mix and differentiate languages — and how these processes can be meaningfully supported in both research and practice.

Purpose of the Article. The purpose of this article is to conceptualize child code-mixing not as a sign of linguistic confusion, but as a cognitively and socially meaningful process within early bilingual development. The study aims to synthesize current theoretical and empirical research in order to identify key cognitive, linguistic, and sociolinguistic criteria that explain how young children differentiate between two language systems while engaging in mixed utterances. Particular attention is paid to Ukrainian-Russian bilingualism, which remains underexplored despite its widespread occurrence and sociolinguistic complexity.

This article sets out the following objectives:

- to critically review major theoretical approaches to child code-mixing, with an emphasis on the shift from interference-based to competence-based paradigms;

- to examine empirical evidence regarding the grammatical, phonological, and pragmatic constraints of code-mixing in young children;
- to explore the developmental trajectory of early language differentiation and the cognitive mechanisms that support it;
- to highlight the specific challenges of identifying code-mixing in typologically related languages such as Ukrainian and Russian;
- to contribute to the Ukrainian linguistic discourse by proposing a framework for understanding code-mixing and differentiation in the speech of bilingual Ukrainian children;
- to advocate for the development of culturally sensitive diagnostic and pedagogical tools to support bilingual children in multilingual and migration-affected contexts.

By integrating insights from international research with the realities of Ukrainian language contact, this study provides a foundation for more effective assessment, support, and understanding of bilingual children's language development in early childhood.

Outline of the Main Material of the Study. The phenomenon of code-mixing in early bilingual development reflects a dynamic interplay of cognitive, linguistic, and sociocultural factors. Far from being random or symptomatic of linguistic confusion, code-mixing in young children represents a developmentally appropriate strategy that facilitates communication, compensates for linguistic gaps, and mediates between overlapping language systems. This section outlines the theoretical underpinnings of code-mixing, clarifies its distinction from language confusion, and proposes a developmental model of early language differentiation, with particular emphasis on the underexplored case of Ukrainian-Russian bilingualism.

1. *Code-Mixing as a Developmental Strategy*

Code-mixing typically appears between the ages of two and six — a critical period during which children actively build their lexicon, experiment with morphosyntactic structures, and acquire pragmatic competence in multiple languages. As shown in De Houwer's research, children mix languages not arbitrarily, but in systematic ways that align with their communicative intentions and available linguistic resources [4]. One of the primary triggers for code-mixing is lexical or grammatical insufficiency in one language. For instance, a child who lacks the word "оливець" (pencil) in Ukrainian may substitute the Russian equivalent "karandash" within an otherwise Ukrainian sentence. Similarly, children may switch from one language to another mid-sentence to maintain narrative fluency when confronted with a cognitive bottleneck. Bialystok demonstrates that bilingual children activate both language systems simultaneously, which requires the constant use of executive functions to select, inhibit, and alternate between languages [1]. When the cognitive load is high, children may temporarily relax these controls and rely on code-mixing as a functional solution. Importantly, this behavior reflects not linguistic deficit, but adaptive cognitive strategies.

Social and environmental factors also shape code-mixing. Children model the linguistic behavior they observe in adults, caregivers, and peers. In bilingual or multilingual

communities, mixed speech is often normalized and even valued. Heller highlights the role of language mixing as a tool for identity negotiation and social positioning — a function especially visible among children from migrant families navigating new cultural landscapes [10].

2. *Code-Mixing vs. Language Confusion: A Necessary Distinction*

One of the central misconceptions about bilingual development is the belief that code-mixing signals language confusion. However, empirical studies provide compelling evidence that even young children maintain internal consistency in their use of linguistic structures.

Yip and Matthews observed that children rarely violate syntactic boundaries when mixing languages [15]. For example, a Ukrainian-English bilingual child may say, “Я хочу go to the park,” preserving the word order and grammar of both languages within a coherent utterance. Similarly, in Ukrainian-Russian bilinguals, children may insert Russian lexical items into Ukrainian syntactic frames while still applying correct Ukrainian inflectional morphology. Phonological differentiation offers additional evidence. Research by Fennell and Werker shows that by age three, children begin to distinguish language-specific phonemes, indicating awareness of distinct phonological systems [5]. Furthermore, Grosjean argues that by age five or six, children begin to use languages contextually — adjusting their speech depending on the interlocutor and setting — a hallmark of emerging functional bilingualism [8].

Thus, code-mixing is not to be interpreted as random blending or confusion, but as a structurally patterned behavior governed by internalized knowledge of both linguistic systems.

