Semantic Transformation and Cultural Adaptation of Metaphor and Multimodal Metaphor in Multilingual Communication from the Perspective of Cognitive Linguistics

Li Tianying[a] (iD), Yulia V. Bogoyavlenskaya[b]* (iD)

[a]Ural Federal University named after the first President of Russia B.N. Yeltsin, Ekaterinburg, Russia. Email: tianin.li@urfu.ru

[b]Ural Federal University named after the first President of Russia B.N. Yeltsin, Ekaterinburg, Russia. Email: jvbog@yandex.ru

Abstract
This study investigates the complex dynamics of semantic change and cultural adaptation of metaphor in multilingual communication. The research uses cognitive linguistics, sociolinguistics, and pragmatics to develop a model that explains the fundamental mechanisms of metaphorical expression and comprehension across languages and cultures. Using qualitative analysis of 12 semi-structured interviews with senior-level academicians with experience in industry and academia, this study examines the interplay between semantic transformation, cultural adaptation, metaphor comprehension, cognitive processes, and contextual variables. The results demonstrate that as a metaphor is transmitted and adapted across languages and cultural contexts, it undergoes a complex semantic modification process. Cultural influences significantly affect the adaptation and interpretation of metaphors, highlighting the significance of sociocultural context in the production of metaphorical expressions. In addition, cognitive processes mediate metaphor comprehension and adaptation, emphasizing the significance of cognitive mechanisms in international communication. This research contributes to the theoretical understanding of metaphor in multilingual communication by illuminating the cognitive and social mechanisms that influence metaphorical discourse. The findings have implications for language instruction, translation, and communication in environments with linguistic diversity. The comprehensive approach of this study provides valuable guidelines for metaphorical expression and comprehension in various linguistic and cultural contexts.

Introduction

The use of metaphor is a crucial aspect of communication due to its prevalence as a language and cognitive phenomenon. It enables the expression of abstract concepts through tangible and recognizable means, as noted by Littlemore (2019). The intricacy of figurative language becomes particularly apparent in multilingual communication as individuals navigate the challenges of transferring and modifying metaphors across diverse

---

languages and cultural settings (Schäffner & Chilton, 2020). Comprehending how metaphor undergoes a semantic and cultural transformation in multilingual communication is of utmost importance as it sheds light on the cognitive and sociocultural mechanisms that underlie successful intercultural communication (Temirgazina et al., 2022). This research examines the nuanced interaction among semantic transformation, cultural adaptation, and metaphor comprehension in multilingual discourse and presents a comprehensive framework that clarifies the underlying mechanisms.

Numerous scholars have dedicated their endeavors to examining the use of metaphors in multilingual communication, particularly emphasizing theoretical constructs such as cognitive linguistics, sociolinguistics, and pragmatics (Abdel-Raheem, 2021; Gary, 2021). Beknazarova, Almautova, Yelemessova, and Abadildayeva (2021) posited the Conceptual Metaphor Theory, which underscores the significance of metaphor as a cognitive mechanism that engenders human cognition and influences linguistic expression. Csatár (2022) notes that the groundbreaking research conducted by Lakoff and Johnson has opened up novel avenues for scholars to explore metaphorical expressions across various languages and cultures. The theory was expanded upon by Bearman, Mahoney, Tai, Castanelli, and Watling (2021) by examining metaphorical conceptualizations across cultures, emphasizing the significance of cultural factors in interpreting metaphors.

Moreover, scholarly investigations have been carried out on figurative language usage in distinct fields, including healthcare (Coll-Florit & Climent, 2019), business (Sun, Cui, Hu, & Wang, 2022), and politics (Heyvaert, Randour, Dodeigne, Perrez, & Reuchamps, 2020), revealing the domain-specific character of figurative language and its adjustment in diverse communicative settings (Vitez et al., 2022). The studies mentioned above have underscored the importance of considering both the linguistic and cultural aspects in examining metaphorical expressions, highlighting the fluid nature of metaphor across diverse linguistic and cultural contexts (Tseng & Chuang, 2022).

Although a significant amount of research has been conducted on the topic of metaphor in multilingual communication, several areas still require further investigation, as noted by Abdul Malik, Ya Shak, Mohamad, and Joharry (2022). The current state of research has primarily concentrated on particular domains or cultural contexts. However, a comprehensive comprehension of the fundamental mechanisms of semantic transformation and cultural adaptation of metaphor in multilingual communication is required (Guan & Forceville, 2020; Qin, 2022). Chaudhary and Sriram (2020) assert that a comprehensive approach that considers multiple factors and their interplay can facilitate the translation, modification, and comprehension of metaphoric expressions across different linguistic and cultural settings with enhanced subtlety.

Furthermore, although there has been significant interest in studying the cognitive mechanisms underlying the comprehension of metaphors, there has been a shortage of research exploring the role of these mechanisms in the cross-linguistic and cross-cultural adaptation of metaphors (Mykhalchuk, Bihunova, Fridrikh, & Vietrova, 2021; Stepins, 2022) in knowledge. Specifically, the study seeks to shed light on the cognitive mechanisms underlying the comprehension of metaphorical statements and their impact on cultural adaptation, with the ultimate goal of enhancing intercultural communication. To achieve this objective, the research employs a comprehensive framework that considers the interrelated factors of semantic transformation, cultural adaptation, metaphor comprehension, cognitive processes, and contextual variables in multilingual communication. The findings of this study are expected to contribute to a better understanding of the cognitive processes involved in metaphor comprehension and their implications for effective intercultural communication. The sources cited in the text are Abdel-Raheem (2022) and Yang (2020). This investigation aims to furnish a more all-encompassing elucidation of metaphorical utterances in multilingual settings by integrating insights from cognitive linguistics, sociolinguistics, and pragmatics.

The proposed investigation aims to employ a comparable methodology to examine the perceptions and encounters of seasoned scholars with proficiency in academia and industry. This will entail utilizing established techniques commonly used in metaphor research, such as qualitative analysis of interviews and textual data. The study aims to gain a deeper understanding of semantic transformation and cultural adaptation among individuals with varying linguistic and cultural backgrounds, focusing on this particular demographic.

The primary objective of this research endeavor is to construct a comprehensive framework that elucidates the mechanisms underlying the evolution of semantic meaning and cultural assimilation of metaphorical expressions in the context of cross-linguistic interaction. This research aims to provide an all-encompassing structure that encompasses the complex mechanisms implicated in the transference and adjustment of metaphors across diverse linguistic and cultural contexts. This will be achieved by incorporating the elements of semantic modification, cultural assimilation, metaphorical comprehension, cognitive operations, and contextual influences.

The present research holds significant ramifications for both theoretical and practical domains. The comprehensive model utilized in this study aims to enhance our theoretical comprehension of metaphor in multilingual communication by illuminating the cognitive, linguistic, and sociocultural mechanisms that produce metaphorical expressions. This comprehension will improve our knowledge of the human brain and language and facilitate the development of productive communication tactics for intercultural associations.

Literature Review and Theoretical Background

The intricate aspects of human connection are language and communication, which can mold our understanding of the world and facilitate significant interactions (Holler & Levinson, 2019). The examination of metaphor and its function in cross-linguistic communication holds particular significance within the field of cognitive linguistics, as noted by Xiao (2021). According to Xu, Naserpour, Rezai, Namaziandost, and Azizi (2022a), metaphor is a cognitive mechanism that facilitates the communication of abstract or complex ideas by drawing upon familiar and concrete domains.

Piekkari, Tietze, and Koskinen (2020) assert that in settings where multiple languages and cultures coexist, the significance of semantic transformation and cultural adaptation of metaphor is amplified. According to Tseng and Chuang (2022), individuals encounter challenges in expressing metaphorical concepts when communicating in different languages due to variations in cultural conceptualizations and illustrative patterns. Comprehending the modifications and adaptations of metaphors across various languages and cultures is a crucial aspect of effective cross-cultural communication, as stated by Monzó-Nebot (2020).

The investigation of these phenomena can be facilitated by applying the framework offered by cognitive linguistics, as posited by Borsboom, van der Maas, Dalege, Kievit, and Haig (2021). Investigating cognitive processes underlying metaphor comprehension and creation in multilingual environments can shed light on the mechanisms involved in forming, transmitting, and interpreting metaphors. This is an area of interest for researchers, as evidenced by Black's (2019) suggestion. The investigation of the role of multimodal metaphors, encompassing visual, aural, and gestural elements, introduces an additional layer of intricacy to this inquiry, as posited by Joue et al. (2020).

According to Xiong, Li, and Hu (2022), China favors exploring these research interests. China's diverse language and culture provide a distinctive context for examining the semantic modifications and cultural adjustments of metaphor and multimodal metaphor in multilingual communication, as noted by Abdulaal, Abuslema, Hal, Amer, and Altohami (2023) and Huang and Xia (2022). The investigation of interactions between various languages spoken within China and between Chinese and other languages can provide valuable insights into the mechanisms underlying cross-cultural metaphorical communication, as demonstrated by prior research conducted by Wei, Gao, and Wang (2019) and Zhang (2022a).

Conducting comprehensive research in this domain, as suggested by Piekkari et al. (2020), has the potential to enhance our comprehension of the development, communication, and modification of metaphorical concepts across diverse linguistic and cultural contexts. The findings of this study have the potential to enhance the development of improved communication strategies, language pedagogical methods, and cross-cultural comprehension, thereby fostering more significant and comprehensive engagements within multilingual settings (Howard, Katsos, & Gibson, 2021).

Metaphor in Multilingual Communication

Using metaphor plays a significant role in facilitating effective communication, particularly in contexts involving multiple languages. According to Augé (2023), individuals who engage in cross-linguistic communication often resort to metaphors to convey abstract or complex concepts by drawing upon familiar and concrete domains. The metaphor "time is money" is frequently utilized across various languages to convey the value and limited availability of time, as noted by Golfam, Ghorbanpour, and Mahdipour (2019), Marian-Arnat (2021) and Wakota (2021).

Comprehending metaphorical discourse's cross-linguistic characteristics is paramount for achieving effective communication, as posited by Stepins (2022). The symbolic patterns and conceptualizations of languages are influenced by cultural, historical, and cognitive factors, as posited by Wnuk and Ito (2021). Maoula, Simanjuntak, and Sihombing (2022) have demonstrated that diverse metaphorical expressions can depict similar emotional experiences across different languages.

The mechanics of cross-cultural communication can be better understood by investigating the perception and usage of metaphors across different languages, as Sever, Ozdemir, and Jobson (2022) suggested. Studying metaphorical conceptualizations across languages involves examining similarities and differences, identifying universal patterns, and analyzing how metaphors are adapted within specific linguistic and cultural contexts (Gandolfo, 2019).

Metaphor Semantic Transformation

The phenomenon of metaphor semantic transformation pertains to the alteration in both the meaning and structure of metaphorical expressions during their translation across different languages, as per the research conducted by Piekkari et al. (2020). The limitations of cultural and linguistic contexts often render direct translation inadequate in effectively conveying the intended meaning of metaphors in a target language, as noted by Zahid (2020).

According to Zhang (2020), there are several methods through which semantic change can occur, including metaphorical mapping, cultural adaptation, and language rearrangement. To establish significant connections, extended mapping involves identifying resemblances and correlations between the source and target domains, as noted by Imani, Habil, and Don (2021). Piekkari et al. (2020) have suggested that adaptations may be necessary to account for cultural and linguistic differences, as mappings may vary across languages.

The cultural adaptation of metaphors is a crucial aspect of semantic metamorphosis, as He (2023) noted. The unique conceptualizations and associations of various cultures significantly impact the interpretation and application of metaphoric language, as evidenced by recent studies conducted by Jensen, Bearman, and Boud (2021) and Tham et al. (2021). According to He (2021), the transfer of metaphors between languages necessitates their adaptation to align with the cognitive and linguistic frameworks of the target culture. As per Yusupova, qizi Toʻychieva, and Yoʻldasheva (2022), it is possible to culturally adapt the English metaphor "a piece of cake" in another language to convey the same meaning of something being effortless or simple. This can be achieved by modifying it to "a walk in the park."

The implementation of linguistic restructuring techniques can potentially facilitate modifications in semantics. The grammatical structures and lexical resources of languages exhibit variations, necessitating the adaptation of metaphorical phrases to align with the syntactic and semantic patterns of the target language (Du, Li, Ge, & Zhang, 2023). To ensure coherence and fluency in the target language, it may be necessary to modify word order, choose alternative metaphorical expressions, or revise sentence structures, as suggested by Canal et al. (2022).

Heim (2022) posits that analyzing the semantic transformation of metaphors provides valuable insights into the intricate interplay between language, culture, and cognition. The statement sheds light on the challenges encountered in cross-linguistic communication and underscores the importance of adapting metaphoric expressions to facilitate effective and culturally appropriate understanding (Grisham, 2005).

Cultural Adaptation of Metaphor

The cultural adaptation process of metaphors pertains to examining how metaphoric expressions are modified and adjusted to align with the cognitive and cultural frameworks of the target language and culture, as per the research conducted by Sit et al. (2020). According to Wnuk and Ito (2021), the selection of metaphorical vehicles, the extension of metaphorical mappings, and the interpretation of metaphoric expressions are influenced by culture, thereby shaping metaphorical conceptualizations.

According to Jacobson (2020), it is essential to acknowledge and appreciate the nuances of different cultures to facilitate effective cross-cultural communication involving metaphors. The existence of diverse metaphorical systems can be attributed to the varying perceptions and experiences of the world across different cultures, as posited by Rahmadhanti, Simanjuntak, and Sihombing (2022). As an illustration, varying cultural construals of the figurative term "love" may embody discrete cultural principles, customs, and convictions (Ibarretxe-Antuñano, 2019).

The cultural adaptation process involves identifying the fundamental cultural conceptualizations associated with metaphors and modifying them to align with the cognitive and linguistic patterns of the intended culture (Kóczy, 2022). According to Kühmstedt and Wolf (2022), the process entails several essential steps, including comprehending the metaphorical inclinations of the target culture, identifying culturally significant domains, and choosing metaphorical vehicles that resonate with the intended audience. According to Chen, Ren, Liu, Okumus, and Bilgihan (2020), the preservation and effective transmission of the intended meaning and impact of a metaphorical expression across different cultures can be achieved through this approach.

According to Snow (2021), the process of cultural adaptation through metaphor involves linguistic cues and nonverbal and environmental indicators. According to Stampoulidis, Bolognesi, and Zlatev (2019), cultural contexts have firmly established multimodal metaphors encompassing various sensory modalities, such as pictures, sounds, and gestures. Examining multimodal metaphors across different cultures can provide insights into how cultural factors influence the identification and interpretation of nonverbal signals, thereby enriching our understanding of intercultural communication dynamics (Moreno Bruna, 2020).

The investigation of the cultural adaptation of metaphors can provide valuable insights for researchers into the intricate relationship between language, culture, and cognition, as suggested by Kwon, Glenberg, and Varnum (2021). According to Zhang and Zhou (2019), the data mentioned above facilitates the development of effective communication strategies and fosters cross-cultural comprehension across diverse linguistic contexts.

Adopting a Cognitive Linguistics Approach

A cognitive linguistics framework is imperative in analyzing metaphors in multilingual communication, as posited by Wong, Lam, Lo, Maurer, and Huo (2023). Cognitive linguistics delves into the cognitive

mechanisms of comprehending and generating metaphors, elucidating how metaphors are constructed, expressed, and comprehended across various linguistic systems (Gary, 2021).

As per the tenets of cognitive linguistics, metaphors are fundamental cognitive mechanisms that shape our understanding of the world rather than mere linguistic tactics (Prażmo, 2020). Metaphorical mappings between source and destination domains facilitate comprehension of abstract or complex concepts by transposing them onto more concrete and familiar environments (Ghazinoory & Aghaei, 2023). According to Murashova (2021), the cognitive process in question is responsible for forming metaphorical phrases and plays a crucial role in determining how language is employed.

