

Interlingual Interference and Interaction in Bilingual Language Use across Digital Platforms

Interferencia e interacción interlingüística en el uso bilingüe del lenguaje en plataformas digitales

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Abstract

The purpose of the research was to examine how interlingual interference and interaction occur during language production and understanding in bilinguals, focusing on the roles of lexical similarity, cognitive control, and types of language experience. The study was conducted as a psycholinguistic experiment using lexical decision and speech production tasks that included cognates, false cognates, interlingual homographs, and neutral vocabulary. Indicators such as reaction times, response accuracy, measures of interlingual competition, and qualitative analyses of speech errors, pauses, and self-corrections were used for evaluation. The findings showed non-selective activation of lexical representations for both languages, evident in facilitative effects for cognates and interference effects for false cognates and interlingual homographs. The data confirmed that the strength of interlingual competition depends on the degree of formal and semantic similarity, and that resolving lexical conflicts involves inhibitory control mechanisms. These results align with current models of non-selective lexical access and inhibitory control, while also clarifying how individual language experience affects these processes in bilinguals. The practical implications are significant, suggesting ways to improve foreign language teaching, translation training, and the diagnosis of language difficulties

in bilingual settings. Future research should increase the sample size, incorporate neurocognitive methods, and analyze interlingual interactions during natural communication and code-switching situations.

Keywords: bilingualism, interlingual interference, interlingual interaction, lexical access, cognates, interlingual homographs, cognitive control, language production, mediation.

Resumen

El objetivo de la investigación era estudiar los mecanismos de interferencia e interacción interlingüísticas en los procesos de producción y comprensión del lenguaje en personas bilingües, haciendo hincapié en el papel de la similitud léxica, el control cognitivo y el tipo de experiencia lingüística. La investigación se llevó a cabo mediante un experimento psicolingüístico que utilizaba tareas de decisión léxica y producción del habla, incluyendo cognados, falsos cognados, homógrafos interlingüísticos y vocabulario neutro. Para el análisis, se emplearon indicadores de tiempo de reacción, precisión de respuesta, índices de competencia interlingüística y análisis cualitativo de errores del habla, pausas y autocorrecciones. Los resultados mostraron la presencia de una activación no selectiva de las representaciones léxicas de ambas lenguas, la cual se manifiesta en efectos facilitadores para los cognados y efectos de interferencia para los falsos cognados y homógrafos interlingüísticos. Los datos confirmaron que la intensidad de la competencia interlingüística depende de la relación entre la similitud formal y semántica, y que superar el conflicto léxico requiere mecanismos de control inhibitorio. Los resultados son coherentes con los modelos modernos de acceso léxico no selectivo y control inhibitorio, además de aclararlos en el contexto de la experiencia lingüística individual de los bilingües. La importancia práctica de la investigación radica en la posibilidad de aplicar las conclusiones para mejorar los métodos de enseñanza de lenguas extranjeras, la formación en traducción y el diagnóstico de dificultades lingüísticas en entornos bilingües. Los estudios futuros deben ampliar la muestra, emplear métodos neurocognitivos y analizar la interacción interlingüística en contextos comunicativos naturales y de cambio de código.

Palabras clave: bilingüismo, interferencia interlingüística, interacción interlingüística, acceso léxico, cognados, homógrafos interlingüísticos, control cognitivo, producción lingüística, mediación.

1. INTRODUCTION

In today's socio-cultural environment, multilingualism is increasingly seen as a normal part of human linguistic development, influenced by long-standing historical, social, and cultural processes (Jafarova, 2021). Mass and local migrations, political and economic shifts, as well as the prolonged coexistence of diverse ethnic groups, have created conditions for continuous linguistic contact, leading to the emergence of complex interlingual systems. In such environments, language develops closely with how people think and their mentality, reflecting changes in social and cultural dynamics (Adli & Guy, 2022; Jafarova, 2021).

Interlinguistic contacts have become especially intense in recent times due to globalization, integration processes, advances in digital communication, and the spread of the global Internet, which has greatly broadened the scope of interlinguistic interaction and raised the issue of language interference in educational, professional, and daily communication practices (Bose et al., 2024; Leleka, 2022). Interference is a fundamental form of interlingual interaction that occurs when mastery of two languages is incomplete or uncoordinated, manifesting as an unconscious transfer of elements from the native language (L1) to the second language (L2) (Bailey, 2024). These transfers can affect all levels of the language system and may result in temporary deviations from the norm or, in cases of prolonged contact, lead to long-term structural changes (Jafarova, 2021; Freeman et al., 2022; Cherciov, 2011).

