Cognitive aspects of simile processing in bilingual (English–Uzbek) speakers

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Annotation *This article explores the cognitive aspects of simile processing in English–Uzbek bilingual speakers. It investigates how similes are perceived and interpreted across two languages, focusing on cultural semantics, conceptual mappings, and linguistic nuances. By analyzing how bilingual minds handle similes that may differ or overlap semantically and culturally, the study reveals the cognitive strategies bilinguals employ when decoding figurative language. The paper also offers practical examples to illustrate cross-linguistic influence and cognitive transfer in simile interpretation, contributing to fields such as bilingualism, cognitive linguistics, and intercultural communication.*

Keywords *Simile, bilingualism, cognitive linguistics, cultural semantics, metaphor, similarity, semantic transfer, mental processing*

Когнитивные аспекты восприятия сравнений у билингвов (англо-узбекских)

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Аннотация *В данной статье рассматриваются когнитивные аспекты восприятия и интерпретации сравнений (сравнительных оборотов) у билингвов, владеющих английским и узбекским языками. Особое внимание уделяется тому, как сравнения осмысливаются на двух языках с учётом культурно-семантических различий, концептуальных соответствий и языковых нюансов. На основе анализа примеров показано, какие когнитивные механизмы активизируются у билингвов при обработке образного языка. Исследование охватывает важные аспекты билингвизма, кросс-языковых влияний и когнитивной лингвистики.*

Ключевые слова *Сравнение, билингвизм, когнитивная лингвистика, культурная семантика, метафора, сходство, семантический трансфер, мышление*

Ingliz–o‘zbek ikki tilli (bilingval) shaxslarda taqqoslash (o‘xshatish) birliklarini idrok etishning kognitiv jihatlari

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Annotatsiya *Ushbu maqolada ingliz–o‘zbek bilingvlarida o‘xshatish (taqqoslash) birliklarini anglash va qayta ishlashning kognitiv jihatlari tahlil qilinadi. Maqolada o‘xshatish birliklarining ikki tilda qanday idrok qilinishi, ularning madaniy konnotatsiyasi va*

semantik yuklamasi taqqoslab o'rganiladi. Shuningdek, bilingv shaxsning ikki tilli tafakkuri, tilaro o'tkazmalar (transferlar), o'xshash va farqli tushunchalar asosida simile-larni qanday talqin qilishi keltirilgan amaliy misollar orqali yoritiladi. Maqola bilingvizm, semantik tafakkur, madaniyatlararo kommunikatsiya va tilshunoslikda kognitiv yondashuvga oid muhim ilmiy mulohazalarni o'z ichiga oladi.

Kalit so'zlar *O'xshatish, bilingvizm, kognitiv tilshunoslik, madaniy semantika, metafora, o'xshashlik, semantik transfer, tafakkur*

Introduction

Understanding how bilingual individuals process figurative language such as similes can offer valuable insights into cross-linguistic cognition and semantic flexibility. Similes, characterized by explicit comparative structures (e.g., "as brave as a lion"), are integral to both English and Uzbek languages, though their cognitive interpretation may vary across cultural and linguistic backgrounds. This study focuses on the cognitive mechanisms underlying simile comprehension in English–Uzbek bilinguals, emphasizing the influence of linguistic proficiency, cultural familiarity, and the type of simile (conventional vs. novel). Similes serve not only aesthetic and rhetorical purposes in language but also reveal how individuals access and integrate stored knowledge to make figurative comparisons. For bilinguals, simile interpretation may trigger different conceptual mappings in each language depending on exposure, usage, and cultural associations.

While English similes may rely on Western metaphoric conventions, Uzbek similes frequently embody Central Asian idiomatic expressions that may lack direct equivalents. Hence, exploring simile processing among bilingual speakers provides a window into the interaction between language systems in the human mind. Processing simile relies on mapping two domains: the target and the source. According to cognitive linguistics, the mental operation involves analogical reasoning and cross-domain mapping (Lakoff & Johnson, 1980).

In bilinguals, these mappings may be influenced by linguistic dominance and cultural frames. While English often employs similes rooted in Western imagery, Uzbek similes frequently draw upon Turkic cultural symbols and idiomatic expressions. Processing a simile like "quick as a fox" may be straightforward for English-dominant bilinguals but may require cultural adaptation for those more familiar with Uzbek simile structures such as "epchilligi qunduzdek" (as agile as an otter). Grice's Cooperative Principle (1975) and Relevance Theory (Sperber & Wilson, 1986) also underpin figurative interpretation. These pragmatic frameworks suggest that listeners infer additional meanings beyond literal ones based on contextual assumptions. In simile processing, especially for bilinguals, listeners must determine the relevance and intended similarity between concepts across potentially different cultural or cognitive domain.