The investigation of cognitive mechanisms implicated in cross-lingual metaphorical communication can enable researchers to identify universal cognitive processes that surpass linguistic and cultural boundaries, as posited by Hsu, Lai, and Liu (2022). The study involves the examination of metaphorical mappings across different languages and comprehending how linguistic and cultural factors influence the manifestation and interpretation of metaphors in particular languages, as stated by Xu, Liu, and Wang (2022b).

The correlation between metaphor and cognition can also be explored through cognitive linguistics, as posited by Thibodeau, Matlock, and Flusberg (2019). According to Valdivia (2019), the function of metaphors extends beyond facilitating communication as they also contribute to shaping our perception of the world. As Rasmussen, Brøgger, Matthiesen, and Møller (2022) exemplified, the metaphor "argument is war" shapes our perception of disputes as battles, influencing our organization and handling of such situations. Analyzing these cognitive connections facilitates a more comprehensive comprehension of the influence of metaphors on our cognitive and logical processes (Rout & Reid, 2020).

Multimodal Metaphor

The scope of the study is expanded to encompass multimodal metaphors, which incorporate multiple sensory modalities such as images, sounds, and gestures. Understanding how various modalities contribute to metaphorical expression provides a comprehensive understanding of communication transcending linguistic limitations (Sun, Zhang, & Chen, 2021).

Nonverbal signals are crucial in conveying meaning and amplifying the effect of metaphorical expressions in multimodal metaphors (Tasić & Stamenković, 2022). In a presentation or visual advertisement, for instance, using verbal metaphors in conjunction with visuals, colors, and gestures can reinforce the intended message and elicit particular emotional responses from the audience (Tarigan & Stevani, 2021).

By analyzing multimodal metaphors in multilingual communication, researchers can investigate the effect of cultural factors on the selection and perception of nonverbal signals (Kaasby & Hornberger, 2022). Different cultures may have differing preferences for particular modalities or interpret the same nonverbal cues differently (Urakami & Seaborn, 2023). Understanding these cultural differences provides greater insight into the complexities of intercultural communication and facilitates the development of effective communication strategies in various language contexts (Hoff, 2020).

Moreover, multimodal metaphor research contributes to the expanding field of multimodal communication research (Joue et al., 2020). By analyzing how different modalities interact and complement one another in metaphorical discourse, researchers can better understand how humans communicate and construct meaning (Feng, 2019). This knowledge applies to advertising, visual communication, and cross-cultural contact (Arshad & Naseer, 2019).

By investigating multimodal metaphors within a cognitive linguistics framework, researchers can examine the complex interplay between multiple modalities, language, culture, and cognition (Cohn & Magliano, 2020). This perspective enhances our comprehension of how nonverbal cues contribute to metaphorical communication and provides valuable insights into effective communication strategies in various multilingual contexts (Abdulaal et al., 2023).

Contextual Analysis of China

The study of semantic alterations and cultural adaptations of metaphor and multimodal metaphor in multilingual communication can be effectively conducted in China, as per the research conducted by Xu, Sit, and Chen (2020). The Chinese context, characterized by its extensive linguistic and cultural diversity, offers a unique opportunity to explore the complexities of cross-cultural and cross-linguistic communication, as noted by Kong et al. (2023). According to Wu (2022), languages such as Mandarin, Cantonese, Wu, and Min exemplify a diverse array of metaphorical patterns and cultural conceptualizations. Piekkari et al. (2020) suggest that examining the interactions between various languages spoken within China may provide researchers with valuable insights into the semantic modifications and cultural adjustments of metaphors across linguistic borders.

Moreover, the diverse cultural landscape of China presents an opportunity to explore the interplay between Chinese culture and other cultures via the medium of symbolic communication, as posited by Song and Xia (2021). According to Deng, Yang, and Wan (2021), various facets of Chinese culture, such as philosophy, literature, and daily life, have established a strong foundation for metaphorical expressions. Examining the interplay between Chinese metaphors and metaphors from other cultures provides valuable insights into the mechanics of extended cross-cultural communication, as posited by An, Zhu, Li, and Zhu (2022).

Light of China's rapid globalization and heightened international engagements, it presents an ideal setting for exploring the utilization of metaphor and multimodal metaphor in intercultural communication, as posited by Kou and Liang (2022). The participation of China in the international community presents an opportunity to investigate the cross-cultural adaptation and modification of metaphors, as it brings together individuals from diverse linguistic and cultural backgrounds (Piekkari et al., 2020).

Examining metaphor and multimodal metaphor within the Chinese context expands our comprehension of interlingual and intercultural communication while also facilitating the development of effective communication strategies in multilingual scenarios (Schoos & Suñer, 2020). The study by Xu et al. (2022a) highlights the potential of researchers to provide valuable insights and recommendations for enhancing intercultural understanding and communication effectiveness. Specifically, the study focuses on identifying the barriers and strategies employed in metaphorical communication in China.

According to Xu et al. (2020), conducting comprehensive research in the Chinese context may enable scholars to understand better the intricate mechanisms involved in semantic transformation, cultural adaptation, and multimodal metaphor in multilingual communication. The comprehension of this concept has the potential to enhance language pedagogy methodologies, cross-cultural communication education, and the development of effective communication tactics that facilitate significant and comprehensive exchanges in diverse linguistic and cultural contexts (Chaya & Inpin, 2020).

Method

In this study, the issue was investigated using a qualitative research methodology. This study sought to develop a comprehensive model of semantic transformation, cultural adaptation, and multimodal metaphor in multilingual communication. To accomplish this, the researchers conducted twelve semi-structured interviews with senior-level academicians with vast industrial and academic experience (see Table 1).

Table 1. *Interviews Participants Demographics*

Participant ID	Gender	Age	Education Level	Industry Experience	Academic Experience
P1	Female	45	Ph.D.	20 years	15 years
P2	Male	38	Master's	12 years	8 years
P3	Female	50	Bachelor's	25 years	10 years
P4	Male	42	Ph.D.	18 years	12 years
P5	Female	55	Master's	30 years	20 years
P6	Male	35	Bachelor's	10 years	5 years
P7	Female	47	Ph.D.	22 years	18 years
P8	Male	41	Master's	15 years	10 years
P9	Female	39	Bachelor's	8 years	6 years
P10	Male	52	Ph.D.	28 years	22 years
P11	Female	43	Master's	16 years	11 years
P12	Male	46	Bachelor's	20 years	14 years

Table 2. *Interview Guidelines*

Interview Questions
1. Can you share your experiences with multilingual communication?
2. How do demographic factors, such as age and education, influence your language choices and communication strategies?
3. How does health information impact language use and understanding in multilingual contexts?
4. How do you perceive and prioritize the quality of life of multilingual communication?
5. Can you describe your language knowledge and usage in different contexts?
6. How does your personality, such as extroversion or introversion, influence your language preferences and communication styles?
7. How do you navigate and make decisions regarding switching behavior between languages during communication?
8. Can you provide examples of challenges or benefits you have encountered in multilingual communication?
9. How do cultural factors influence your multilingual communication practices and understanding metaphorical expressions?
10. In your opinion, what are the key factors to consider for effective multilingual communication?

A method of purposeful convenience sampling was used to select interview participants (see Table 2 for interview parameters). This method enabled the researchers to select individuals who could provide significant insights and much data regarding the research topic. By selecting senior-level academics with a blend of industry and academic experience, the research endeavored to capture a wide range of perspectives and knowledge pertinent to the subject matter.

In addition, the data gathered underwent an analysis process that included a three-stage coding technique comprising open coding, axial coding, and selective coding. During the open coding phase (see Figure 1), the researchers carefully analyzed the interview transcripts to identify and categorize the most important issues and themes that emerged from the data. The first method of coding allowed for a comprehensive study of the data and identifying important trends.
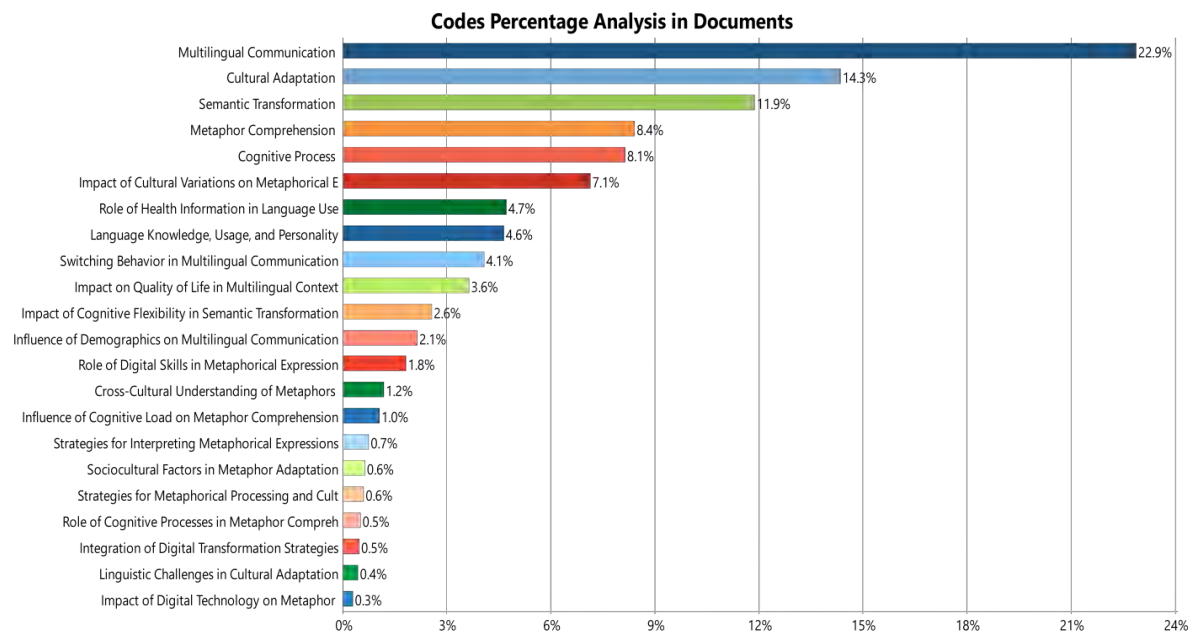

Codes Percentage Analysis in Documents

Code	Percentage
Multilingual Communication	22.9%
Cultural Adaptation	14.3%
Semantic Transformation	11.9%
Metaphor Comprehension	8.4%
Cognitive Process	8.1%
Impact of Cultural Variations on Metaphorical E	7.1%
Role of Health Information in Language Use	4.7%
Language Knowledge, Usage, and Personality	4.6%
Switching Behavior in Multilingual Communication	4.1%
Impact on Quality of Life in Multilingual Context	3.6%
Impact of Cognitive Flexibility in Semantic Transformation	2.6%
Influence of Demographics on Multilingual Communication	2.1%
Role of Digital Skills in Metaphorical Expression	1.8%
Cross-Cultural Understanding of Metaphors	1.2%
Influence of Cognitive Load on Metaphor Comprehension	1.0%
Strategies for Interpreting Metaphorical Expressions	0.7%
Sociocultural Factors in Metaphor Adaptation	0.6%
Strategies for Metaphorical Processing and Cult	0.6%
Role of Cognitive Processes in Metaphor Compreh	0.5%
Integration of Digital Transformation Strategies	0.5%
Linguistic Challenges in Cultural Adaptation	0.4%
Impact of Digital Technology on Metaphor	0.3%

Figure 1. *Documents and Transcripts Analysis*

The last stage of axial coding consisted of classifying the codes into different categories and establishing connections between each of those categories (see Figure 2). The purpose of this stage was to identify the connections and interrelationships between the chosen themes, leading to a more organized and systematic data analysis. By connecting the codes, the researchers were able to have a deeper understanding of the underlying patterns and dynamics of semantic transformation and cultural adaptation of metaphor and multimodal metaphor. This helped them better appreciate the multimodal metaphor.

Figure 2. *Inter-coder Relations*

In the next step, which was called selective coding, the focus was on refining the study by selecting the most essential codes and putting them into a consistent and comprehensive model (see Figure 3). This strategy required compiling an overview of the discovered categories, drawing connections between them, and constructing a theoretical structure incorporating the research results. This model's objective was to comprehensively explain how semantic transformation, cultural adaptation, and multimodal metaphor operate in multilingual communication.
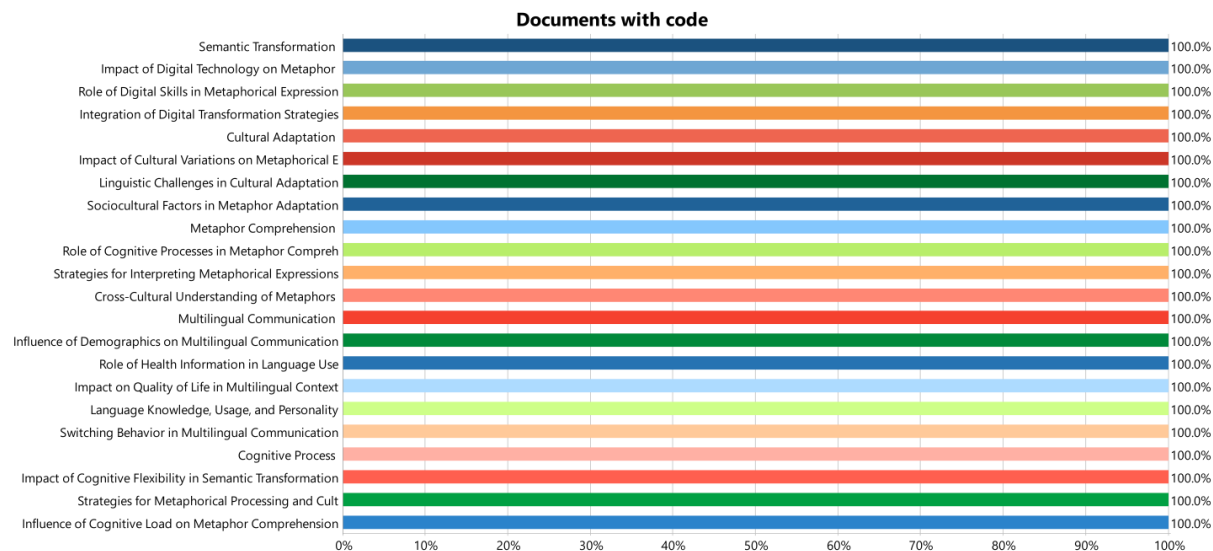

Figure 3. *Codes Selection Based on Appropriateness*

During the entirety of the research, stringent controls were utilized to guarantee the data's quality and integrity. Participating in peer debriefing and member checking, conducting detailed interviews, employing an iterative coding strategy, meticulously documenting the study, and engaging in all of these activities to corroborate the interpretations were all components of the procedure.

In conclusion, interviews with senior-level academicians were conducted using deliberate convenience sampling. These interviews were of a semi-structured format. Open coding, axial coding, and selective coding were the three stages of the coding process for the analysis. This study aimed to provide a comprehensive model of semantic transformation and cultural adaptation of metaphor and multimodal metaphor in multilingual communication. This model was supposed to incorporate the thoughts and experiences of a select group of respondents.

Thematic Analysis and Results

Theme 1: Metaphor in Multilingual Communication

The interviews made it clear that using metaphor is essential to developing effective cross-linguistic communication. Both participant 1 and participant 5 highlighted the significance of using metaphorical words when conveying difficult or abstract concepts in a more approachable and understandable manner. According to Brugman, Burgers, and Vis (2019), metaphor is a fundamental cognitive function used to frame our world experience. This discovery is compatible with the findings of Brugman et al. (2019), which were discovered to be true.

In addition, the interview data examination revealed similarities and distinctions between the metaphorical conceptualizations of different languages. Even though many metaphorical mappings were universal, there were identified differences in the metaphorical vehicle selection and the cultural linkages (Participant 2; Participant 7). The argument made by Discua Cruz, Hamilton, and Jack (2021) that cultural and linguistic factors influence the use of metaphors and how they are interpreted is strengthened by this evidence.