An additional challenge is the cognitive aspect of interlingual interference. In bilinguals, the L1 and L2 language systems are partly integrated and can be activated at the same time, creating conditions that both facilitate language use and cause conflicts between languages, especially when the linguistic units are similar in form or meaning (Blumenfeld et al., 2022; Lameira et al., 2023). These effects are particularly noticeable in language pairs with high lexical and phonological similarity, such as Spanish-Catalan or German-English, where the simultaneous activation of two language systems increases both helpful and disruptive processes (Gálvez-McDonough, 2025; Vanlangendonck et al., 2020). The outcomes of these processes extend beyond purely linguistic phenomena and can be observed in difficulties with second language learning, ongoing speech errors, and increased cognitive effort, which are especially relevant in clinical and educational settings (Gálvez-McDonough, 2025; Melnyk, 2025).

Modern linguistic and psycholinguistic research views interlingual interaction in bilinguals as a systematic process involving both linguistic and cognitive mechanisms. Most scientific studies assume that bilingualism is a normal aspect of language use, given that a large portion of the world's population speaks two or more languages (Gálvez-McDonough, 2025; Grosjean, 2010). Models of complex systems, built using complex network theory and coordination dynamics, reveal universal principles of coactivation, competition, and inhibition that apply across natural, technical, and social systems (Danziger et al., 2019; Tognoli et al., 2020). Similar logic of component interdependence is also seen in applied engineering research, where adjusting individual system parameters can alter stresses and either suppress or enhance the function of other parts (Shavarskyi et al., 2022). On the cognitive level, these principles are reflected in modern psycholinguistic models of interlingual interaction, which describe bilingual speech as the result of simultaneous coactivation of linguistic representations and their competition, managed through inhibitory mechanisms (Bailey, 2024; Lowe, 2021). Psycholinguistic models consistently demonstrate that bilinguals are in a constant state of coactivation during both language perception and production, creating conditions for both facilitation and interlingual interference during lexical competition (Starreveld et al., 2014).

A separate line of research investigates the role of cognitive control in overcoming interlingual interference (Sabourin & Vinerte, 2019). Most models include inhibitory mechanisms to handle competition between languages, although the nature and universality of these mechanisms are still debated (Blanco-Elorrieta & Caramazza, 2021). Neurobiological evidence shows a partial overlap between networks involved in linguistic and nonlinguistic interference, emphasizing the general cognitive aspect of interlingual interaction (Mendoza et al., 2021).

Despite extensive theoretical and empirical research on interlingual interaction in bilingualism, some aspects of interference remain poorly understood. Although modern psycholinguistic models confirm that interlingual interference can occur even in highly skilled bilinguals due to the simultaneous activation of two languages, the conditions that amplify or diminish these effects are still not fully defined (Starreveld et al., 2014; Kaliuzhna, 2025). The limited research on language production compared to perception processes, especially regarding false cognates and lexical rivalry, along with the unclear role of cognitive control in overcoming interlingual interference, continue to be central issues (Bailey, 2024; Gálvez-McDonough, 2025). While inhibitory models are popular, findings on the “bilingual advantage” in cognitive control remain debated, emphasizing the need for more precise descriptions of bilingual language profiles using continuous and combined measures of language dominance (van den Noort et al., 2019; Freeman et al., 2022).

The importance of this research comes from the growing interest in how interlingual interaction happens during speech production in bilinguals, especially when two language systems are active at the same time. Although there are several theoretical models of bilingual lexical access, like non-selective activation and inhibitory control, the effect of formal and semantic similarity of words on the speed, accuracy, and stability of speech choices is still debated and requires more empirical research. This issue is particularly relevant as functional bilingualism becomes more common, with the second language often used in educational, professional, and digital settings. The goal of this study is to examine the extent and nature of interlingual interference in bilinguals' language production and to investigate how lexical similarity affects competition between L1 and L2. Specifically, it aims to identify facilitative and interfering effects related to cognates, false cognates, and neutral vocabulary, analyze how linguistic representations are coactivated, and describe the cognitive control mechanisms that assist in selecting the correct lexical item. This research is important because it advances understanding of the non-selective nature of lexical access in bilinguals and provides empirical evidence for the graded level of interlingual competition based on the similarity of form and meaning between languages. The findings will contribute to existing psycholinguistic models by clarifying when coactivation of languages leads to facilitation or interference. The theoretical significance involves comparing experimental data with models of non-selective lexical access and inhibitory control, which helps clarify the dynamic balance between activation and inhibition during speech. The practical relevance includes potential applications in foreign language teaching, development of educational materials for bilinguals, and translation and language training practices, where understanding the interference potential of false cognates and the facilitative role of cognates can improve language learning outcomes.

The motivation for conducting this research comes from the need to empirically clarify how interlingual interference affects the speech production of bilinguals, especially when both language systems are active at the same time. Despite many theoretical models of bilingual lexical access—such as non-selective activation and inhibitory control—the question remains open about how formal and semantic similarities between words in different languages impact the speed and accuracy of speech selection. This calls for further experimental testing on specific language pairs. The goal of this paper is to experimentally explore the nature and strength of interlingual interference in bilinguals during speech production in a second language by analyzing time and accuracy data from a picture naming task that involves different types of lexical similarity. This involves comparing the facilitative and interfering effects of cognates, false cognates, and neutral

vocabulary, and clarifying how cognitive control helps manage lexical competition between L1 and L2.