Cognitive Load and Figurative Language. Simile processing imposes a certain cognitive load, as it requires not only linguistic decoding but also abstract conceptualization. For bilingual speakers, this load is modulated by their proficiency in the language of the simile and their familiarity with its cultural connotations. Studies in psycholinguistics (e.g., Giora, 2003) show that conventional similes are processed faster than novel ones because they are stored in long-term memory. In contrast, novel similes require online semantic integration, drawing more heavily on working memory and inferential reasoning.

Bilinguals may experience interference or transfer from one language system to another during figurative processing. A simile familiar in Uzbek may be misunderstood or processed more slowly when translated literally into English. Moreover, similes that involve culturally specific knowledge (e.g., references to traditional objects or folk beliefs) demand greater cognitive resources for interpretation if that knowledge is not shared. Reaction time experiments demonstrate that such unfamiliar similes elicit delayed responses, indicating increased cognitive load.

Research Design and Methodology

Participants: 60 English–Uzbek bilinguals aged 18-35, divided into two groups based on language proficiency (intermediate and advanced). Participants had at least five years of formal English education and regular exposure to both languages in academic or media settings.

Materials: 40 similes divided into 4 categories:

- 10 conventional English similes (e.g., "as cold as ice")
- 10 novel English similes (e.g., "like a balloon in a thunderstorm")
- 10 culturally rooted Uzbek similes (e.g., "tili asaldek" – "sweet as honey")
- 10 literal English-to-Uzbek translated similes (e.g., "yuragi muzdek" – "as cold as ice")

Tasks: Participants completed a computer-based task using PsychoPy, where they read each simile and selected the best paraphrase from four options. Reaction time and accuracy were recorded. Afterward, a subset of participants took part in think-aloud interviews, where they verbalized their interpretation process.

Data Analysis: quantitative data (reaction times and accuracy) were analyzed using SPSS with independent t-tests and repeated measures ANOVA. Qualitative interview data were thematically coded and categorized into interpretative strategies, emotional responses, and cultural associations.

Reaction time and accuracy data revealed that culturally familiar similes (especially in the dominant language of the speaker) were processed faster and more accurately. Novel similes took significantly longer to interpret. Advanced bilinguals outperformed intermediate ones across all categories.

- **English conventional:** Avg RT = 1250 ms, Accuracy = 87%
- **English novel:** Avg RT = 1495 ms, Accuracy = 73%
- **Uzbek familiar:** Avg RT = 1170 ms, Accuracy = 91%
- **Uzbek translated:** Avg RT = 1430 ms, Accuracy = 76%

These findings show that cognitive processing is highly sensitive to familiarity and language dominance. Interview data highlighted several cognitive patterns:

Mental translation: intermediate bilinguals often translated similes to their dominant language before interpretation.

- *Image association:* participants visualized similes using culturally resonant imagery.
- *Semantic integration:* advanced bilinguals used context and linguistic cues for faster metaphorical reasoning.

The findings suggest that both linguistic proficiency and cultural familiarity play pivotal roles in simile comprehension. Advanced bilinguals demonstrated greater semantic flexibility, processing both conventional and novel similes more efficiently. The reaction time and accuracy data underscore the cognitive cost of processing unfamiliar or culturally incongruent similes.

This supports the notion of dual-coding theory (Paivio, 1986), where verbal and imagistic systems work in tandem. Bilinguals fluent in both languages have a wider repertoire of figurative templates and can activate these representations more quickly. Cultural scripts further inform these templates, enhancing interpretive speed when similes match culturally familiar domains.

The findings align with relevance theory, which posits that listeners aim to maximize

contextual effects with minimal cognitive effort (Sperber & Wilson, 1986). Bilinguals leverage their dual linguistic backgrounds to optimize interpretation, especially when the simile structure or imagery aligns with culturally embedded knowledge. However, the mismatch of imagery between source and target languages sometimes disrupts interpretation, leading to processing delays.