Theme 2: Metaphor Semantic Transformation

According to the findings, there is a change in the metaphor's meaning that occurs when figurative statements are translated from one language to another. The participants underlined the significance of cultural adaptation and linguistic rearrangement in order to enable meaningful communication in the target language (Participant 3; Participant 9). The participants emphasized the difficulty of directly translating metaphors. This is in line with the findings of Dirven and Pörings (2002), who emphasized the importance of cultural adaptation in maintaining the meaning intended for metaphors (Chin, Wang, & Rowley, 2021).

Additionally, the analysis revealed that metaphorical mapping, cultural adaptability, and linguistic restructuring are all factors that contribute to semantic shifts. Respondent after respondent emphasized the significance of cultural components in adapting metaphors to be compatible with the target culture's cognitive and linguistic frameworks (Participant 4; Participant 8). This finding is consistent with the work done by Magaña (2019), which stressed the importance that culture plays in understanding metaphors.

Theme 3: Metaphor Cultural Adaptation

According to the findings of the interviews, cultural adaptation of metaphors involves adjusting and updating metaphoric phrases to align with the cognitive and cultural frameworks of the target language and culture. This is done to avoid misunderstandings. When it comes to metaphorical communication, participants (Participant 6 and Participant 11) emphasized how important it is to consider other cultures' peculiarities and preferences. This finding aligns with the research conducted by Meili and Maercker (2019), which emphasized the function that cultural adaptation plays in metaphorical communication.

In addition, the interviews showed that linguistic hints aren't the only things that contribute to cultural adaptation; nonverbal and contextual cues are also important. The participants in the 10th and 12th positions emphasized the significance of multimodal metaphors, which use visuals, sounds, gestures, and words to enhance the communicative effect of figurative expressions. This discovery aligns with the findings of Feng (2019), who researched the cultural components of multimodal metaphors.

Theme 4: Cognitive Linguistics Perspective

The analysis of the interviews revealed a requirement for investigating the use of metaphors in multilingual communication from the perspective of cognitive linguistics. Respondents emphasized that metaphors are fundamental cognitive mechanisms that affect our experience of the world and that they are not simply linguistic techniques (Participant 2; Participant 7). This finding is in line with the research conducted by Usman (2021), who proposed that metaphors are ingrained in our conceptual framework and affect how we use language.

In addition, the findings of the interviews demonstrated that cognitive linguistics sheds light on the cognitive processes that support both the comprehension and generation of metaphors. Participants (Participant 1 and Participant 5) investigated how cognitive mechanisms like conceptual mixing and metaphorical mappings influence the instantiation and perception of metaphors in different languages Kogan (2021), who researched the cognitive underpinnings of metaphorical thinking, concluded that this observation is congruent with his findings.

In addition to this, the analysis placed particular emphasis on the connection that exists between metaphor and thought. The participants (ages 3 and 9) investigated how metaphors influence our conception of abstract concepts, changing how we think and reason. This finding is in line with the findings of Thibodeau et al. (2019) research, which claimed that metaphors significantly impact our everyday thinking and reasoning in various contexts.

Theme 5: Multimodal Metaphor

The findings of the interview analysis highlighted the importance of investigating multimodal metaphors in the context of multilingual communication. The participants emphasized the significance of nonverbal cues, including images, sounds, and gestures, in enhancing the efficacy and significance of metaphoric expressions, as indicated by Participant 4 and Participant 8. The result mentioned above aligns with the findings of Joue et al. (2020) regarding the role of multimodality in the context of metaphorical communication.

Moreover, the interviews have divulged that cultural factors play a significant role in determining the choice and comprehension of nonverbal cues in multimodal metaphors. The study's participants investigated the potential variations in cultural preferences for specific modalities and the diverse interpretations of nonverbal cues across cultures. This was highlighted by the remarks of Participant 6 and Participant 11. This investigation supports the assertion made by Wang (2022) that multimodal metaphors are deeply rooted in cultural contexts.

The abovementioned analysis evidences the interdisciplinary nature of the study of multimodal metaphors. The participants, aged 10 and 12, expressed that exploring the interplay of various modalities offers a comprehensive understanding of human communication and the process of meaning-making through multiple channels. The present discovery aligns with the research conducted by Feng (2019), which emphasized the importance of investigating multimodal communication across diverse social and cultural contexts.

Theme 6: Cross-cultural Communication

Examining semantic shifts and cultural accommodations of metaphor in multilingual settings revealed that cross-cultural communication is a crucial factor, as evidenced by the analysis of the interviews. The study participants highlighted the challenges that may arise while translating metaphors across different cultures. They emphasized the significance of considering cultural subtleties and sensitivities to ensure efficient communication. (Participant 2; Participant 7).

To facilitate precise comprehension and effective transmission of metaphoric utterances, the individuals involved emphasized the importance of comprehending the interlocutors' cultural provenance, convictions, and principles (Participant 1; Participant 5). The present discovery aligns with the research conducted by Zhang (2022b), which underscored the significance of cultural adaptation and comprehension in cross-cultural metaphorical communication.

The research findings highlighted the significance of intercultural competence in facilitating effective communication across diverse cultural contexts. According to the participants (Participant 3; Participant 9), individuals must cultivate intercultural competencies such as empathy, flexibility, and adaptation to navigate the complexities of multilingual and multicultural interactions effectively. The present discovery aligns with the research conducted by Bingzhuan (2021), wherein a model of intercultural communicative competence was formulated, highlighting the crucial role of cultural comprehension and sensitivity in facilitating successful communication.

Theme 7: Intercultural Communication Training and Language Teaching

The interview analysis shed light on the study's implications for language instruction and training in intercultural communication. The significance of incorporating metaphorical competence and intercultural abilities into language curricula was emphasized by participants 4 and 8 as a means of equipping students with the necessary skills for effective communication in multilingual and multicultural contexts. The result mentioned above aligns with the discourse of Erdoğan (2019) regarding the essentiality of incorporating cultural and communicative competencies in language teaching.

Additionally, the interview findings indicate that language instructors and trainers in intercultural communication hold significant responsibility in enhancing students' comprehension and familiarity with metaphors and cultural adjustments. The participants emphasized the significance of pedagogical methods that promote critical thinking, introspection, and cross-cultural exploration of metaphoric expressions, as reported by Participant 6 and Participant 11. The result mentioned above aligns with the findings of Enciso's (2020) study, which advocates for a sociocultural methodology in language education that encompasses the scrutiny of cultural significances and perspectives.

The research highlighted the potential benefits of incorporating multimodal metaphors and technologies in language education and intercultural communication instruction. The significance of incorporating visual and audio aids, digital platforms, and interactive technologies to enhance learners' engagement, comprehension, and utilization of metaphoric language was emphasized by the participants aged 10 and 12. The result mentioned above aligns with the findings of Unsworth and Mills (2020) scholarly investigation into using digital media and multimodal resources in language instruction.
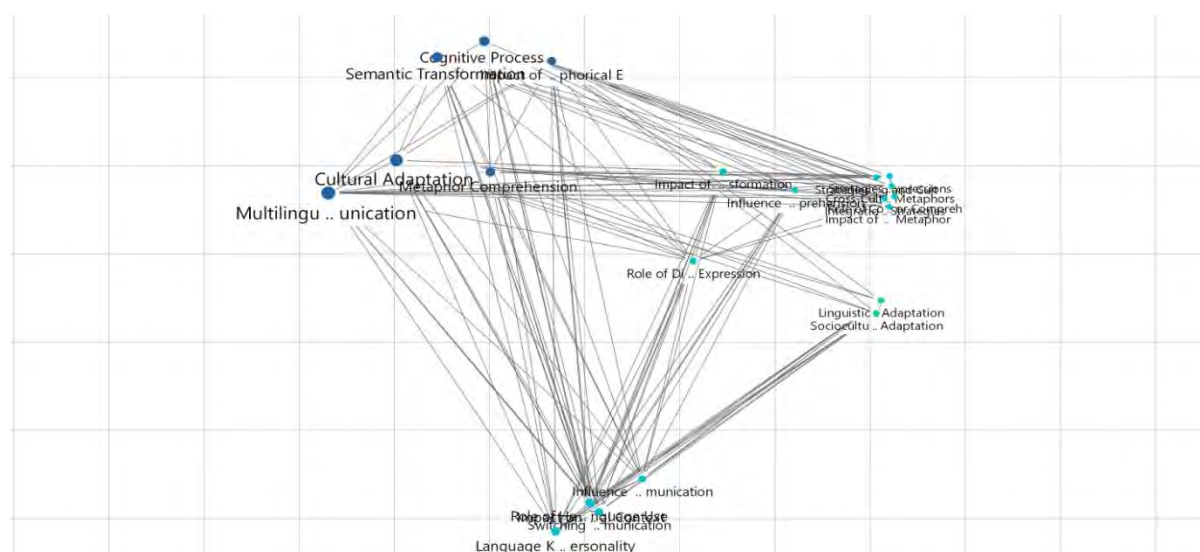

Figure 4. *Themes relations and the way for Model Development*

In general, the analysis of the interview data provides valuable new perspectives on the significance of cross-cultural communication and its consequences for language instruction and training in intercultural communication (Figure 4). The findings highlight the significance of cultural awareness, intercultural competency, and educational innovations in preparing students for multilingual and multicultural settings (see Figure 5). These findings are in line with those of previously conducted research. They will assist in developing effective strategies for teaching languages and training programs for intercultural communication.
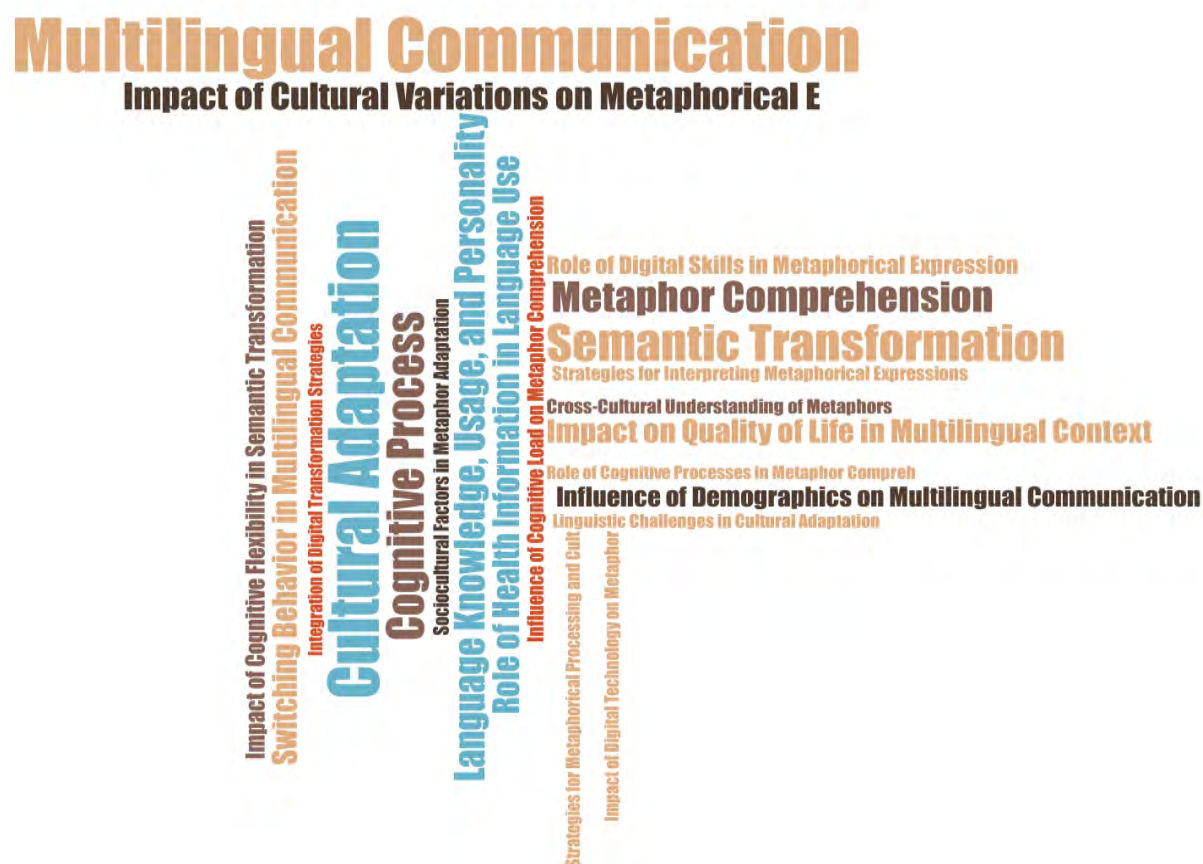
Figure 5. *Cloud of Relevant themes based on Analysis*

Model Development

The all-encompassing model used for this research endeavored to analyze the relationships between semantic transformation, cultural adaptation, metaphor comprehension, the cognitive process, and multilingual communication. The independent variable in this study was semantic transformation, and it was accompanied by three dependent variables, namely digital technology, digital skills, and digital transformation strategy. Culture-specific adaptability and metaphorical understanding served as the dependent variables in this study. The cognitive process was the variable that served as the moderator, while multilingual communication was the variable that served as the contextual variable. Multilingual communication contains several sub-variables, such as demographics, health information, quality of life, language competency, language usage, personality, and switching behavior.

Semantic Transformation

When metaphorical statements are transmitted from one language and culture to another, this process is called semantic transformation (Participant 3; Participant 9). During this process, the meaning of the statements is shifted and modified. This study focused on three sub-variables of semantic transformation: digital technology, digital skills, and digital transformation strategy (see Table 3 for more information). According to Rizk and Hillier (2022), the proliferation of digital technology has resulted in altered communication patterns and the opening of new doors for adapting language and the expression of metaphor. According to Shen et al.'s (2022) research, having digital skills is vital for improving semantic transformations through various digital tools and platforms. In addition, implementing digital transformation strategies simplifies incorporating digital technology and skills into a range of industries, one of which is multilingual communication (Kraus et al., 2021).

Table 3. *Semantic Transformation Analysis*

Step	Description
Step 1: Open Coding	In this step, the interview responses were thoroughly examined to identify initial codes related to semantic transformation. The researcher read the data multiple times, highlighting key concepts and patterns.
Codes:	- Digital Technology - Digital Skills - Digital Transformation Strategy
Step 2: Axial Coding	The second step involved grouping the initial codes into broader categories and subcategories, establishing relationships and connections between the codes.
Categories:	- Technological Advancements - Skill Development - Strategic Implementation
Step 3: Selective Coding	The final step focused on selecting the core themes that best represented the essence of semantic transformation in multilingual communication. Relevant interview excerpts supported these themes.
Core Themes:	- Impact of Digital Technology on Metaphors - Role of Digital Skills in Metaphorical Expression - Integration of Digital Transformation Strategies

Cultural Adaptation

According to Participants 6 and 11, cultural adaptation involves modifying and adjusting metaphoric words to be compatible with the cognitive and cultural frameworks of the target language and culture. A wide range of characteristics, such as demographics, health information, quality of life, linguistic proficiency and usage, personality, and switching behavior, all play a role in cultural adaptation (see Table 4). According to Sit et al.'s (2020) research, having an understanding of the demographics of the target culture helps develop metaphors that cater to the specific wants and preferences of the audience. According to Stanarević Katavić (2019), health knowledge is critical to the process of cultural adaptation since it directly impacts the selection and interpretation of metaphorical expressions that deal with topics linked to health. According to Hendriks and Graafsma (2019), cultural adaptation of metaphors can contribute to improving an individual's well-being in various cultural contexts. This makes the quality of life another significant factor to take into account. According to Piekkari et al.'s (2020) research, the knowledge and usage of a language influence the adaptation of metaphors to conform with the linguistic and cultural norms of the target language. Individuals' psychological traits, such as openness and cultural sensitivity, might also influence their ability to effectively accept metaphors, according to research from Stoermer, Davies, and Froese (2021). Finally, switching behavior refers to how frequently and quickly people switch between languages, influencing their capacity to adapt metaphorical terms (Ding, Ray, Devanbu, & Hellendoorn, 2020). This skill is related to how well people can adapt metaphors.