1.1. Research objectives:

1. To analyze the influence of the type of lexical similarity between languages on the temporal and accuracy indicators of speech production in bilinguals.
2. To identify the specificity of interference and facilitation effects in the processing of cognates, false cognates and neutral vocabulary.
3. To quantitatively assess the degree of lexical competition between L1 and L2 in the picture naming task.
4. To compare the obtained experimental results with the provisions of the models of non-selective lexical access and inhibitory control.

2. LITERATURE REVIEW

In today's world, scientific literature describes interlingual interaction in bilinguals as a multilevel phenomenon that results from the simultaneous operation of two language systems within a single cognitive space (Blumenfeld et al., 2022; Gálvez-McDonough, 2025). Psycholinguistic research consistently supports the idea that language processing in bilinguals involves non-selective activation of lexical representations from both languages, regardless of the linguistic context of the task (Starreveld et al., 2014; Toassi et al., 2023).

Analysis of experimental studies shows that the simultaneous activation of two languages creates both facilitative effects and interlingual interference, mainly at the lexical level (Gálvez-McDonough, 2025; Mendoza et al., 2021). Current scientific research especially highlights the importance of formal and semantic similarity among linguistic units, which impacts the competition between different representations during lexical choice (Vanlangendonck et al., 2020; Vingron et al., 2022). Many studies demonstrate that cognates are associated with shorter reaction times and greater accuracy in language tasks for bilinguals, whereas false cognates and cross-linguistic homographs often cause increased interference because conflicting meanings are activated in both languages (da Silva Gadelha & Toassi, 2022; Gálvez-McDonough, 2025; Toassi et al., 2023).

A separate line of research examines the role of cognitive control in managing interlingual competition, where interference is regarded as a form of conflict in information processing that requires engagement of domain-general inhibition mechanisms (Freeman et al., 2022; Kroll et al., 2021). At the same time, the literature reveals contradictions about the existence of a "bilingual advantage" in cognitive control, which can be explained by differences in research designs, measurement methods, and approaches to classifying language experience (de Bruin et al., 2021; Dentella et al., 2024; Paplikar et al., 2021). Research on bilingual vocabulary development shows that learning a second language often involves transferring native language features, and the level of interference is affected by language dominance and the frequency of use for each language (Chantal et al., 2022; Grose-Hodge et al., 2025). Furthermore, sociocultural context and educational practices play a significant role in shaping interlingual interactions, impacting vocabulary learning and interference (Wei et al., 2024; Medynska et al., 2023). Findings from studies on phonetic and phonological interference support the development of variable "compromise" categories in bilinguals, which are influenced by

age, duration of learning, and individual cognitive strategies (Casillas, 2021; Schmid, 2025; Siow et al., 2025). In educational environments, the value of multilingual approaches and standardized methods for assessing language profiles is emphasized for effectively managing interlingual competition (Sokolova, 2022; Nykyporets et al., 2025).

The limitations of current research include a lack of comprehensive approaches that integrate lexical, grammatical, phonetic, and cognitive aspects of interlingual interaction. Most studies focus on individual levels, which complicates understanding interference processes (da Silva Gadelha & Toassi, 2022; Toassi et al., 2023). The absence of combining empirical data from psycholinguistics, neurocognitive research, and sociocultural analyses creates gaps in developing coherent theoretical models (Dentella et al., 2024; Freeman et al., 2022).

3. MATERIALS AND METHODS

3.1. Methodological basis of the research

This research examined interlingual interference in bilinguals during speech production, focusing on lexical competition and the cognitive mechanisms that control it. The study was carried out as a controlled psycholinguistic experiment using standardized behavioral methods, which allowed for the quantitative measurement of interference effects while selecting second-language lexical units under the simultaneous activation of two language systems.

The study's methodology was grounded in psycholinguistic models of non-selective lexical access, which propose that bilinguals' speech processing involves the simultaneous activation of both languages' lexical representations, regardless of language mode (Bailey, 2024; Gálvez-McDonough, 2025). According to the inhibitory control model of bilingual speech, interlingual interference results from competition between activated L1 and L2 representations, requiring the activation of cognitive control mechanisms—particularly the inhibition of irrelevant language—to manage this (Bailey, 2024; Blanco-Elorrieta & Caramazza, 2021).