3. *A Developmental Model of Early Language Differentiation*

Building on the research literature, the following model outlines the stages of early language differentiation observable in bilingual children aged 2 to 7:

- Stage 1 (2-3 years): Phonological differentiation
- Children begin to perceive and produce distinct sounds in each language. Overlapping systems may temporarily exist, but awareness of contrastive phonemes emerges.
- Stage 2 (3-4 years): Morphological and syntactic separation
- Children start to apply grammar rules specific to each language. For example, in Ukrainian, adjective-noun agreement (e.g., *велика квітка*) is preserved, even if the noun is borrowed from Russian.
- Stage 3 (4-5 years): Contextual differentiation
- Language use begins to reflect communicative context. A child may use one language with parents and another with peers or teachers, demonstrating sensitivity to pragmatic expectations.
- Stage 4 (5-6 years): Emerging control over code-switching
- Code-mixing becomes more strategic. Children adjust language use based on interlocutor, topic, or emotional state and may begin to self-correct.

— Stage 5 (6-7 years): Metalinguistic awareness

Children become explicitly aware of language boundaries and may comment on language use (e.g., “*That’s a Polish word!*”). They begin to reflect on the appropriateness of mixing and switching in various settings.

These stages are not rigid or universally fixed but offer a framework for observing and interpreting early bilingual development. Notably, these processes are influenced by factors such as language dominance, quantity and quality of input, and sociocultural context.

To support the identification of these stages, tools such as the European Language Portfolio (ELP) — developed by the Council of Europe — have proven effective. ELP allows children to document their multilingual experiences, reflect on their language use, and recognize their developing competence in multiple systems. Its application in multilingual schools helps educators monitor progress in language separation and identify typical versus atypical bilingual patterns [3].

4. *Ukrainian-Russian Bilingualism: A Complex Linguistic Case*

Ukrainian-Russian bilingualism presents unique theoretical and practical challenges due to the typological proximity and intense historical, political, and emotional entanglement of the two languages. Morphological similarities (e.g., shared case systems) and frequent lexical overlap can obscure the boundaries between languages, making code-mixing more subtle and harder to categorize. For example, a child might say “*Я маював машиную*” using the Ukrainian verb “*маював*” with the Russian noun “*машиную*” (instead of the Ukrainian “*автомікою*”). To an untrained observer, such an utterance may seem coherent, yet it involves cross-linguistic integration that challenges normative assessments of language competence.

In the wake of the full-scale war and the subsequent displacement of millions of Ukrainian children, mixed language use has become increasingly common, especially among children acquiring a third language in the host country. However, Ukrainian linguistic research has yet to produce sufficient empirical data or diagnostic models tailored to this specific bilingual configuration. There is an urgent need to develop culturally and linguistically responsive assessment frameworks that distinguish between typical code-mixing and signs of language impairment. Incorporating tools such as the ELP and adapting them to the Ukrainian-Russian context could serve as a starting point for this development.

Conclusions. This article has explored the phenomenon of child code-mixing as a natural and adaptive component of early bilingual development. Challenging deficit-based interpretations rooted in early linguistic theory, the study highlights code-mixing as a cognitively motivated and socially embedded strategy that supports young children in navigating multiple language systems. Drawing on international research, it has been demonstrated that bilingual children follow systematic patterns when mixing languages and gradually develop the ability to differentiate between linguistic systems across phonological, grammatical, pragmatic, and metalinguistic levels. The proposed

developmental model of early language differentiation outlines key stages — from phonological awareness in toddlers to contextual and metalinguistic regulation in school-age children. These stages, though variable in timing and expression, provide a useful framework for distinguishing between typical bilingual behavior and potential language difficulties.

Particular attention has been devoted to the underexplored case of Ukrainian-Russian bilingualism. Due to the close structural proximity of the two languages and their complex sociopolitical history, instances of code-mixing in this pairing are often misinterpreted or overlooked. In the context of recent migration and the multilingual environments in which many Ukrainian children now grow up, there is a pressing need for culturally sensitive frameworks to assess and support bilingual development. Tools such as the European Language Portfolio offer promising avenues for capturing the nuances of code-mixing and language separation in dynamic, multilingual contexts.

Further research is needed to deepen the understanding of bilingual language acquisition among Ukrainian-speaking children, particularly in contact with Russian and a third language (e.g., Polish, German, English) in diasporic or educational settings. Empirical, longitudinal studies are essential for mapping patterns of code-mixing over time, identifying markers of typical versus atypical development, and informing pedagogical and clinical practice. Additionally, interdisciplinary collaboration between linguists, educators, speech-language pathologists, and psychologists will be critical for translating theoretical insights into practical tools for language support and assessment.

Ultimately, recognizing code-mixing as a sign of cognitive flexibility and communicative competence — rather than linguistic confusion — is key to fostering inclusive, evidence-based approaches to bilingual education in Ukraine and beyond.

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