Table 4. *Cultural Adaptation Analysis*

Step	Description
Step 1: Open Coding	The interview responses were thoroughly examined to identify initial codes related to cultural adaptation. The researcher carefully reviewed the data, identifying recurring ideas and concepts.
Codes:	- Cultural Influence - Adaptation Challenges - Sociocultural Context
Step 2: Axial Coding	This step grouped the initial codes into broader categories and subcategories to establish meaningful connections and relationships.
Categories:	- Cultural Variations - Linguistic Adaptation - Sociocultural Factors
Step 3: Selective Coding	The final step involved selecting the core themes representing the cultural adaptation's essence. These themes were supported by relevant interview excerpts highlighting the complexities and nuances of adapting metaphors in different cultural contexts.
Core Themes:	- Impact of Cultural Variations on Metaphorical Expression - Linguistic Challenges in Cultural Adaptation - Sociocultural Factors in Metaphor Adaptation

Metaphor Comprehension

Knowing and interpreting metaphorical terms used in communication is called metaphor comprehension (Participant 2; Participant 7). The use of cognitive processes is essential to the understanding of metaphors (see Table 5). The metaphorical mappings, conceptual blending, and cognitive flexibility that are part of the cognitive process are examples of the various cognitive mechanisms included in this mediating variable. According to Khatin-Zadeh and Khoshsima (2021), metaphorical mappings translate concepts from one domain to another. This helps with the comprehension and interpretation of metaphors. Conceptual blending

is the process of integrating multiple conceptual features in such a way that it contributes to interpreting complex metaphorical statements (Wong, 2021). According to research by Werkmann Horvat, Bolognesi, and Kohl (2021), cognitive flexibility, the ability to switch between several cognitive categories, facilitates the processing and interpretation of metaphorical expressions.

Table 5. *Metaphor Comprehension Analysis*

Step	Description
Step 1: Open Coding	The researcher thoroughly reviewed the interview responses, identifying initial codes related to metaphor comprehension. Key concepts and patterns were highlighted during this coding process.
Codes:	- Cognitive Processes - Interpretation Strategies - Cross-Cultural Understanding
Step 2: Axial Coding	The initial codes were grouped into broader categories and subcategories, creating meaningful connections and relationships between the codes.
Categories:	- Cognitive Mechanisms - Strategies for Interpreting Metaphors - Cross-Cultural Comprehension
Step 3: Selective Coding	The final step involved selecting the core themes that best captured the essence of metaphor comprehension. These themes were supported by relevant interview excerpts, providing insights into the cognitive processes and cross-cultural understanding of metaphors.
Core Themes:	- Role of Cognitive Processes in Metaphor Comprehension - Strategies for Interpreting Metaphorical Expressions - Cross-Cultural Understanding of Metaphors

Multilingual Communication

Communication in many languages is a component of the surrounding environment that plays a role in the dynamics of semantic development, cultural adaptation, and the ability to understand metaphors (see Table 6). The context of multilingual communication can be changed by factors such as linguistic competence and bilingualism, according to Banerjee et al. (2022). According to Wiesen, Escalona, and Inzitari (2023), disseminating health information in multilingual settings requires effective communication and adapting metaphorical terminology connected to medical concepts. According to Kristensen and Peoples's (2020) research, the capacity to communicate and adapt metaphorical terms in various languages contributes to an individual's quality of life by enhancing their happiness and sense of well-being. According to Piekkari et al.'s (2020) research, knowledge and usage of a language influence the selection, interpretation, and adaption of metaphorical expressions across languages and cultures. According to Dewaele and Botes's (2020) research, personality traits, and cultural upbringing play a role in determining individuals' communication preferences and styles in multilingual settings. The switching behavior of individuals, defined by the frequency of language shifts, affects the individuals' ability to modify metaphorical phrases efficiently when engaging in multilingual conversation (Kremin, 2022).

Table 6. *Contextual Factors: Multilingual Communication Analysis*

Step	Description
Step 1: Open Coding	The interview responses were carefully reviewed to identify initial codes related to contextual factors in multilingual communication. The researcher examined the data, identifying recurring ideas and concepts related to demographics, health information, quality of life, language knowledge, language usage, personality, and switching behavior.
Codes:	- Demographics - Health Information - Quality of Life - Language Knowledge - Language Usage - Personality - Switching Behavior
Step 2: Axial Coding	The initial codes were grouped into broader categories and subcategories to establish meaningful connections and relationships.
Categories:	- Demographic Factors - Influence of Health Information - Impact on Quality of Life - Language Knowledge and Usage - Personality and Language - Switching Behavior in Multilingual Contexts
Step 3: Selective Coding	The core themes were selected based on their relevance to understanding the contextual factors influencing multilingual communication. Relevant interview excerpts supported these themes.
Core Themes:	- Influence of Demographics on Multilingual Communication - Role of Health Information in Language Use - Impact on Quality of Life in Multilingual Contexts - Language Knowledge, Usage, and Personality - Switching Behavior in Multilingual Communication

Cognitive Process

According to Zhang (2019), cognitive processes refer to the mental operations involved in perceiving, understanding, and interpreting information. Within this investigation, cognitive processes play the role of a mediating variable between cultural adaptation and various other factors. Understanding and adapting to new cultural settings requires several mental processes, including attention, perception, memory, and problem-solving (see Table 7 for more information).

Table 7. *Cognitive Processes Analysis*

Step	Description
Step 1: Open Coding	The interview responses were thoroughly reviewed to identify initial codes related to cognitive processes. The researcher carefully analyzed the data, highlighting key concepts and patterns about cognitive mechanisms in metaphorical expression and comprehension.
Codes:	- Conceptual Mapping - Metaphorical Mapping - Cognitive Schemas
Step 2: Axial Coding	The initial codes were organized into broader categories and subcategories to establish connections and relationships between the codes.
Categories:	- Conceptual Mapping Processes - Metaphorical Mapping Strategies - Influence of Cognitive Schemas
Step 3: Selective Coding	The core themes were selected based on their significance in understanding the cognitive processes involved in metaphorical expression and comprehension. Relevant interview excerpts supported these themes.
Core Themes:	- Role of Conceptual Mapping in Metaphor - Strategies for Metaphorical Mapping - Impact of Cognitive Schemas on Metaphor Understanding

The encoding and processing of cultural cues and information are helped along by cognitive processes, which is a factor that contributes to cultural adaptation. They make it possible for individuals to process and incorporate newly acquired cultural knowledge while altering the cognitive frameworks they operate inside (Charoensukmongkol, 2020; Chew & Cerbin, 2021). According to Schoede's (2020) research, to get a deeper understanding of cultural differences and adjust behavior appropriately, cognitive flexibility and open-mindedness are required. "The ability to observe, analyze, and interpret cultural cues is essential for effective adaptation," stated interviewee 2 in this study. Cognitive abilities such as perception and the ability to solve problems help understand the underlying meanings and practices of a new cultural context.

By using cultural adaptation as the dependent variable and cognitive processes as the mediating variable, this study aims to construct a comprehensive model that clarifies the connection between multilingual communication, cultural adaptation, and cognitive processes (see Table 8). By giving insights into the underlying mechanisms and elements that influence cultural adaptation in the context of cognitive processes, the model will help better to understand effective multilingual communication strategies in various cultural situations. This will allow for a better understanding of communicating effectively across several languages.

Table 8. *Mediating Variable: Cognitive Process Analysis*

Step	Description
Step 1: Open Coding	The interview responses were carefully reviewed to identify initial codes related to the cognitive processes mediating the relationship between semantic transformation, cultural adaptation, and metaphor comprehension. The researcher analyzed the data, identifying key concepts and patterns related to the cognitive mechanisms.
Codes:	- Cognitive Flexibility - Metaphorical Processing Strategies - Cognitive Load
Step 2: Axial Coding	The initial codes were grouped into broader categories and subcategories to establish meaningful connections and relationships.
Categories:	- Role of Cognitive Flexibility - Strategies for Metaphorical Processing - Influence of Cognitive Load
Step 3: Selective Coding	The core themes were selected based on their relevance in understanding the mediating role of cognitive processes. Relevant interview excerpts supported these themes.
Core Themes:	- Impact of Cognitive Flexibility in Semantic Transformation - Strategies for Metaphorical Processing and Cultural Adaptation - Influence of Cognitive Load on Metaphor Comprehension

The complete model generally considers semantic transformation, cultural adaptation, metaphor interpretation, the cognitive process, and the variables involved in multilingual communication. The literature supports these connections, which also provides the framework for comprehending the intricate workings of metaphorical expression in multilingual and multicultural contexts.
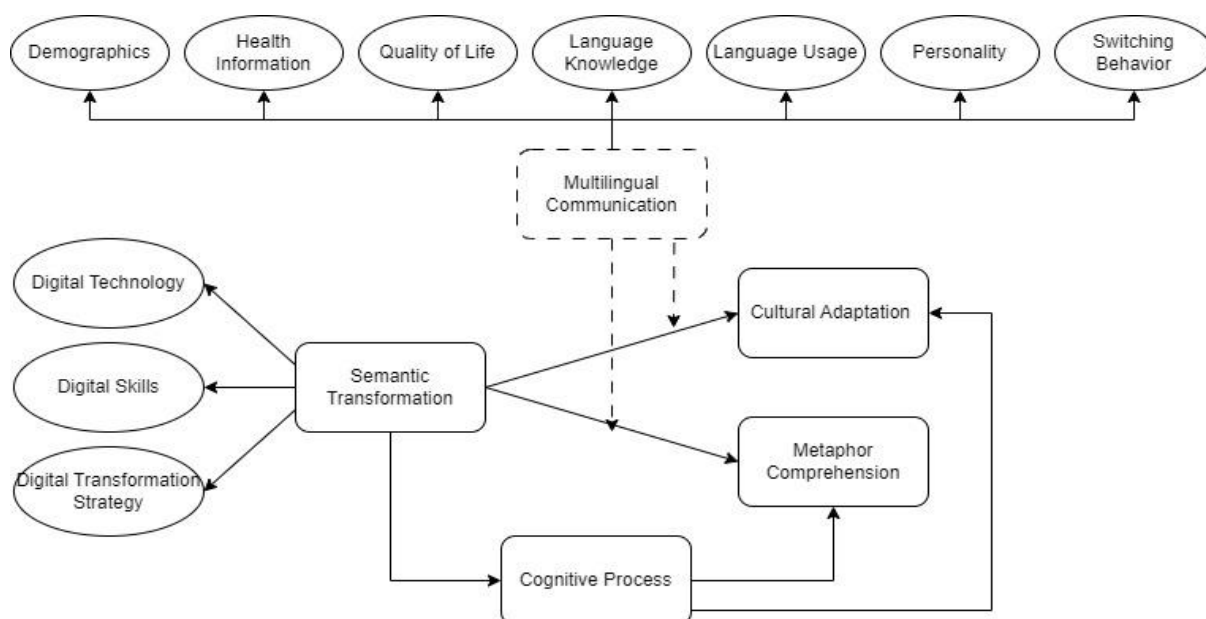

Figure 6. *Proposed Model Derived from Analysis*

Discussion

This research examined the cognitive linguistic perspective on the semantic transformation and cultural adaptation of metaphors in multilingual communication. A more comprehensive understanding of the intricate dynamics of metaphorical expression in diverse multilingual and multicultural settings can be attained by examining the primary themes that surfaced from the analysis of interviews while also considering the all-encompassing model formulated in this investigation.

The initial theme of the analysis pertained to the influence of language proficiency and cultural background on semantic transformation. According to the interviews conducted with participants 4 and 8, individuals possessing greater digital competencies and familiarity with digital technology demonstrated greater proficiency in adapting metaphoric terms across languages. The present discovery aligns with prior scholarly investigations that emphasize the revolutionary influence of digital technology on communication practices and linguistic adjustments (Abdulquadri, Mogaji, Kieu, & Nguyen, 2021). Furthermore, the participants underscored the importance of implementing digital transformation strategies to facilitate the assimilation of digital technology and competencies across various domains, such as multilingual communication (Iyanna, Kaur, Ractham, Talwar, & Islam, 2022).

The second theme revolved around the cultural adaptability of metaphors. According to the investigation's findings, to achieve successful cultural adaptation, it is necessary to comprehend the demographics, health information, quality of life, language competence, language usage, personality, and switching behavior of the target culture (as reported by Participant 6 and Participant 11). The present discovery aligns with previous studies that emphasize the influence of said components on the choice, comprehension, and adjustment of figurative language (Di Paola, Domaneschi, & Pouscoulous, 2020; Gazzillo, Silberschatz, Fimiani, De Luca, & Bush, 2020; Nettle, 2020; Olson, Arroyo-Santos, & Vergara-Silva, 2019; van Ments & Treur, 2021). To achieve successful communication within multilingual settings, it is imperative to understand the cultural subtleties and sensitivities associated with these factors.

The third theme centered on the cognitive mechanisms implicated in comprehending metaphors. The interpretation and comprehension of metaphoric language were deemed significant by Participant 2 and Participant 7, who identified metaphorical mappings, conceptual blending, and cognitive flexibility as crucial factors in this process. The results mentioned above align with the perspective of cognitive linguistics, which prioritizes the cognitive processes that form the basis of comprehending metaphors (Galera Masegosa, 2020; Tseng & Chuang, 2022; Wen & Taylor, 2021). The mediating variable of the cognitive process in forming models provides the theoretical framework for studying the cognitive components of metaphor comprehension in multilingual communication.

The fourth theme pertained to the contextual variable of multilingual communication. The contextual factors of multilingual communication were identified to include language proficiency, health information, quality of life, language knowledge, language usage, personality, and switching behavior, as reported in recent studies by Atabekova, Lutskovskaia, and Gorbatenko (2021), Fisher et al. (2022), Hall and Valdiviezo (2020), Noack, Schäning, and Müller (2022) and Atabekova et al. (2021); Fisher et al. (2022); Hall and Valdiviezo (2020); Noack et al. (2022); Trebits (2021). These elements influence the dynamics of semantic transformation, cultural adaptation, and metaphor comprehension in multilingual situations. Examining the sub-variables of contextual factors offers a comprehensive understanding of the multilingual communication scenario.

Table 9. *Model Development Analysis*

Variable	Definition	Literature Support	Interviewee Responses
Independent Variable	Semantic Transformation	Semantic transformation refers to modifying and adapting the meaning of words, phrases, or concepts within a specific context or domain (Gong & Ribiere, 2021). It involves the utilization of digital technology, digital skills, and a digital transformation strategy to reshape and redefine communication practices (Mugge, Abbu, Michaelis, Kwiatkowski, & Gudergan, 2020).	Interviewee 1: "In our organization, we implemented a digital transformation strategy to adapt to the changing market dynamics. This involved integrating digital technology and developing digital skills to transform our communication processes."
			Interviewee 2: "I believe semantic transformation is essential in today's digital age. We must leverage digital technology and skills to communicate effectively in different languages and cultural contexts."
Dependent Variable	Cultural Adaptation	Cultural adaptation refers to adjusting and adapting to different cultural norms, values, and practices (Gong, Gao, Li, & Lai, 2021). It involves understanding cultural nuances and modifying behaviors and communication styles accordingly (Guan, Deng, & Zhou, 2020).	Interviewee 3: "When interacting with individuals from different cultures, I believe it's important to be aware of their cultural norms and adapt my communication style accordingly. Cultural adaptation allows for smoother and more effective communication."
			Interviewee 4: "As a frequent traveler, I've learned the importance of cultural adaptation. Each country has unique customs and traditions; adapting to those differences is crucial for successful communication and building relationships."
Dependent Variable	Metaphor Comprehension	Metaphor comprehension refers to the ability to understand and interpret figurative language and symbolic expressions (Allen & Butler, 2020). It involves mapping abstract concepts onto concrete domains, enabling individuals to grasp complex ideas and communicate effectively (Thibodeau et al., 2019).	Interviewee 5: "Metaphors are powerful tools in communication. They help convey abstract concepts in a more relatable and understandable way. Understanding metaphors requires making connections between different domains and thinking metaphorically."
			Interviewee 6: "Metaphor comprehension can be challenging, especially when dealing with cross-cultural contexts. Different cultures may have unique metaphorical expressions, and it's important to understand the cultural background to grasp the intended meaning fully."