The choice of the experimental task was based on lexical access models that emphasize the role of formal and semantic similarities between linguistic units in generating facilitative and interference effects, especially for cognates, false cognates, and cross-linguistic homographs (Toassi et al., 2023). In this study, cognates are defined as lexical units from different languages with a shared etymology and high similarity in both meaning and form. False cognates are words that are similar in form or spelling but have different meanings across languages, potentially causing cross-linguistic interference. Cross-linguistic homographs are characterized by identical or similar written forms with differences in pronunciation and/or meaning (Toassi et al., 2023). Using stimulus materials with varying degrees of formal and semantic similarity allows for measuring facilitative and interference effects in lexical access and naming tasks, which are commonly used in psycholinguistic research on bilingualism (Lowe, 2021; Toassi et al., 2023). Cognitive control was examined as a domain-general mechanism involved in resolving conflicting processing in both linguistic and nonlinguistic tasks (Freeman et al., 2022; Kroll et al., 2021), consistent with neurocognitive evidence of partial overlap between linguistic and nonlinguistic interference networks (Dentella et al., 2024; Mendoza et al., 2021).

The specified methodological approaches guided the selection of an intragroup experimental design, criteria for choosing stimulus material, and indicators for analyzing interlingual interference in speech production.

3.2. The research design and sampling

The research was conducted as a controlled online psycholinguistic experiment with a within-group design, comparing language production markers across different lexical conditions. The main experimental task was a picture naming activity, which is commonly used to study lexical access, language coactivation, and interlingual interference in bilinguals (Mendoza et al., 2021).

Participants were recruited through an open online process during March–April 2025. Advertisements inviting participation in the study were shared via thematic Viber channels dedicated to foreign language learning, bilingualism, and linguistic research. A total of 119 individuals responded to the invitation and completed a preliminary online language profile questionnaire, which was developed based on an adapted version of the Language Experience and Proficiency Questionnaire (LEAP-Q) (Marian et al., 2007) (see Appendix 1). The adapted language profile questionnaire included sections on the age at which each language was learned, how often the language is used in different communication settings, self-assessment of proficiency levels, and language dominance on continuous scales.

The questionnaire data were used to screen participants and form the final sample. At this stage, 46 respondents were excluded for the following reasons: irregular use of the second language ($n = 19$), dominance of the third language ($n = 11$), self-rated L2 proficiency below average ($n = 9$), and technical limitations for conducting the online experiment ($n = 7$). The final sample included 73 participants ($n = 73$; 38 females, 35 males) aged 18 to 35 years ($M = 24$), who met all inclusion criteria. All participants were Ukrainian-dominant bilinguals with Ukrainian as their native language (L1). The second language (L2) for the participants was English ($n = 49$) or Polish ($n = 24$), which they actively used in educational, professional, or everyday communication contexts for at least five years. This choice of language pairs was due to their prevalence in the contemporary Ukrainian sociolinguistic space and the presence of both formally similar and potentially interfering lexical items (Wei et al., 2024; Kaliuzhna, 2025).

The inclusion criteria for the study were regular use of Ukrainian and either English or Polish, no diagnosed speech, cognitive, or neurological disorders, normal or corrected vision, and no professional linguistic education that could affect conscious language control strategies.

The experiment was conducted online individually using the Gorilla Experiment Builder platform, which is widely employed in modern psycholinguistic research to gather behavioral data with accurate reaction-time measurement (Anwyl-Irvine et al., 2020). The stimulus set included 90 images representing three lexical conditions: cognates, false cognates, and neutral words. All stimulus images were pre-screened for visual ambiguity and the frequency of the corresponding tokens in both L1 and L2 languages (Fulga & McDonough, 2016; Jakesch et al., 2013).

Participants completed a picture naming task in the target language (L2), with reaction times (ms) and response accuracy recorded. The stimulus presentation order was

randomized for each participant to minimize learning and fatigue effects. A practice phase of 10 stimuli was done before the main task but was not included in the primary analysis. The entire session for each participant lasted about 30 minutes, including instructions, practice, and the main task.

3.3. Data collection and analysis methods

Interlingual interference was evaluated through quantitative behavioral measures in a picture naming task. The primary variables were reaction time (ms) and response accuracy, which are common indicators of lexical access efficiency in bilinguals (Jafari et al., 2025; Jiang, 2013). All responses were automatically recorded via the Gorilla Experiment Builder platform, and audio recordings (.wav) were used to verify correctness and categorize error types (cross-linguistic substitutions, semantic errors, phonological distortions). Initial data processing involved discarding technical failures, missed responses, and responses under 300 ms or over 3000 ms. Accuracy was rated by two independent bilingual experts ($\kappa = 0.89$). For quantitative analysis, descriptive statistics (means, SD) were used for lexical conditions (cognates, false cognates, neutral vocabulary), and linear mixed-effects models were employed to account for fixed effects of conditions and random effects of participants and stimuli (Freeman et al., 2022; Kroll et al., 2021). Statistical analyses were performed in R 4.3.1, utilizing the lme4 and emmeans packages, with a significance level set at $p < 0.05$.