Moreover, the study highlights the potential for simile processing to reveal broader aspects of bilingual cognition, including how language systems interact in real-time during metaphorical thinking. It suggests that figurative language comprehension may serve as a sensitive measure of bilinguals' cognitive flexibility, especially under conditions requiring rapid cross-linguistic mapping. Understanding the cognitive aspects of simile processing can aid in the development of language curricula that integrate figurative competence, especially for bilingual learners. Educators should consider incorporating culturally diverse similes and teaching strategies that build metaphorical awareness. This can enhance bilinguals' semantic agility and intercultural communicative competence.

Moreover, language assessment frameworks such as CEFR may benefit from including figurative language tasks to evaluate pragmatic competence more holistically. In translation studies, awareness of how similes function cognitively can inform more effective rendering of figurative meaning across languages. This research also has implications for AI and NLP. Improved understanding of bilingual simile processing may guide the development of more culturally sensitive language models capable of interpreting non-literal language in multilingual contexts. Tools trained on bilingual figurative corpora could enhance automated translation, sentiment analysis, and conversational agents (Paivio, 1986).

Additionally, findings can benefit cognitive rehabilitation and language therapy. Figurative comprehension tasks may be used to assess and train executive functions in bilingual individuals with language-related impairments, providing diagnostic and therapeutic value. Further, this study can inform intercultural communication training, especially in international business and diplomacy, where misinterpretation of figurative expressions could lead to communication breakdowns. Equipping professionals with an awareness of how different cultures process figurative language can promote clearer, more empathetic interaction. For curriculum designers, results highlight the necessity of integrating figurative competence into bilingual education programs, not only through literary texts but also in everyday conversation practice. Understanding how figurative language is understood and misunderstood helps bridge linguistic gaps and fosters mutual intelligibility.

Finally, implications extend to psycholinguistic theory itself – contributing to models of bilingual mental lexicon and language switching mechanisms under figurative demands. Insights into how bilingual brains manage conceptual mapping in similes can refine our understanding of bilingual cognition at large.

Conclusion

Simile processing in bilingual speakers is a cognitively rich activity shaped by proficiency, culture, and linguistic structure. Familiar similes are easier and faster to process, while novel ones demand deeper inferential reasoning. The findings contribute to the growing field of bilingual figurative language research, highlighting the need for culturally contextualized pedagogies. Future studies should explore neural correlates of simile processing using EEG or fMRI to determine how brain activation patterns differ between familiar and unfamiliar similes. Longitudinal studies may also investigate how figurative language competence develops over time in bilinguals exposed to both languages in varying proportions. Sperber, & Wilson, 1986)

Moreover, future research should examine age-related differences and the impact of early versus late bilingualism on simile comprehension. Investigating how code-switching and language dominance shift in real time during figurative language processing can reveal new dimensions of bilingual cognition. In sum, simile processing offers a fertile ground for interdisciplinary research at the crossroads of linguistics, psychology, pedagogy, and artificial intelligence. By delving deeper into how bilingual minds navigate figurative meaning, scholars and educators can better support cross-cultural communication and cognitive development across languages. Furthermore, the study reinforces the idea that bilingual simile processing is not merely a matter of translation or vocabulary knowledge, but a dynamic interaction of cognitive, linguistic, and cultural faculties.

The differences in processing speed and accuracy between conventional and novel similes across English and Uzbek contexts illustrate how figurative meaning depends on more than just linguistic input – it relies on stored conceptual knowledge and cultural schemas. The implications for bilingual education are especially salient. Instructional materials often overlook figurative expressions, yet mastery of similes and metaphors is critical for full communicative competence. Incorporating figurative language into curricula can help learners navigate real-world discourse more effectively, from literature and media to daily interactions and academic writing.

Finally, this study opens the door to interdisciplinary inquiry. Cognitive science, education, sociolinguistics, and artificial intelligence all stand to benefit from further exploration of figurative language processing in bilinguals. Understanding how individuals draw meaning from figurative expressions in multiple languages not only enriches our theories of language but also enhances cross-cultural understanding in an increasingly globalized world.

References:

1. Giora, R. (2003). On our mind: Salience, context, and figurative language. Oxford University Press.
2. Grice, H. P. (1975). Logic and conversation. In P. Cole & J.L. Morgan (Eds.), *Syntax and semantics* (Vol. 3, pp. 41–58). Academic Press.
3. Lakoff, G., & Johnson, M. (1980). Metaphors we live by. University of Chicago Press.
4. Paivio, A. (1986). Mental representations: A dual coding approach. Oxford University Press.
5. Sperber, D., & Wilson, D. (1986). Relevance: Communication and cognition. Harvard University Press.