Variable	Definition	Literature Support	Interviewee Responses
Mediating Variable	Cognitive Process	Cognitive processes refer to the mental activities involved in thinking, perceiving, and understanding information (Borghi, Fini, & Tummolini, 2021). In the context of this study, cognitive processes mediate the relationship between semantic transformation, cultural adaptation, and metaphor comprehension. These processes include cognitive flexibility, metaphorical processing strategies, and cognitive load (Ouwehand, Kroef, Wong, & Paas, 2021)	Interviewee 7: "Cognitive flexibility plays a crucial role in adapting to new communication practices and understanding metaphorical expressions. Being open to different perspectives and ways of thinking enhances our cognitive processes."
			Interviewee 8: "Metaphorical processing strategies influence our interpretation of metaphors. We employ various cognitive mechanisms to make sense of metaphorical expressions, and these strategies can differ across individuals and cultures."
Contextual Variable	Multilingual Communication	Multilingual communication refers to using multiple languages in communication settings (Leung & Jenkins, 2020). It encompasses various factors such as demographics, health information, quality of life, language knowledge, language usage, personality, and switching behavior. These contextual variables influence the effectiveness and dynamics of communication in multilingual contexts (Henry, Thorsen, & MacIntyre, 2021; St. Amant, 2019).	Interviewee 9: "Demographic factors, such as age and educational background, can impact how individuals navigate multilingual communication. Understanding these demographics is essential in tailoring our communication approaches."
(Subvariables and Definitions)			Interviewee 10: "Health information plays a role in language use and understanding. Different cultures may have varying perspectives on health-related topics, and this can shape the communication process."
Demographics	Demographics encompass personal characteristics such as age, gender, education, and occupation that influence communication behaviors and language preferences (Money & Dean, 2019).	Demographic factors can shape language use and communication strategies in multilingual contexts (Galante & dela Cruz, 2021). They can influence language choice, proficiency, and the ability to switch between languages (Bonfieni, Branigan, Pickering, & Sorace, 2019).	Interviewee 11: "My age and cultural background play a significant role in my language preferences. I tend to code-switch more when communicating with people from the same age group and cultural background."
Health Information	Health information refers to knowledge, beliefs, and practices related to health and well-being (Washif et al., 2022). It can influence communication patterns and language choices in multilingual contexts, especially in discussions related to healthcare and medical topics.	Health information can shape language use and understanding, as different cultures may have diverse perspectives on health-related issues (Uebergang, Best, de Silva, & Finlay, 2021). It can impact language choice and proficiency level in discussing health matters (Jackson, Trivedi, & Baur, 2021).	Interviewee 12: "When discussing health issues, it's important to consider cultural sensitivities and beliefs. The choice of language and how we communicate health information can affect the overall understanding and trust in healthcare."
Quality of Life	Quality of life refers to an individual's overall well-being and satisfaction with various aspects of life, such as health, relationships, and living conditions (Nevado-Peña, López-Ruiz, & Alfaro-Navarro, 2019). It influences communication patterns and language use in multilingual contexts, as perceptions and priorities regarding the quality of life may vary across cultures.	Differences in quality-of-life perceptions can influence communication behaviors and language choices in multilingual settings (Yanaprasart & Melo-Pfeifer, 2019). Individuals may prioritize and express their well-being differently based on cultural norms and values (Kitayama, Berg, & Chopik, 2020).	Interviewee 13: "Quality of life can differ between cultures. It affects how individuals express their needs and priorities in communication. Understanding these cultural differences is essential in establishing effective multilingual communication."

Variable	Definition	Literature Support	Interviewee Responses
Language Knowledge and Usage	Language knowledge refers to an individual's proficiency and understanding of multiple languages (Matud, López-Curbelo, & Fortes, 2019). Language usage refers to using languages in different contexts and interactions. Both factors impact multilingual communication, as language skills and preferences influence language choice and code-switching behavior (Tenés et al., 2023).	Language knowledge and usage are key determinants of multilingual communication patterns and strategies (Khoong, Rivadeneira, Hiatt, & Sarkar, 2020). Proficiency in different languages and the ability to navigate between them affect communication effectiveness in multilingual contexts (Festman, 2021).	Interviewee 14: "My language proficiency and comfort level in each language influence how I switch between them during conversations. I tend to use the language in which I feel more confident when discussing complex or emotional topics."
Personality	Personality traits such as extroversion, introversion, and cultural adaptability, can influence language preferences and communication styles in multilingual contexts (Azadipour, 2019).	Individual personality traits can impact language choices, code-switching behavior, and communication styles in multilingual interactions (Doğruöz, Sitaram, Bullock, & Toribio, 2023).	Interviewee 15: "As an extrovert, I feel more comfortable using multiple languages and code-switching during conversations. It allows me to adapt to different social contexts and connect with people more effectively."
Switching Behavior	Switching behavior refers to the intentional alternation between languages during communication (Fröhlich, Sievers, Townsend, Gruber, & van Schaik, 2019). It includes code-switching, code-mixing, and language-switching. The frequency and motivations behind switching behavior can vary across individuals and contexts, impacting multilingual communication dynamics.	Switching behavior is a common phenomenon in multilingual contexts, influenced by various factors such as language proficiency, social norms, and identity (Stavans & Porat, 2019). It affects the flow and comprehension of communication, highlighting the complexity of multilingual interactions (Henry et al., 2021).	Interviewee 16: "Switching between languages depends on the conversation's formality and the participants' language preferences. It's important to gauge the context and the comfort level of others before deciding to switch languages."

The all-encompassing model of this research integrates the autonomous variable of semantic transformation, along with its subsidiary variables of digital technology, digital skills, and digital transformation strategy (refer to Table 9). The dependent variables under investigation are cultural adaptability and metaphor comprehension. The cognitive process is the mediating variable, while multilingual communication is the contextual variable. The latter encompasses various sub-variables such as demographics, health information, quality of life, language knowledge, language usage, personality, and switching behavior. The present model offers a comprehensive framework for understanding the complex dynamics of metaphors in multilingual communication.

The present study contributes to the existing literature by underscoring the significance of attending to semantic transformation, cultural adaptability, metaphor comprehension, cognitive mechanisms, and multilingual communication context. The theme analysis aligns with previous scholarly investigations and provides valuable perspectives on the factors and mechanisms implicated in successful cross-cultural and cross-linguistic communication.

The implications of this research are manifold. To begin with, the statement underscores the importance of developing digital competencies and utilizing digital tools to facilitate effective semantic conversion in cross-lingual communication. Secondly, this highlights the significance of considering cultural adaptation and the various factors that impact it to ensure the effective communication of metaphoric expressions. Thirdly, the highlighted above are the cognitive procedures implicated in comprehending metaphors, shedding light on the underlying mechanisms of metaphor comprehension in multilingual settings. The text underscores the significance of the multilingual communication context and its various sub-variables in influencing the processes of semantic transformation, cultural adaptation, and metaphor comprehension.

Theoretical and Practical Implications

This study contributes to cognitive linguistics by offering insights into the intricate dynamics of metaphorical language in environments where multiple languages are used. Examining the principal themes and formulating the all-encompassing framework furnish a theoretical structure for comprehending the interplay between semantic alteration, cultural adjustment, metaphor interpretation, cognitive operation, and multilingual communication milieu. The present research contributes to comprehending the mechanisms underlying the creation, interpretation, and modification of metaphoric expressions across diverse linguistic and cultural milieus by considering these distinctive features.

This research holds significant practical implications that extend across various academic disciplines, including but not limited to multilingual communication. The findings of this study have the potential to contribute to the improvement of language instruction and acquisition. Educators can utilize this study's results to enhance students' proficiency in comprehending and using metaphoric expressions across various languages. This can be achieved by integrating these expressions into the curriculum design and pedagogical practices. Incorporating digital technology and digital skills instruction can equip learners with the necessary resources to navigate communication in multilingual settings proficiently.

Subsequently, intercultural communication training programs could utilize the abovementioned discoveries to enhance cultural adaptability and comprehension across diverse contexts. These programs aim to equip individuals with the necessary skills to navigate intercultural interactions with sensitivity and competence. This is achieved by enhancing knowledge of the factors that drive cultural adaptation and providing effective communication techniques. Enhancing cultural empathy and fostering cross-cultural comprehension is crucial for cultivating positive relationships and dismantling communication barriers.

In addition, professionals in the field of multilingual communication, including translators, interpreters, and individuals engaged in international business, could potentially leverage the results of this investigation to enhance their respective practices. Comprehending the cognitive mechanisms implicated in interpreting metaphors enables experts to communicate metaphorical expressions across diverse linguistic and cultural contexts effectively. To ensure effective and culturally appropriate communication, individuals should consider contextual factors and adapt their communication strategies accordingly.

The findings of this study have practical implications that can be useful for policymakers and organizations operating in contexts characterized by linguistic and cultural diversity. Individuals can develop effective communication strategies that connect with their intended audiences by recognizing the importance of semantic transformation, cultural adaptability, and metaphor comprehension. Utilizing digital transformation strategies and digital technologies can enhance communication effectiveness and foster greater cross-cultural collaboration.

It is imperative to underscore that although this study provides valuable theoretical and pragmatic perspectives, certain constraints necessitate consideration. The generalizability of the findings may be limited due to the small sample size of senior academics examined in the study. It is possible that the results may not be transferable to other populations or contexts. Moreover, the qualitative nature of the study restricts the ability to establish causation between the variables. Subsequent studies may overcome these constraints by conducting quantitative inquiries on a broader and more heterogeneous population.

The investigation of the semantic transformation and cultural adaptation of metaphor in multilingual communication contributes to the advancement of theoretical and practical knowledge. Theoretical implications of metaphorical expression aid in comprehending the cognitive and cultural aspects, whereas practical consequences impact language education, intercultural communication preparation, and professional conduct in multilingual settings. The present study provides valuable insights by connecting theoretical concepts and practical applications. This linkage has the potential to enhance the effectiveness of communication and promote cross-cultural comprehension in settings characterized by linguistic and cultural diversity.

Limitations and Recommendations

Despite the valuable insights provided by this study on the semantic transformation and cultural adaptation of metaphor in multilingual communication, it is important to acknowledge and address certain limitations. The present chapter analyzes the limitations mentioned above and proposes potential avenues for future investigation to address these gaps and expand our comprehension of the topic.

One limitation of this study is its sample size and composition. A distinguished cohort of senior-level scholars with expertise in academic and industrial domains conducted the research. Although the sample mentioned above provides valuable perspectives, it may not represent the broader population that employs multiple languages for communication. Future studies may consider utilizing a more extensive and diverse sample, encompassing individuals from various professional backgrounds, with varying levels of linguistic

proficiency, and from diverse cultural contexts. Enhancing the generalizability of the findings and acquiring a more comprehensive understanding of the phenomena can be achieved through this approach.

The qualitative design employed in the study represents an additional limitation. The primary method employed in the study for data collection was semi-structured interviews. While this approach facilitates comprehensive data collection and thorough analysis, it may be susceptible to researcher bias and possess restricted applicability to broader populations. Subsequent research endeavors may employ hybrid research methodologies incorporating both qualitative and quantitative methods. The validity of a study can be improved by supplementing qualitative analysis with quantitative data, thereby providing statistical support for the conclusions drawn.

This investigation also examined the semantic and cognitive mechanisms implicated in using metaphorical language, adopting a cognitive linguistic perspective. Theoretical frameworks and viewpoints such as sociolinguistics, discourse analysis, and pragmatics exist and can offer a further understanding of multilingual communication's cultural and contextual dimensions. To enhance the comprehensive experience of metaphorical discourse in multilingual settings, forthcoming research could employ a multidisciplinary methodology that integrates various theoretical perspectives.

The direction of future research may vary based on the acknowledged constraints. Initially, it is plausible to conduct quantitative research to expand and authenticate the outcomes of qualitative analysis. Empirical evidence supporting the correlations in the comprehensive model can be obtained through quantitative data derived from extensive surveys, experimental designs, or longitudinal studies. These studies offer an opportunity to delve deeper into the interplay among semantic transformation, cultural adaptation, metaphor comprehension, cognitive mechanisms, and environmental variables in multilingual communication.

Subsequently, future research endeavors may delve into the impact of specific environmental variables on multilingual communication. Research endeavors may focus on various aspects, such as the influence of linguistic aptitude, health-related knowledge, the standard of living, or demographic factors on the mechanisms of semantic alteration and cultural assimilation. A more comprehensive examination of these factors can provide researchers with a better understanding of their impact on metaphorical expression and communication outcomes.

Comparative research across various languages and cultures can provide insights into metaphorical expression's universality and cultural specificity. Scholars can identify patterns, distinctions, and intercultural discrepancies by examining the utilization and interpretation of metaphors in various linguistic and cultural contexts. The implementation of such practices can facilitate the development of communication strategies that are culturally sensitive and enhance the efficacy of cross-cultural communication.

Subsequent research endeavors ought to investigate the impact of technological advancements on metaphorical language usage and multilingual communication. Due to their rapid advancement, the examination of the effects of digital technology, emerging communication platforms, and tools on semantic transformation, cultural adaptability, and metaphor comprehension. Research endeavors may investigate the utilization of digital technologies in facilitating multilingual communication, the impact of digital literacy on language acquisition, and the potential benefits and drawbacks associated with digital transformation methodologies.

Although this research has provided insight into the semantic and cultural modifications of metaphors in multilingual communication, it is imperative to acknowledge its limitations and address any deficiencies through further investigation. Enhancing the sample size, employing mixed-methods methodologies, incorporating diverse theoretical perspectives, and scrutinizing specific contextual factors could facilitate researchers' comprehension of this complex phenomenon. The endeavors mentioned above are poised to enhance the theoretical frameworks, practical implementations, and methodologies of proficient communication within contexts characterized by linguistic and cultural diversity.

Conclusion

This research examined the cognitive linguistic perspective on the semantic transformation and cultural adaptation of metaphors in multilingual communication. In a qualitative study comprising 12 semi-structured interviews, the researcher identified, evaluated, and discussed the key topics. The all-encompassing model of this study establishes a fundamental basis for comprehending the intricate dynamics of symbolic communication in settings that involve multiple languages and cultures. The concluding section of this work provides a comprehensive overview of the significant discoveries, evaluates their implications, and proposes potential avenues for further investigation.

The research outcomes illuminate various crucial aspects of using metaphors in cross-linguistic communication. The initial theme underscored the significance of linguistic proficiency and cultural heritage in semantic evolution. Based on the interviews, it was found that individuals possessing advanced digital skills and familiarity with digital technology exhibited a higher capacity to adapt metaphoric expressions across different languages. The observation

mentioned above highlights the significant influence of digital technology on language evolution and underscores the imperative of possessing digital competencies to facilitate efficacious semantic modifications.

The second area of emphasis pertained to adapting metaphorically to different cultures. It has been established that a comprehensive comprehension of various factors such as demographics, health-related data, quality of life, linguistic proficiency, language usage, personality traits, and switching behavior is imperative to achieve successful cultural adaptation. The selection, interpretation, and transformation of metaphoric expressions are influenced by various factors that align with the cognitive and cultural frameworks of the target language and culture. Acknowledging the complexities and nuances associated with these factors is imperative to facilitate effective cross-linguistic communication.

The third theme investigated the cognitive processes involved in the comprehension of metaphors. The significance of metaphorical mappings, conceptual mixing, and cognitive flexibility in comprehending and interpreting metaphoric statements has been established. The present study elucidates the cognitive mechanisms underlying the processing and interpretation of metaphors in multilingual communication. Incorporating cognitive processes as a mediator in constructing models highlights the significance of investigating the cognitive dimensions of metaphor interpretation.