3.4. The research limitations

The sample included Ukrainian-dominant bilinguals with English or Polish as their second language, which limits its applicability to other language pairs or types of bilingualism. The online format of the experiment did not allow for complete control of conditions (noise, microphone, internet), although data cleaning procedures minimized the impact on reaction time. The assessment of language experience was based on self-report, which may have subjective errors, but the adapted questionnaire and clear inclusion criteria improved the relevance of the sample. The research relied solely on behavioral indicators without neurophysiological verification, which restricts the direct identification of cognitive control mechanisms.

4. RESULTS

The results of the experimental picture naming task revealed consistent differences in the timing and accuracy of speech production depending on the type of lexical similarity between languages. Analysis of the average reaction times showed that the type of stimulus significantly affects how quickly bilinguals retrieve lexical items when speaking in their second language.

The mean reaction time for cognates was the shortest, at $M = 812$ ms ($SD = 96$), while for neutral vocabulary it increased to $M = 864$ ms ($SD = 104$). The longest reaction times were observed with false cognates, with a mean of $M = 941$ ms ($SD = 118$). Thus, processing cognates was associated with faster speech production, whereas false cognates caused a clear interference effect, as shown by a significant slowdown in responses. Linear mixed models confirmed a significant effect of lexical similarity type on reaction time ($\chi^2(2) = 46.87$; $p < 0.001$). Pairwise comparisons showed that the difference between cognates and neutral vocabulary was statistically significant ($\Delta M = 52$ ms; $p < 0.01$), and

the difference between neutral vocabulary and false cognates was even more pronounced ($\Delta M = 77$ ms; $p < 0.001$). The largest difference was between cognates and false cognates ($\Delta M = 129$ ms; $p < 0.001$), indicating a distinctly different effect on speech production (Figure 1).

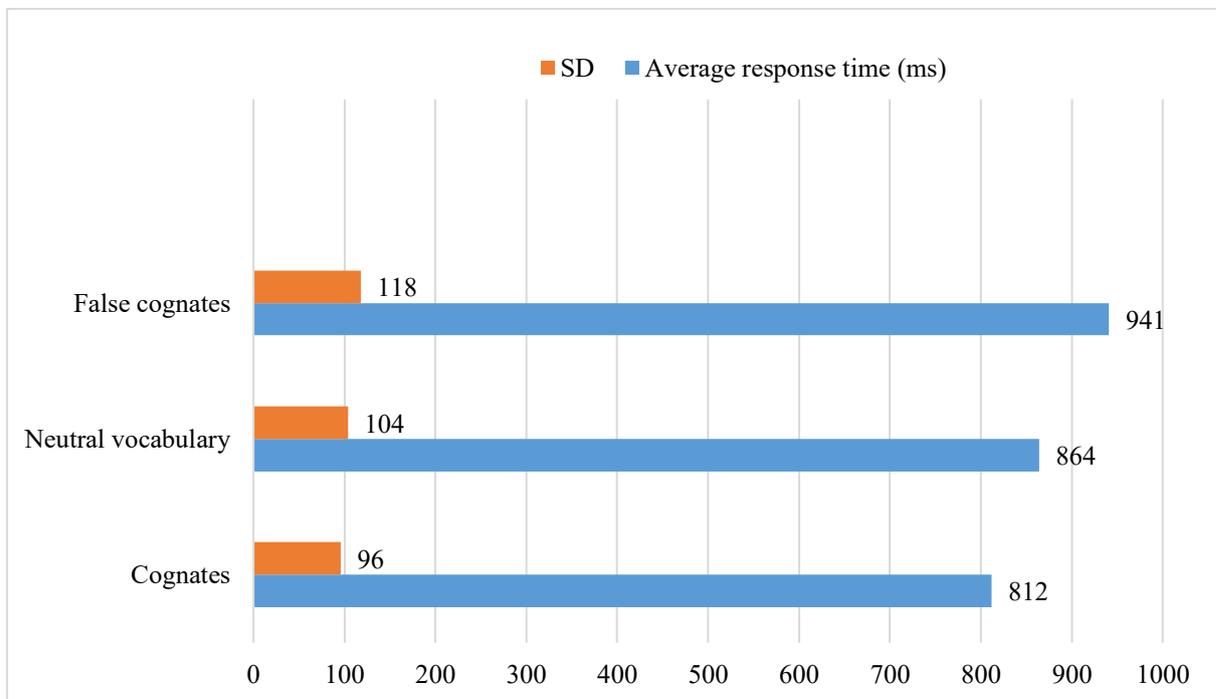


Figure 1. Mean reaction time (ms) in the picture naming task for different types of lexical similarity (with standard deviation errors)

The analysis of response accuracy also demonstrated dependence on the type of lexical stimulus. The highest accuracy was seen with cognates—94.6%—while neutral vocabulary reached 91.2%. Conditions involving false cognates had the lowest accuracy at 84.8%, indicating more errors when units are formally similar but semantically different. Statistical comparisons showed significant differences between conditions ($\chi^2(2) = 39.14$; $p < 0.001$). The accuracy difference between cognates and neutral vocabulary was moderate yet statistically significant ($p < 0.05$), while the false cognates condition significantly differed from both other stimulus types ($p < 0.001$). Detailed measures of mean reaction times and response accuracy for each lexical condition are provided in Table 1.

Table 1. Average values of reaction time and accuracy of responses in the picture naming task, depending on the type of lexical similarity

Type of stimulus	Reaction time, M (SD), ms	Accuracy, %
Cognates	812 (96)	94.6
Neutral vocabulary	864 (104)	91.2
False cognates	941 (118)	84.8

Analysis of the error distribution revealed that, in the case of false cognates, interlingual semantic substitutions were the main type, with participants either producing a word from L1 or choosing an L2 lexeme that's semantically related to the stimulus form but not matching its meaning. For neutral vocabulary, errors mainly involved phonological distortions or delays with self-correction, while in the case of cognates, the number of incorrect responses was minimal and did not follow a consistent pattern. The results indicate that the degree of lexical similarity between languages greatly affects both the speed and accuracy of speech production in bilinguals. The facilitative effects observed for cognates and the strong interference effects seen with false cognates quantitatively reflect the level of lexical competition between L1 and L2 during simultaneous activation of both language systems.

An in-depth analysis of the experimental data helped us understand the nature of facilitative and interference effects that occur during speech production in a second language, depending on the type of lexical similarity. Comparing time and accuracy measures showed that these effects vary both in magnitude and in type. The facilitative effect of cognates manifested as a decrease in average reaction time and reduced variability within individuals. The distribution of reaction times for cognates was more tightly clustered, as indicated by lower standard deviations. Most participants responded consistently to cognate stimuli with few pauses or self-corrections, suggesting coordinated activation of lexical representations in both languages and easier selection of L2 target items.

The interference effect of false cognates, on the other hand, was clearly multidimensional. Besides a significant increase in reaction time, this condition also resulted in more incorrect and partially correct responses, often with delays or self-corrections. Analysis of the audio recordings showed that about 41% of errors in this condition involved brief pauses before speech, indicating increased difficulty in lexical selection. Neutral vocabulary displayed intermediate effects: response times were more stable than with false cognates but did not reach the facilitation seen with true cognates. Errors in this condition were mostly nonsystematic, related to phonological realization or delays in retrieving the correct lexical item.

To measure the effects, the difference in average reaction times between conditions was calculated. The facilitatory effect of cognates compared to neutral vocabulary was, on average, 52 ms, while the interference effect of false cognates was 77 ms. Therefore, the interference effect was stronger than the facilitatory effect, showing the asymmetric influence of different types of lexical similarity on speech production.

Further analysis of response accuracy showed that, in the case of cognates, interlingual and intralingual errors happened less often. However, for false cognates, the highest rate of interlingual substitutions was seen among all conditions. A comparison of individual participant profiles revealed a consistent pattern: responses to cognates were quicker, while responses to false cognates were slower, despite some changes in interference levels. The results clearly distinguish between facilitative and interfering effects in bilingual speech production: cognates help and stabilize lexical access, while false cognates increase interlingual competition, which leads to longer response times and lower accuracy.

The research also calculated overall indices of competition between L1 and L2 based on timing and accuracy measures of speech production. The time competition index (now –

TCI) was defined as the difference in average reaction times between conditions with interference potential and neutral vocabulary: positive values were interpreted as increased lexical competition, while negative values indicated facilitation. Results showed that for false cognates, the TCI was on average +77 ms, while for cognates, a facilitative effect was observed (−52 ms), indicating the highest level of temporal competition occurs in conditions of formal similarity without semantic match. At the same time, the accuracy competition index (now – ACI) was calculated, reflecting a decrease in the percentage of correct responses compared to the neutral condition. The largest decrease in accuracy was seen with false cognates (−6.4%), whereas for cognates, it was minimal (−2.0%) and not consistent. This suggests that interlingual competition in the case of false cognates impacts not only speed but also the correctness of lexical choices.

For a general assessment, an overall index of lexical competition (hereafter, ILC) was created by combining standardized values of TCI and ACI. The highest ILC values were observed for false cognates, intermediate for neutral vocabulary, and the lowest for cognates, indicating the dominance of facilitative processes. The overall indices are presented in Table 2.

Table 2. Indices of lexical competition depending on the type of lexical similarity

Type of stimulus	Time competition index, ms	Accuracy competition index, %	Integral index of lexical competition
Cognates	−52	−2.0	Low
Neutral vocabulary	0	0	Medium
False cognates	+77	−6.4	High

The visualization of the integral index of lexical competition clearly illustrates the asymmetric nature of interlingual interaction: the interference effects of false cognates greatly exceed the facilitatory effects of cognates in strength (Figure 2).