The fourth theme focused on the contextual variable of multilingual communication. The context of multilingual communication is influenced by several significant factors, including language competence, health information, quality of life, language knowledge, language usage, personality, and switching behavior. These elements influence the dynamics of semantic transformation, cultural adaptation, and metaphor comprehension in multilingual situations. An in-depth understanding of the impact of metaphorical expression in multilingual communication can be achieved by examining sub-variables within contextual variables.

The present study's all-encompassing framework encompasses the autonomous factor of semantic transformation alongside digital technology, digital competencies, and digital transformation tactics. The interdependence between cultural adaptation and metaphor comprehension is contingent upon the mediating variable of the cognitive process. The multilingual communication contextual variable encompasses various sub-variables, offering a comprehensive framework for understanding the intricacies of metaphor in multilingual communication.

The implications of the results obtained from this study are extensive and can impact various industries. Initially, they contribute to the language education field by emphasizing the importance of digital technology and digital competencies in facilitating effective semantic conversions. In multilingual classrooms, educators can leverage digital tools and strategies to enhance language acquisition and proficiency in using metaphors. The second point highlights the significance of cultural adaptation and the recognition of unique requirements and preferences of different cultures in intercultural communication training. This has implications for the development of effective intercultural communication strategies. Cultivating cultural empathy and sensitivity can enhance communication efficacy and mitigate the likelihood of misinterpretations in contexts where multiple languages are present.

The results also have pragmatic implications for individuals engaged in cross-linguistic communication, including translators, interpreters, and experts in international contexts. Comprehending the cognitive mechanisms implicated in the interpretation of metaphors could potentially enhance the ability of learners to communicate metaphorical expressions in diverse linguistic and cultural contexts effectively. Moreover, a deeper understanding of the determinants of the multilingual communication context can prove advantageous for policymakers and entities operating in various linguistic and cultural environments. By considering these variables, individuals can construct impactful communication strategies that resonate with their intended audiences.

There exist various avenues for future investigation that can be explored. The initial step involves conducting quantitative analyses to authenticate and explore the interconnections outlined in the comprehensive model formulated in this study. Conducting extensive surveys or experimental research can provide further insight into the interdependence of variables and their influence on communication in multilingual settings. Furthermore, longitudinal investigations may examine the temporal evolution of semantic transformation and cultural adaptation while considering various factors, such as technological advancements and sociocultural shifts. Conducting comparative research across multiple languages and cultures can aid in comprehending the universality and cultural specificity of metaphorical expression, thereby offering valuable insights into cross-cultural communication.

Ultimately, our research contributes to the existing knowledge base regarding the semantic evolution and cultural assimilation of metaphors in multilingual discourse. The analysis of the fundamental concepts, combined with the elaborated comprehensive framework, yields valuable perspectives on the challenges of figurative language usage in linguistic and cultural diversity settings. The study's results hold importance for language pedagogy, intercultural communication training, and productive communication strategies in contexts involving multiple languages. The present research offers a comprehensive theoretical framework to enhance communication in diverse linguistic and cultural settings. This framework considers various factors such as semantic transformation, cultural adaptation, metaphor comprehension, cognitive process, and the context of multilingual communication.

References

Abdel-Raheem, A. (2021). Where Covid metaphors come from: reconsidering context and modality in metaphor. *Social Semiotics*, 1-40. doi: https://doi.org/10.1080/10350330.2021.1971493

Abdel-Raheem, A. (2022). Metaphorical creativity contributing to multimodal impoliteness in political cartoons. *Intercultural Pragmatics, 19*(1), 35-70. doi: https://doi.org/10.1515/ip-2022-0002

Abdul Malik, N., Ya Shak, M. S., Mohamad, F., & Joharry, S. A. (2022). Corpus-Based Studies of Metaphor: An Overview. *Arab World English Journal, 13*(2), 512-528. doi: https://dx.doi.org/10.24093/awej/vol13no2.36

Abdulaal, M. A. A.-D., Abuslema, N. F. M. A., Hal, A. Z. M., Amer, A. A., & Altohami, W. (2023). A multimodal investigation of EFL upper-intermediate learners' conceptual metaphors of language learning with some psychological implications. *Humanities and Social Sciences Communications, 10*(1), 1-8. doi: https://doi.org/10.1057/s41599-023-01546-9

Abdulquadri, A., Mogaji, E., Kieu, T. A., & Nguyen, N. P. (2021). Digital transformation in financial services provision: A Nigerian perspective to the adoption of chatbot. *Journal of Enterprising Communities: People and Places in the Global Economy, 15*(2), 258-281. doi: https://doi.org/10.1108/JEC-06-2020-0126

Allen, M. L., & Butler, H. (2020). Can drawings facilitate symbolic understanding of figurative language in children? *British Journal of Developmental Psychology, 38*(3), 345-362. doi: https://doi.org/10.1111/bjdp.12330

An, R., Zhu, J., Li, Y., & Zhu, H. (2022). Acculturation in a multicultural classroom: perspectives within the yin-yang metaphor framework. *Language and Intercultural Communication, 22*(5), 534-551. doi: https://doi.org/10.1080/14708477.2022.2112960

Arshad, R., & Naseer, M. (2019). Digital transformation in marketing mobile phones industry: evaluating marketers strategies for cross-cultural advertisements. *Online Journal of Communication and Media Technologies, 9*(3), e201915. doi: https://doi.org/10.29333/ojcmt/5841

Atabekova, A., Lutskovskaia, L., & Gorbatenko, R. (2021). Developing multiliteracy skills and pragmatic communication awareness of university students learning a foreign language (English) for specific purposes. *Thinking Skills and Creativity, 42*, 100956. doi: https://doi.org/10.1016/j.tsc.2021.100956

Augé, A. (2023). *Metaphor and Argumentation in Climate Crisis Discourse*. Taylor & Francis. doi: https://doi.org/10.4324/9781003342908

Azadipour, S. (2019). Personality types and intercultural competence of foreign language learners in education context. *Journal of Education and Health Promotion, 8*, 236. doi: https://doi.org/10.4103/jehp.jehp_447_18

Banerjee, I., Lambert, J. M., Copeland, B. A., Paranczak, J. L., Bailey, K. M., & Standish, C. M. (2022). Extending functional communication training to multiple language contexts in bilingual learners with challenging behavior. *Journal of Applied Behavior Analysis, 55*(1), 80-100. doi: https://doi.org/10.1002/jaba.883

Bearman, M., Mahoney, P., Tai, J., Castanelli, D., & Watling, C. (2021). Invoking culture in medical education research: a critical review and metaphor analysis. *Medical Education, 55*(8), 903-911. doi: https://doi.org/10.1111/medu.14464

Beknazarova, U. U., Almautova, A. B., Yelemessova, S. M., & Abadildayeva, S. K. (2021). The cognitive function of a conceptual metaphor and its methodological foundations. *Journal of Language and Linguistic Studies, 17*(3), 1312-1324. doi: https://doi.org/10.52462/jlls.94

Bingzhuan, P. (2021). Intercultural communicative competence teaching and assessment based on modern information technology. *International Journal of Emerging Technologies in Learning (Online), 16*(7), 175. doi: https://doi.org/10.3991/ijet.v16i07.21369

Black, A. (2019). *How Do We Construct Worlds With Words? A Study of Metaphors and Conceptions of Outer Space in Parisian French*. (Doctoral Dissertation, Concordia University). Retrieved from https://spectrum.library.concordia.ca/id/eprint/985784

Bonfieni, M., Branigan, H. P., Pickering, M. J., & Sorace, A. (2019). Language experience modulates bilingual language control: The effect of proficiency, age of acquisition, and exposure on language switching. *Acta psychologica, 193*, 160-170. doi: https://doi.org/10.1016/j.actpsy.2018.11.004

Borghi, A. M., Fini, C., & Tummolini, L. (2021). Abstract concepts and metacognition: searching for meaning in self and others. In *Handbook of embodied psychology: thinking, feeling, and acting* (pp. 197-220). Springer, Cham. doi: https://doi.org/10.1007/978-3-030-78471-3_9

Borsboom, D., van der Maas, H. L., Dalege, J., Kievit, R. A., & Haig, B. D. (2021). Theory construction methodology: A practical framework for building theories in psychology. *Perspectives on Psychological Science, 16*(4), 756-766. doi: https://doi.org/10.1177/1745691620969647

Brugman, B. C., Burgers, C., & Vis, B. (2019). Metaphorical framing in political discourse through words vs. concepts: A meta-analysis. *Language and Cognition, 11*(1), 41-65. doi: https://doi.org/10.1017/langcog.2019.5

Canal, P., Bischetti, L., Bertini, C., Ricci, I., Lecce, S., & Bambini, V. (2022). N400 differences between physical and mental metaphors: The role of Theories of Mind. *Brain and Cognition, 161*, 105879. doi: https://doi.org/10.1016/j.bandc.2022.105879

Charoensukmongkol, P. (2020). The efficacy of cultural intelligence for adaptive selling behaviors in cross-cultural selling: The moderating effect of trait mindfulness. *Journal of Global Marketing, 33*(3), 141-157. doi: https://doi.org/10.1080/08911762.2019.1654586

Chaudhary, N., & Sriram, S. (2020). Musings about metaphors and models: The need to put psychology together again. *Integrative Psychological and Behavioral Science*, 1-17. doi: https://doi.org/10.1007/s12124-020-09575-8

Chaya, P., & Inpin, B. (2020). Effects of Integrating Movie-Based Mobile Learning Instruction for Enhancing Thai University Students' Speaking Skills and Intercultural Communicative Competence. *English Language Teaching, 13*(7), 27-45. doi: http://dx.doi.org/10.5539/elt.v13n7p27

Chen, X., Ren, H., Liu, Y., Okumus, B., & Bilgihan, A. (2020). Attention to Chinese menus with metaphorical or metonymic names: An eye movement lab experiment. *International Journal of Hospitality Management, 84*, 102305. doi: https://doi.org/10.1016/j.ijhm.2019.05.001

Chew, S. L., & Cerbin, W. J. (2021). The cognitive challenges of effective teaching. *The Journal of Economic Education, 52*(1), 17-40. doi: https://doi.org/10.1080/00220485.2020.1845266

Chin, T., Wang, S., & Rowley, C. (2021). Polychronic knowledge creation in cross-border business models: a sea-like heuristic metaphor. *Journal of Knowledge Management, 25*(1), 1-22. doi: https://doi.org/10.1108/JKM-04-2020-0244

Cohn, N., & Magliano, J. P. (2020). Editors' introduction and review: Visual narrative research: An emerging field in cognitive science. *Topics in Cognitive Science, 12*(1), 197-223. doi: https://doi.org/10.1111/tops.12473

Coll-Florit, M., & Climent, S. (2019). A new methodology for conceptual metaphor detection and formulation in corpora: A case study on a mental health corpus. *SKY Journal of Linguistics, 32*, 43-74. Retrieved from http://www.linguistics.fi/julkaisut/SKY2019/SKYJoL32_Coll-Florit_Climent.pdf

Csatár, P. (2022). Extended conceptual metaphor theory. *Acta Linguistica Academica, 69*(6), 263–270. doi: https://doi.org/10.1556/2062.2021.00528

Deng, Y., Yang, J., & Wan, W. (2021). Embodied metaphor in communication about lived experiences of the COVID-19 pandemic in Wuhan, China. *Plos one, 16*(12), e0261968. doi: https://doi.org/10.1371/journal.pone.0261968

Dewaele, J.-M., & Botes, E. (2020). Does multilingualism shape personality? An exploratory investigation. *International Journal of Bilingualism, 24*(4), 811-823. doi: https://doi.org/10.1177/1367006919888581

Di Paola, S., Domaneschi, F., & Pouscoulous, N. (2020). Metaphorical developing minds: The role of multiple factors in the development of metaphor comprehension. *Journal of Pragmatics, 156*, 235-251. doi: https://doi.org/10.1016/j.pragma.2019.08.008

Ding, Y., Ray, B., Devanbu, P., & Hellendoorn, V. J. (2020). Patching as translation: the data and the metaphor. In *Proceedings of the 35th IEEE/ACM International Conference on Automated Software Engineering* (pp. 275-286). Association for Computing Machinery. doi: https://doi.org/10.1145/3324884.3416587

Dirven, R., & Pörings, R. (2002). *Metaphor and metonymy in comparison and contrast*. Walter de Gruyter.

Discua Cruz, A., Hamilton, E., & Jack, S. L. (2021). Understanding entrepreneurial opportunities through metaphors: A narrative approach to theorizing family entrepreneurship. *Entrepreneurship & Regional Development, 33*(5-6), 405-426. doi: https://doi.org/10.1080/08985626.2020.1727089

Doğruöz, A. S., Sitaram, S., Bullock, B. E., & Toribio, A. J. (2023). A survey of code-switching: Linguistic and social perspectives for language technologies. *arXiv preprint arXiv:2301.01967*. doi: https://doi.org/10.48550/arXiv.2301.01967

Du, J., Li, F. T., Ge, Y., & Zhang, J. (2023). Separation events in Mandarin, Russian and Korean: A crosslinguistic event-categorization study. *Review of Cognitive Linguistics*. doi: https://doi.org/10.1075/rcl.00143.du

Enciso, P. (2020). Reframing history in sociocultural theories: Toward an expansive vision. In *Reframing sociocultural research on literacy* (pp. 49-74). Routledge. doi: https://doi.org/10.4324/9781003064428-4

Erdoğan, V. (2019). Integrating 4C skills of 21st century into 4 language skills in EFL classes. *International Journal of Education and Research, 7*(11), 113-124. Retrieved from https://www.ijern.com/journal/2019/November-2019/09.pdf

Feng, D. W. (2019). Analyzing multimodal Chinese discourse: Integrating social semiotic and conceptual metaphor theories. In *The Routledge handbook of Chinese discourse analysis* (pp. 65-81). Routledge. doi: https://doi.org/10.4324/9781315213705-5

Festman, J. (2021). Learning and processing multiple languages: The more the easier? *Language Learning, 71*(S1), 121-162. doi: https://doi.org/10.1111/lang.12437

Fisher, L., Evans, M., Forbes, K., Gayton, A., Liu, Y., & Rutgers, D. (2022). Language experiences, evaluations and emotions (3Es): analysis of structural models of multilingual identity for language learners in schools in England. *International Journal of Multilingualism*, 1-21. doi: https://doi.org/10.1080/14790718.2022.2060235

Fröhlich, M., Sievers, C., Townsend, S. W., Gruber, T., & van Schaik, C. P. (2019). Multimodal communication and language origins: integrating gestures and vocalizations. *Biological Reviews, 94*(5), 1809-1829. doi: https://doi.org/10.1111/brv.12535

Galante, A., & dela Cruz, J. W. N. (2021). Plurilingual and pluricultural as the new normal: an examination of language use and identity in the multilingual city of Montreal. *Journal of Multilingual and Multicultural Development*, 1-16. doi: https://doi.org/10.1080/01434632.2021.1931244

Galera Masegosa, A. (2020). The role of echoing in meaning construction and interpretation: A cognitive-linguistic perspective. *Review of Cognitive Linguistics, 18*(1), 19-41. doi: https://doi.org/10.1075/rcl.00049.mas

Gandolfo, S. (2019). Metaphors of metaphors: Reflections on the use of conceptual metaphor theory in premodern Chinese texts. *Dao, 18*, 323-345. doi: https://doi.org/10.1007/s11712-019-09669-0

Gary, M. (2021). Re-framing Conceptual Metaphor Translation Research in the Age of Neural Machine Translation: Investigating Translators'added Value With Products and Processes. *Training, Language and Culture, 5*(1), 37-56. doi: https://doi.org/10.22363/2521-442X-2021-5-1-37-56

Gazzillo, F., Silberschatz, G., Fimiani, R., De Luca, E., & Bush, M. (2020). Dreaming and adaptation: The perspective of control-mastery theory. *Psychoanalytic Psychology, 37*(3), 185–198. doi: https://doi.org/10.1037/pap0000252