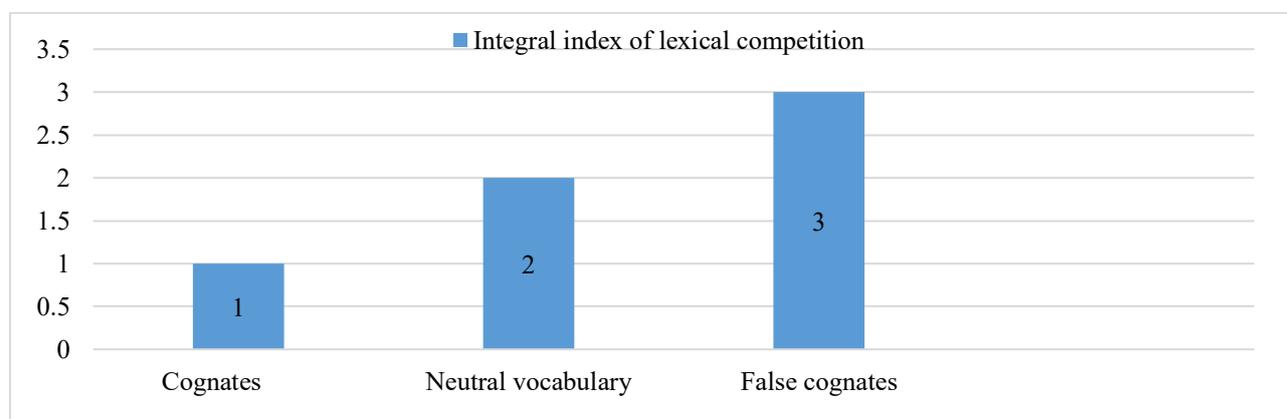


Figure 2. Integral index of lexical competition for different types of lexical similarity (1 – low; 2 – medium; 3 – high)

The quantitative assessment of lexical competition confirms its gradated nature and dependence on the ratio of formal and semantic similarity between lexical units L1 and L2. False cognates create conditions for maximum competition between language systems, which leads to significant time delays and decreased accuracy. Conversely, cognates help reduce conflict and stabilize lexical access. The obtained index indicators summarize the experiment results and quantitatively describe the intensity of interlingual interaction in bilingual speech production, demonstrating the variability in the balance of facilitation and interference based on the type of lexical similarity.

5. DISCUSSION

The results from the research indicate the systemic nature of interlingual interaction in bilinguals' language production and align with modern psycholinguistic models of bilingual lexical access. The observed interference effects can be explained by approaches suggesting that the lexical representations of L1 and L2 are activated simultaneously, with their interaction shaped by a balance of facilitation and competition depending on the type of lexical similarity. Analyzing temporal, accuracy, and index indicators shows that processing second language lexical items occurs when both language systems are coactivated. Notably, the facilitatory effects of cognates—evident in reduced reaction times, increased accuracy, and response stability—suggest the presence of shared or closely related conceptual-semantic representations in the bilingual lexicon. These findings support previous studies considering cognates as a factor that reduces interlingual competition and facilitates language production (da Silva Gadelha & Toassi, 2022; Gálvez-McDonough, 2025). The consistent responses in the cognate condition indicate that coactivation of lexical items from both languages may serve a facilitative role, promoting more efficient language production. This aligns with the idea that interlingual interference is not a uniform phenomenon and can be both restrictive and supportive, depending on the structure of lexical similarity (Mendoza et al., 2021; Toassi et al., 2023).

In contrast, the results for false cognates and interlingual homographs reveal a pattern of increased lexical competition. The longer reaction times, lower response accuracy, and more interlingual substitutions demonstrate the need to actively suppress irrelevant representations of the non-target language. These effects align with findings from experimental studies that view false cognates and homographs as sources of conflicting meaning activation in two languages (Poort & Rodd, 2022; Vingron et al., 2022; Toassi, 2023). The presence of pauses, self-corrections, and partially correct responses in this condition suggests the involvement of cognitive control mechanisms to resolve lexical conflicts. These observations support the idea of linguistic control in bilinguals as a continuous process of managing interlingual competition by inhibiting irrelevant items (Kroll et al., 2021). In this context, interlingual interference can be considered a type of cognitive conflict that involves domain-general monitoring and control mechanisms (Popovych et al., 2021; Freeman et al., 2022).

The strength of interference effects depends on the ratio of formal to semantic similarity between languages. When semantic congruence exists, facilitative processes tend to dominate, whereas in cases of semantic inconsistency or conflict, the demand on inhibitory mechanisms increases. These dynamics align with current ideas about the adaptive nature of language control, which relies on the characteristics of the language material and communication needs (Beatty-Martínez et al., 2020). Neutral vocabulary represents a situation with relatively low levels of interlingual competition, indicating a

lower burden on regulatory mechanisms when there is no formal or semantic similarity. At the same time, the ongoing presence of background interlingual interaction even in this case confirms that lexical access in bilinguals is not entirely selective (Bonfieni et al., 2019; Gálvez-McDonough, 2025).

In a broader theoretical context, the results emphasize the adaptive nature of language control and how language experience impacts interlingual competition. Simultaneously, interpreting the data requires recognizing the study's limitations, such as the specifics of the language pairs, the online format of the experiment, and the exclusive use of behavioral indicators. From a practical standpoint, the findings can be used in teaching foreign languages to enhance work with cognate vocabulary and reduce the risks of interference from false cognates.

6. CONCLUSIONS

The research findings show that the type of lexical similarity between languages greatly affects the speed of speech production in bilinguals: cognates facilitate faster and more stable lexical access, while false cognates lead to slower responses and more errors. The accuracy results follow a similar pattern: the highest percentage of correct answers was for cognates—94.6%—and the lowest for false cognates, at 84.8%. Examining pauses, self-corrections, and response variability reveals active cognitive control in managing interlingual competition.

This research's novelty lies in the quantitative and qualitative analysis of facilitative and interference effects, as well as in confirming the systemic nature of coactivation of linguistic representations. The practical importance of the data is demonstrated by its potential to influence how vocabulary interference is addressed in foreign language teaching and translator training. Limitations include the specific language pair, a small sample size, and the exclusive reliance on behavioral indicators. Future studies could increase the sample size, examine different types of bilingualism, and combine behavioral and neurocognitive methods for a deeper understanding of interlingual interaction. Furthermore, they could investigate how language experience, dominance, and communicative contexts shape the adaptive regulation of language control.

ETHICAL STATEMENT

The research followed international ethical standards. Participants provided informed consent and could withdraw at any time without facing any negative consequences. No personal information was collected. Results remained anonymous, audio recordings were used only for scientific analysis and stored securely with restricted access.

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APPENDIX 1

The research participant language profile questionnaire

(an adapted version of the LEAP-Q for studying interlingual interference in speech production)

1. General information

1.1. Age (full years): _____

1.2. Gender:

a) female

b) male

c) other / do not wish to specify

2. Language status

2.1. Your native language (L1): _____

2.2. A second language (L2) that you use regularly:

2.3. Do you speak other languages (L3, L4, etc.)?

a) no

b) yes (specify language(s): _____

3. Order and age of language acquisition

Fill in for each language you speak.

3.1. Age of language acquisition onset:

– L1: _____ years

– L2: _____ years

– L3 (if available): _____ years

3.2. Age at which you were able to communicate fluently in this language:

– L1: _____ years

– L2: _____ years

– L3 (if available): _____ years

3.3. Age when you started reading in this language:

– L1: _____ years

– L2: _____ years

– L3 (if available): _____ years

4. Frequency of language use

Estimate the approximate percentage of use of each language in the different communicative domains (the sum should be 100%).

4.1. Everyday communication:

– L1: _____ %

– L2: _____ %

– L3: _____ %

4.2. Educational context:

– L1: _____ %

– L2: _____ %

– L3: _____ %

4.3. Professional activity:

– L1: _____ %

– L2: _____ %

– L3: _____ %

4.4. Digital communication (social networks, messengers):

- L1: _____ %
- L2: _____ %
- L3: _____ %

5. Language dominance

5.1. Which language do you consider dominant at the moment?

- a) L1
- b) L2
- c) roughly equal

5.2. Has your language dominance changed throughout your life?

- a) no
- b) yes (briefly describe): _____

6. Self-assessment of language proficiency

Rate each skill on a scale from 0 to 10, where 0 means I don't know it at all, 10 means I know it perfectly.

6.1. Language L1

Skill	0	1	2	3	4	5	6	7	8	9	10
Understanding spoken language											
Speaking											
Reading											
Writing											

6.2. Language L2

Skill	0	1	2	3	4	5	6	7	8	9	10
Understanding spoken language											
Speaking											
Reading											
Writing											

7. Experience in a language environment (L2)

7.1. Have you lived in a country where L2 is the main language of communication?

- a) no
- b) yes (specify total duration: _____ years _____ months)

7.2. Have you studied in an educational institution using L2 as the language of instruction?

- a) no
- b) yes (specify total duration: _____ years _____ months)

7.3. Do you use L2 in your professional activities?

- a) no
- b) yes (specify total duration: _____ years _____ months)

8. Medical and cognitive factors

8.1. Do you have a diagnosed speech, cognitive or neurological disorder?

- a) no
- b) yes (specify): _____

8.2. Do you have a visual or hearing impairment (corrected or uncorrected)?

a) no

b) yes (specify): _____

9. Additional information

9.1. Do you have a professional linguistic education?

a) no

b) yes

9.2. Is there any other information about your language experience that you consider relevant to the research?