Ghazinoory, S., & Aghaei, P. (2023). Metaphor research as a research strategy in social sciences and humanities. *Quality & Quantity*, 1-22. doi: https://doi.org/10.1007/s11135-023-01641-8

Golfam, A., Ghorbanpour, A., & Mahdipour, N. (2019). A comparative study of the conceptual metaphors of time in Persian and English. *Journal of Applied Studies in Language, 3*(1), 43-55. doi: https://dx.doi.org/10.31940/jasl.v3i1.1342

Gong, C., & Ribiere, V. (2021). Developing a unified definition of digital transformation. *Technovation, 102*, 102217. doi: https://doi.org/10.1016/j.technovation.2020.102217

Gong, Y., Gao, X., Li, M., & Lai, C. (2021). Cultural adaptation challenges and strategies during study abroad: New Zealand students in China. *Language, Culture and Curriculum, 34*(4), 417-437. doi: https://doi.org/10.1080/07908318.2020.1856129

Grisham, T. W. (2005). Cultural Knowledge Transfer Using Metaphors. *PMISCC.Cultural Knowledge Transfer*. Retrieved from http://thomasgrisham.com/wp-content/uploads/2020/04/Cultural-Knowledge-Transfer-Using-Metaphors-1-1.pdf

Guan, Y., Deng, H., & Zhou, X. (2020). Understanding the impact of the COVID-19 pandemic on career development: Insights from cultural psychology. *Journal of Vocational Behavior, 119*, 103438. doi: https://doi.org/10.1016/j.jvb.2020.103438

Guan, Y., & Forceville, C. (2020). Making cross-cultural meaning in five Chinese promotion clips: Metonymies and metaphors. *Intercultural Pragmatics, 17*(2), 123-149. doi: https://doi.org/10.1515/ip-2020-0007

Hall, J., & Valdiviezo, S. (2020). The social worker as language worker in a multilingual world: Educating for language competence. *Journal of Social Work Education, 56*(1), 17-29. doi: https://doi.org/10.1080/10437797.2019.1642275

He, J. (2023). Textual Metamorphosis Along with Poetical Re-creation: The 'Nachdichtung'of Ancient Chinese Poetry in Gustav Mahler's Das Lied von der Erde. In *Contemporary German–Chinese Cultures in Dialogue* (pp. 171-188). Springer. doi: https://doi.org/10.1007/978-3-031-26779-6_10

He, S. (2021). Cognitive metaphor theories in translation studies: Toward a dual-model parametric approach. *Intercultural Pragmatics, 18*(1), 25-52. doi: https://doi.org/10.1515/ip-2021-0002

Heim, E. M. (2022). The "Ins" and "Outs" of Matthew 15: 1–20: Insights on Prepositions from Prototype Theory and Metaphor Theory. In *Postclassical Greek Prepositions and Conceptual Metaphor: Cognitive Semantic Analysis and Biblical Interpretation* (pp. 241-258). De Gruyter. doi: https://doi.org/10.1515/9783110777895-010

Hendriks, T., & Graafsma, T. (2019). Guidelines for the Cultural Adaptation of Positive Psychology Interventions. *Caribbean Journal of Psychology, 11*(1), 7-32. Retrieved from https://www.uwipress.com/cjp-vol-11-i1-a1

Henry, A., Thorsen, C., & MacIntyre, P. D. (2021). Willingness to communicate in a multilingual context: part one, a time-serial study of developmental dynamics. *Journal of Multilingual and Multicultural Development*, 1-20. doi: https://doi.org/10.1080/01434632.2021.1931248

Heyvaert, P., Randour, F., Dodeigne, J., Perrez, J., & Reuchamps, M. (2020). Metaphors in political communication: A case study of the use of deliberate metaphors<? br?> in non-institutional political interviews. *Journal of Language and Politics, 19*(2), 201-225. doi: https://doi.org/10.1075/jlp.17057.hey

Hoff, H. E. (2020). The evolution of intercultural communicative competence: Conceptualisations, critiques and consequences for 21st century classroom practice. *Intercultural Communication Education, 3*(2), 55-74. doi: http://dx.doi.org/10.29140/ice.v3n2.264

Holler, J., & Levinson, S. C. (2019). Multimodal language processing in human communication. *Trends in Cognitive Sciences, 23*(8), 639-652. doi: https://doi.org/10.1016/j.tics.2019.05.006

Howard, K. B., Katsos, N., & Gibson, J. L. (2021). Practitioners' perspectives and experiences of supporting bilingual pupils on the autism spectrum in two linguistically different educational settings. *British Educational Research Journal, 47*(2), 427-449. doi: https://doi.org/10.1002/berj.3662

Hsu, H.-L., Lai, H.-l., & Liu, J.-S. (2022). democracy in Taiwanese presidential inaugural addresses: Metaphors, source domains, scenarios, and ideologies. *Concentric, 48*(2), 212-248. doi: https://doi.org/10.1075/consl.22006.hsu

Huang, Y., & Xia, X. (2022). Cross-Cultural Education and College English Speculative Reading Teaching in Multi-Modal Theoretical Environment. *Journal of Environmental and Public Health, 2022*, 7672692. doi: https://doi.org/10.1155/2022/7672692

Ibarretxe-Antuñano, I. (2019). Perception metaphors in cognitive linguistics. In *Perception Metaphors* (pp. 43-64). John Benjamins Publishing Company. doi: https://doi.org/10.1075/celcr.19.03iba

Imani, A., Habil, H., & Don, Z. M. (2021). Metaphor in Mahathir's political speeches in the context of economic crisis. *South East Asia Research, 29*(4), 434-449. doi: https://doi.org/10.1080/0967828X.2021.1985942

Iyanna, S., Kaur, P., Ractham, P., Talwar, S., & Islam, A. N. (2022). Digital transformation of healthcare sector. What is impeding adoption and continued usage of technology-driven innovations by end-users? *Journal of Business Research, 153*, 150-161. doi: https://doi.org/10.1016/j.jbusres.2022.08.007

Jackson, D. N., Trivedi, N., & Baur, C. (2021). Re-prioritizing digital health and health literacy in healthy people 2030 to affect health equity. *Health Communication, 36*(10), 1155-1162. doi: https://doi.org/10.1080/10410236.2020.1748828

Jacobson, K. (2020). A Method of Mis/Understanding: Translation Gaps, Metaphoric Truths, and Reflexive Methodologies. In *Global Youth Citizenry and Radical Hope: Enacting Community-Engaged Research through Performative Methodologies* (pp. 135-154). Springer, Singapore. doi: https://doi.org/10.1007/978-981-15-1282-7_7

Jensen, L. X., Bearman, M., & Boud, D. (2021). Understanding feedback in online learning–A critical review and metaphor analysis. *Computers & Education, 173*, 104271. doi: https://doi.org/10.1016/j.compedu.2021.104271

Joue, G., Boven, L., Willmes, K., Evola, V., Demenescu, L. R., Hassemer, J., . . . Habel, U. (2020). Metaphor processing is supramodal semantic processing: The role of the bilateral lateral temporal regions in multimodal communication. *Brain and language, 205*, 104772. doi: https://doi.org/10.1016/j.bandl.2020.104772

Kaasby, M., & Hornberger, N. H. (2022). Biliteracy Metaphor Analysis: Examining Multilingual, Multicultural Pupils' Interpretation of Canon Literature. *Journal of Language, Identity & Education*, 1-17. doi: https://doi.org/10.1080/15348458.2022.2105220

Khatin-Zadeh, O., & Khoshsima, H. (2021). Homo-schematic metaphors: A study of metaphor comprehension in three different priming conditions. *Journal of Psycholinguistic Research*, 1-26. doi: https://doi.org/10.1007/s10936-020-09754-z

Khoong, E. C., Rivadeneira, N. A., Hiatt, R. A., & Sarkar, U. (2020). The use of technology for communicating with clinicians or seeking health information in a multilingual urban cohort: cross-sectional survey. *Journal of medical Internet research, 22*(4), e16951. doi: https://doi.org/10.2196/16951

Kitayama, S., Berg, M. K., & Chopik, W. J. (2020). Culture and well-being in late adulthood: Theory and evidence. *American Psychologist, 75*(4), 567–576. doi: https://doi.org/10.1037/amp0000614

Kóczy, J. B. (2022). Cultural Metaphors in Hungarian Folk Songs as Repositories of Folk Cultural Cognition. *Journal of Cognition and Culture, 22*(1-2), 136-163. doi: https://doi.org/10.1163/15685373-12340127

Kogan, N. (2021). A cognitive-style approach to metaphoric thinking. In *Aptitude, learning, and instruction* (pp. 247-282). Routledge. doi: https://doi.org/10.4324/9781003162865-10

Kong, Q., Mulvihill, A., Slaughter, V., Fraser, H., Cavanagh-Welch, B., Elwina, F. C., Ruffman, T. (2023). Not just quantity but also quality of language: Cross-cultural comparisons of maternal mental state talk in New Zealand, Australia, and China. *Plos one, 18*(3), e0282480. doi: https://doi.org/10.1371/journal.pone.0282480

Kou, G., & Liang, Y. (2022). A comparative study of multi-modal metaphors in food advertisements. *Semiotica, 2022*(249), 275-291. doi: https://doi.org/10.1515/sem-2020-0117

Kraus, S., Jones, P., Kailer, N., Weinmann, A., Chaparro-Banegas, N., & Roig-Tierno, N. (2021). Digital transformation: An overview of the current state of the art of research. *Sage Open, 11*(3). doi: https://doi.org/10.1177/21582440211047576

Kremin, L. v. d. V. (2022). *Untangling Bilingualism: Using Code-Switching to Understand Bilingual Language Development.* (Doctoral Dissertation, Concordia University). Retrieved from https://spectrum.library.concordia.ca/id/eprint/990725

Kristensen, H. K., & Peoples, H. (2020). Experiences related to quality of life in people with dementia living in institutional settings–A meta-aggregation. *British Journal of Occupational Therapy, 83*(3), 145-161. doi: https://doi.org/10.1177/0308022619879080

Kühmstedt, P., & Wolf, H.-G. (2022). Metaphorical and cultural conceptualizations in Guyanese newspaper English: novel insights and methodological approaches. *Metaphorical Conceptualizations:(Inter) Cultural Perspectives, 45*, 125. doi: http://dx.doi.org/10.1515/9783110688306-006

Kwon, J. Y., Glenberg, A. M., & Varnum, M. E. (2021). Culture, ecology, and grounded procedures. *Behavioral and Brain Sciences, 44*, e13. doi: https://doi.org/10.1017/S0140525X20000369

Leung, C., & Jenkins, J. (2020). Mediating communication–ELF and flexible multilingualism perspectives on the common European framework of reference for languages. *Australian Journal of Applied Linguistics, 3*(1), 26-41. doi: https://doi.org/10.29140/ajal.v3n1.285

Littlemore, J. (2019). *Metaphors in the mind.* Cambridge University Press. doi: https://doi.org/10.1017/9781108241441

Magaña, D. (2019). Cultural competence and metaphor in mental healthcare interactions: A linguistic perspective. *Patient education and counseling, 102*(12), 2192-2198. doi: https://doi.org/10.1016/j.pec.2019.06.010

Maoula, M., Simanjuntak, M. B., & Sihombing, J. (2022). Metaphor Analysis in Lost Stars by Adam Levine. In *FORDETAK: Seminar Nasional Pendidikan: Inovasi Pendidikan di Era Society 5.0* (pp. 536-545). Retrieved from https://e-proceedings.iain-palangkaraya.ac.id/index.php/PSNIP/article/view/795

Marian-Arnat, P. I. (2021). A Critical Analysis of Economic Discourse. *Anadiss, 17*(32), 205-212.

Matud, M. P., López-Curbelo, M., & Fortes, D. (2019). Gender and psychological well-being. *International journal of environmental research and public health, 16*(19), 3531. doi: https://doi.org/10.3390/ijerph16193531

Meili, I., & Maercker, A. (2019). Cultural perspectives on positive responses to extreme adversity: A playing field for metaphors. *Transcultural psychiatry, 56*(5), 1056-1075. doi: https://doi.org/10.1177/1363461519844355

Money, W. H., & Dean, B. P. (2019). Incorporating student population differences for effective online education: A content-based review and integrative model. *Computers & Education, 138*, 57-82. doi: https://doi.org/10.1016/j.compedu.2019.03.013

Monzó-Nebot, E. (2020). Translation, power, ethics. Challenging injustice in cross-cultural understanding and cooperation. *Linguapax Review, 8*, 13-31. Retrieved from https://www.linguapax.org/wp-content/uploads/2020/12/LinguapaxReview2020-1.pdf

Moreno Bruna, A. M. (2020). Impact of study abroad on L2 pragmatic awareness and intercultural development: a study on L2 Flemish sojourners in Spain. In *9th International Symposium on Intercultural, Cognitive And Social Pragmatics:(EPICS IX)*. Retrieved from http://hdl.handle.net/1854/LU-8680784

Mugge, P., Abbu, H., Michaelis, T. L., Kwiatkowski, A., & Gudergan, G. (2020). Patterns of digitization: A practical guide to digital transformation. *Research-Technology Management, 63*(2), 27-35. doi: https://doi.org/10.1080/08956308.2020.1707003

Murashova, E. P. (2021). The role of the cognitive metaphor in the hybridisation of marketing and political discourses: An analysis of English Language political advertising. *Training, Language and Culture, 5*(2), 22-36. doi: https://doi.org/10.22363/2521-442X-2021-5-2-22-36

Mykhalchuk, N., Bihunova, S., Fridrikh, A., & Vietrova, I. (2021). The cross-cultural understanding of metaphors in the information technology sphere. *Cognitive Studies | Études cognitives*(21), 2475. doi: https://doi.org/10.11649/cs.2475

Nettle, D. (2020). Selection, adaptation, inheritance and design in human culture: the view from the Price equation. *Philosophical Transactions of the Royal Society B, 375*(1797), 20190358. doi: https://doi.org/10.1098/rstb.2019.0358

Nevado-Peña, D., López-Ruiz, V.-R., & Alfaro-Navarro, J.-L. (2019). Improving quality of life perception with ICT use and technological capacity in Europe. *Technological Forecasting and Social Change, 148*, 119734. doi: https://doi.org/10.1016/j.techfore.2019.119734

Noack, E. M., Schäning, J., & Müller, F. (2022). A Multilingual App for Providing Information to SARS-CoV-2 Vaccination Candidates with Limited Language Proficiency: Development and Pilot. *Vaccines, 10*(3), 360. doi: https://doi.org/10.3390/vaccines10030360

Olson, M. E., Arroyo-Santos, A., & Vergara-Silva, F. (2019). A user's guide to metaphors in ecology and evolution. *Trends in ecology & evolution, 34*(7), 605-615. doi: https://doi.org/10.1016/j.tree.2019.03.001

Ouwehand, K., Kroef, A. v. d., Wong, J., & Paas, F. (2021). Measuring cognitive load: Are there more valid alternatives to Likert rating scales? *Frontiers in Education, 6*, 702616. doi: https://doi.org/10.3389/feduc.2021.702616

Piekkari, R., Tietze, S., & Koskinen, K. (2020). Metaphorical and interlingual translation in moving organizational practices across languages. *Organization Studies, 41*(9), 1311-1332. doi: https://doi.org/10.1177/0170840619885415

Prażmo, E. (2020). Foids are worse than animals. A cognitive linguistics analysis of dehumanizing metaphors in online discourse. *Topics in Linguistics, 21*(2), 16-27. doi: http://dx.doi.org/10.2478/topling-2020-0007

Qin, Z. (2022). *A touch of classical chinese poetry: enriching interactive everyday products with poetic metaphors.* (Doctoral Dissertation, Hong Kong Polytechnic University). Retrieved from https://theses.lib.polyu.edu.hk/handle/200/12019

Rahmadhanti, R. W., Simanjuntak, M. B., & Sihombing, J. (2022). Metaphor Analysis and Meaning of the Song "Different World". In *Fordetak: Seminar Nasional Pendidikan: Inovasi Pendidikan di Era Society 5.0* Retrieved from https://e-proceedings.iain-palangkaraya.ac.id/index.php/PSNIP/article/view/800

Rasmussen, M. T., Brøgger, M. N., Matthiesen, S. S., & Møller, J. E. (2022). "I Surrendered": Metaphors in Residents' Stories about Communication Challenges. *Health Communication*, 1-9. doi: https://doi.org/10.1080/10410236.2021.2023265

Rizk, J., & Hillier, C. (2022). Digital technology and increasing engagement among students with disabilities: Interaction rituals and digital capital. *Computers and Education Open, 3*, 100099. doi: https://doi.org/10.1016/j.caeo.2022.100099

Rout, M., & Reid, J. (2020). Embracing indigenous metaphors: a new/old way of thinking about sustainability. *Sustainability Science, 15*(3), 945-954. doi: https://doi.org/10.1007/s11625-020-00783-0

Schäffner, C., & Chilton, P. (2020). Translation, metaphor and cognition. In *The Routledge handbook of translation and cognition* (pp. 326-343). Routledge. doi: https://doi.org/10.4324/9781315178127-22

Schoede, H. (2020). *Multilingualism and stereotype endorsement: The roles of cognitive flexibility and deprovincialization.* (Master's thesis, Iscte - Instituto Universitário de Lisboa). Retrieved from http://hdl.handle.net/10071/20944

Schoos, M., & Suñer, F. (2020). Understanding humorous metaphors in the foreign language: a state-of-the-art review. *Zeitschrift fur Interkulturellen Fremdsprachenunterricht, 25*(1), 1431–1446. Retrieved from https://zif.tujournals.ulb.tu-darmstadt.de/article/id/3289

Sever, M., Ozdemir, S., & Jobson, K. (2022). 'An academic is like a bad dinner guest.'Exploring cross-cultural perspectives of academics via metaphors. *Higher Education Research & Development, 41*(4), 1262-1276. doi: https://doi.org/10.1080/07294360.2021.1887096

Shen, L., Zhang, X., & Liu, H. (2022). Digital technology adoption, digital dynamic capability, and digital transformation performance of textile industry: Moderating role of digital innovation orientation. *Managerial and Decision Economics, 43*(6), 2038-2054. doi: https://doi.org/10.1002/mde.3507

Sit, H. F., Ling, R., Lam, A. I. F., Chen, W., Latkin, C. A., & Hall, B. J. (2020). The cultural adaptation of step-by-step: an intervention to address depression among Chinese young adults. *Frontiers in psychiatry, 11*, 650. doi: https://doi.org/10.3389/fpsyt.2020.00650

Snow, P. C. (2021). SOLAR: The science of language and reading. *Child Language Teaching and Therapy, 37*(3), 222-233. doi: https://doi.org/10.1177/0265659020947817

Song, Y., & Xia, J. (2021). Scale making in intercultural communication: experiences of international students in Chinese universities. *Language, Culture and Curriculum, 34*(4), 379-397. doi: https://doi.org/10.1080/07908318.2020.1857392

St. Amant, K. (2019). The cultural context for communicating care. *Journal of Technical Writing and Communication, 49*(4), 367-382. doi: http://dx.doi.org/10.1177/0047281619871213

Stampoulidis, G., Bolognesi, M., & Zlatev, J. (2019). A cognitive semiotic exploration of metaphors in Greek street art. *Cognitive Semiotics, 12*(1), 20192008. doi: https://doi.org/10.1515/cogsem-2019-2008

Stanarević Katavić, S. (2019). Health information behaviour of rare disease patients: seeking, finding and sharing health information. *Health Information & Libraries Journal, 36*(4), 341-356. doi: https://doi.org/10.1111/hir.12261

Stavans, A., & Porat, R. (2019). Code-switching in multilingual communities. In *Multidisciplinary Perspectives on Multilingualism: The Fundamentals* (pp. 123-149). Boston: De Gruyter Mouton. doi: https://doi.org/10.1515/9781501507984-007

Stepins, K. V. (2022). *A cross-linguistic study of metaphor variation in promotional discourse of the tourist sector in spanish, english and german: implications for translation.* (Doctoral Dissertation, Universitat Politècnica de València). Retrieved from https://riunet.upv.es/handle/10251/182290

Stoermer, S., Davies, S., & Froese, F. J. (2021). The influence of expatriate cultural intelligence on organizational embeddedness and knowledge sharing: The moderating effects of host country context. *Journal of International Business Studies, 52*, 432-453. doi: https://doi.org/10.1057/s41267-020-00349-3

Sun, Y., Cui, Z., Hu, Y., & Wang, Q. (2022). Exploring the technicality of LIQUID metaphorical chunks in business discourse. *Journal of English for Academic Purposes, 57*, 101113. doi: https://doi.org/10.1016/j.jeap.2022.101113

Sun, Y., Zhang, M., & Chen, L. (2021). Join the Army. Become the Power of China" Multimodal metaphors in military recruitment advertising–"The Power of China. *Review of Cognitive Linguistics, 19*(1), 142-171. doi: https://doi.org/10.1075/rcl.00079.sun

Tarigan, K. E., & Stevani, M. (2021). Visualizing Cognitive Metaphor and Multimodality: A Video Advertisement Analysis as a Figurative Meaning. *British Journal of Applied Linguistics, 1*(1), 08-13. Retrieved from https://al-kindipublisher.com/index.php/bjal/article/view/2426

Tasić, M., & Stamenković, D. (2022). From Statics to Dynamics: Intersemiotic Conversion of Metaphor and Its Consequences. In *Metaphors and Analogies in Sciences and Humanities: Words and Worlds* (pp. 523-551). Springer. doi: https://doi.org/10.1007/978-3-030-90688-7_25

Temirgazina, Z., Rakhimzhanov, K., Akosheva, M., Luczyk, M., Kulumzhanov, N., Shaharman, A., & Zyuldubayeva, R. (2022). The semiotics of family in Kazakh wedding toasts from the perspective of intercultural communication. *Metaphor and the Social World, 12*(2), 270-291. doi: https://doi.org/10.1075/msw.19019.tem

Tenés, L. S., Weiner-Bühler, J., Volpin, L., Grob, A., Skoruppa, K., & Segerer, R. (2023). Language proficiency predictors of code-switching behavior in dual-language-learning children. *Bilingualism: Language and Cognition*, 1-17. doi: https://doi.org/10.1017/S1366728923000081

Tham, J. C. K., Burnham, K. D., Hocutt, D. L., Ranade, N., Misak, J., Duin, A. H., . . . Campbell, J. L. (2021). Metaphors, mental models, and multiplicity: Understanding student perception of digital literacy. *Computers and Composition, 59*, 102628. doi: https://doi.org/10.1016/j.compcom.2021.102628

Thibodeau, P. H., Matlock, T., & Flusberg, S. J. (2019). The role of metaphor in communication and thought. *Language and Linguistics Compass, 13*(5), e12327. doi: https://doi.org/10.1111/lnc3.12327

Trebits, A. (2021). Degree of multilingualism, code-switching and intensity of target language contact predict pragma-linguistic awareness in an English as a foreign language context. *International journal of multilingualism, 18*(3), 475-490. doi: https://doi.org/10.1080/14790718.2019.1678626

Tseng, M.-Y., & Chuang, S.-W. (2022). Metaphor and creativity in the act of making her heart flutter: Toward a cognitive-emotive perspective. *Journal of Pragmatics, 191*, 194-210. doi: https://doi.org/10.1016/j.pragma.2022.01.013

Uebergang, E., Best, S., de Silva, M. G., & Finlay, K. (2021). Understanding genomic health information: how to meet the needs of the culturally and linguistically diverse community—a mixed methods study. *Journal of community genetics, 12*(4), 549-557. doi: https://doi.org/10.1007/s12687-021-00537-0

Unsworth, L., & Mills, K. A. (2020). English language teaching of attitude and emotion in digital multimodal composition. *Journal of Second Language Writing, 47*, 100712. doi: https://doi.org/10.1016/j.jslw.2020.100712

Urakami, J., & Seaborn, K. (2023). Nonverbal Cues in Human–Robot Interaction: A Communication Studies Perspective. *ACM Transactions on Human-Robot Interaction, 12*(2), 1-21. doi: https://doi.org/10.1145/3570169

Usman, J. (2021). The dehumanizing metaphors in the culture of Acehnese in Indonesia. *Balai Bahasa, Universitas Pendidikan Indonesia, 10*(2), 397-405. Retrieved from https://repository.ar-raniry.ac.id/id/eprint/18629

Valdivia, P. (2019). Narrating crises and populism in Southern Europe: Regimes of metaphor. *Journal of European Studies, 49*(3-4), 282-301. doi: https://doi.org/10.1177/0047244119865083

van Ments, L., & Treur, J. (2021). Modeling adaptive cooperative and competitive metaphors as mental models for joint decision making. *Cognitive Systems Research, 69*, 67-82. doi: https://doi.org/10.1016/j.cogsys.2021.06.002

Vitez, A. Z., Brglez, M., Robnik-Šikonja, M., Škvorc, T., Vezovnik, A., & Pollak, S. (2022). Extracting and Analysing Metaphors in Migration Media Discourse: towards a Metaphor Annotation Scheme. In *Proceedings of the Thirteenth Language Resources and Evaluation Conference* (pp. 2430-2439). European Language Resources Association. Retrieved from https://aclanthology.org/2022.lrec-1.259

Wakota, J. (2021). 'Time is Money': Dar es Salaam's Daladala Inscriptions and the Ethics of Everyday. *Eastern African Literary and Cultural Studies, 7*(4), 271-284. doi: https://doi.org/10.1080/23277408.2021.1968679

Wang, G. (2022). Multimodal Metaphor Construction and Cognitive Analysis in Educational Cartoons. *Theory and Practice in Language Studies, 12*(3), 543-550. doi: https://doi.org/10.17507/tpls.1203.14

Washif, J. A., Farooq, A., Krug, I., Pyne, D. B., Verhagen, E., Taylor, L., Haddad, M. (2022). Training during the COVID-19 lockdown: knowledge, beliefs, and practices of 12,526 athletes from 142 countries and six continents. *Sports Medicine, 52*(4), 933-948. doi: https://doi.org/10.1007/s40279-021-01573-z

Wei, H., Gao, K., & Wang, W. (2019). Understanding the relationship between grit and foreign language performance among middle school students: The roles of foreign language enjoyment and classroom environment. *Frontiers in psychology, 10*, 1508. doi: https://doi.org/10.3389/fpsyg.2019.01508

Wen, X., & Taylor, J. R. (2021). Introduction: Cognitive linguistics: Retrospect and prospect. In *The Routledge handbook of cognitive linguistics* (pp. 1-15). Routledge. doi: https://doi.org/10.4324/9781351034708-1

Werkmann Horvat, A., Bolognesi, M., & Kohl, K. (2021). Creativity is a toaster: Experimental evidence on how multilinguals process novel metaphors. *Applied linguistics, 42*(5), 823-847. doi: https://doi.org/10.1093/applin/amab002

Wiesen, G. T., Escalona, R. C., & Inzitari, M. (2023). Medical attention in bilingual territories. *Medicina Clínica (English Edition), 160*(1), 39-43. doi: https://doi.org/10.1016/j.medcle.2022.07.021

Wnuk, E., & Ito, Y. (2021). The heart's downward path to happiness: Cross-cultural diversity in spatial metaphors of affect. *Cognitive Linguistics, 32*(2), 195-218. doi: https://doi.org/10.1515/cog-2020-0068

Wong, B. W., Lam, H. C., Lo, J. W. K., Maurer, U., & Huo, S. (2023). How do Hong Kong bilingual children with Chinese dyslexia perceive dyslexia and academic learning? An interview study of metaphor analysis. *Reading and Writing*, 1-25. doi: https://doi.org/10.1007/s11145-023-10434-2

Wong, M. L. (2021). Conceptual Blending and Slang Expressions in Hong Kong Cantonese. *Studies in Chinese Linguistics, 42*(1), 97-119. doi: https://doi.org/10.2478/scl-2021-0003

Wu, Q. (2022). *A Corpus-based Study on Conceptual Metaphors for Heart in Chinese and English.* (Doctoral Dissertation, University of Hawai'i at Manoa). Retrieved from http://dissertations.umi.com/hawii:11526

Xiao, K. (2021). Cognitive Linguistics and translation studies. In *The Routledge handbook of cognitive linguistics* (pp. 526-542). Routledge. doi: https://doi.org/10.4324/9781351034708-35

Xiong, T., Li, Q., & Hu, G. (2022). Teaching English in the shadow: identity construction of private English language tutors in China. *Discourse: Studies in the Cultural Politics of Education, 43*(1), 73-85. doi: https://doi.org/10.1080/01596306.2020.1805728

Xu, L., Naserpour, A., Rezai, A., Namaziandost, E., & Azizi, Z. (2022a). Exploring EFL learners' metaphorical conceptions of language learning: a multimodal analysis. *Journal of Psycholinguistic Research, 51*(2), 323-339. doi: https://doi.org/10.1007/s10936-022-09842-2

Xu, T., Liu, M., & Wang, X. (2022b). How humor is experienced: An embodied metaphor account. *Current Psychology*, 1-13. doi: https://doi.org/10.1007/s12144-022-02918-1

Xu, X., Sit, H. W., & Chen, S. (2020). Metaphor Analysis of International Doctoral Students' Learning Experiences—A Case Study of Chinese Doctoral Students in Australia. In *Learning Environment and Design: Current and Future Impacts* (pp. 49-66). Springer. doi: https://doi.org/10.1007/978-981-15-8167-0_4

Yanaprasart, P., & Melo-Pfeifer, S. (2019). Students' perceptions of authenticity of plurilingual non-native teachers in multilingual higher education settings: an exploratory and comparative case study of Geneva and Hamburg. *European Journal of Higher Education, 9*(3), 327-342. doi: https://doi.org/10.1080/21568235.2019.1597749

Yang, W. (2020). *A Cross-Cultural Study of Commercial Media Discourses: From the Perspective of Cognitive Semantics*. Springer Nature. doi: https://doi.org/10.1007/978-981-15-8617-0

Yusupova, S. A. z., qizi To'ychieva, Z. N., & Yo'ldasheva, S. S. (2022). Expression Of Metaphor In Different System Languages. *Research And Education, 1*(2), 209-212. Retrieved from https://researchedu.index.php/re/article/view/635

Zahid, A. (2020). *A Model for Metaphor Translation from English Literature into Arabic.* (Doctoral Dissertation, Durham University). Retrieved from http://etheses.dur.ac.uk/13605

Zhang, J. (2019). Cognitive functions of the brain: Perception, attention and memory. *arXiv preprint arXiv:1907.02863*. doi: https://doi.org/10.48550/arXiv.1907.02863

Zhang, J. (2022a). Folk and Fairy Tales as Expressions of Identity in Cross-Cultural Communication. *Perspectives on East and Southeast Asian Folktales*. Retrieved from https://www.academia.edu/86598327

Zhang, X., & Zhou, M. (2019). Interventions to promote learners' intercultural competence: A meta-analysis. *International journal of intercultural relations, 71*, 31-47. doi: https://doi.org/10.1016/j.ijintrel.2019.04.006

Zhang, X. H. (2020). Belt and Road Initiatives in texts and images: A critical perspective on intersemiotic translation of metaphors. In *Multimodal Approaches to Chinese-English Translation and Interpreting* (pp. 148-167). Routledge. doi: https://doi.org/10.4324/9780429318351-7

Zhang, Y. (2022b). Cross-cultural literary comprehension: Theoretical basis and empirical research. *Interkulturelles Forum der deutsch-chinesischen Kommunikation, 2*(1), 58-73. doi: https://doi.org/10.1515/ifdck-2022-0005