ACADEMIA International Journal for Social Sciences
Volume 4, Issue 3, 2025 ISSN-L (Online): 3006-6638

Modulation of Non-verbal Cues in Bilingual Code-switching

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Received: 09-04-2025 **Revised:** 10-05-2025 **Accepted:** 15-06-2025 **Published:** 17-07-2025

ABSTRACT

In bilingual settings, speakers frequently code switches and gestures facilitates this interaction by bridging linguistic gaps and enhancing clarity and comprehension. This study aims to explore the relationship between dominant language and gesture usage during code-switching among bilingual speakers with a focus on emblems (speech independent gestures) and illustrators (speech dependent gestures). Although there is extensive literature on bilingualism communication and gesture types in isolation, the relationship between gestures and dominant language use during code-switching remains underexplored. Preliminary studies indicate a relationship between dominant language and gestures (King et. Al,2003; Woolfson, 1991), this study not only highlights the intricate interplay between bilingual language dominance and gesture types but also provides valuable insights into how gesture facilitate comprehension and clarity during bilingual communication. Guided by a mixed-method research paradigm, this study employs descriptive and correlational research design. Data is collected through video recordings of ten bilingual participants, selected through purposive sampling. The analysis is done through Lausberg and Sloetjes (2009) coding system for NEUROGES ELAN, an annotation tool to analyze gesture behavior. Adapting this coding scheme involves customized inclusion of emblems, illustrators gesture type, and frequency analysis. By elucidating this relationship, the findings contribute to a growing understanding of bilingual communication dynamics and offer a framework for future exploration. The findings aim to inform the practitioners, researchers, and educators, encouraging the integration of gesture analysis into studies of bilingualism and code-switching to enhance the scope of the area.

Keywords: *Non-verbal cues, Dominant Language, Gesture type, Bilingualism, Code-Switching*

INTRODUCTION

The art of speaking is indeed superior in humans, that facilitates effective communication. Communication in general is categorized into verbal and non-verbal communication. A great portion of human communication consists of non-verbal cues. Language production not only involves vocal cords and lungs but also head, face, eyes, trunk and often hands. (Levinson, S. C., & Holler, J. ,2014). It is observed that researches and observations on non-verbal behavior cues starts with the publication of Charles Darwin (1872) “The Expressions of the Emotions in Man and Animals”. Since then significant research on non-verbal behavior, its types and effects have been carried out, its cognitive significance, social and communicative competence, and correlation with speech have also been studied. These studies elucidate the significance of body language and gestures as significant as speech for effective delivery of thoughts and ideas. Non-verbal communication includes paralinguistic features and bodily movements. (Fatima, I., Ajmal, M., & Khan, I. ,2024). The bodily movements include facial expressions, hand gestures, postures, leg movement and so on. (Grillo, H. M., & Enesi, M. (2022). This paper focuses on the

gestures category of non-verbal behavior in bilingual speakers, further elucidating its role during code-switching and observing the effect of dominant language on it.

In a bilingual society, often effective communication extends beyond spoken language and includes non-verbal cues such as gestures, due to which it has been observed that bilinguals use higher gesture rates than monolinguals. (Nicoladis, E. (2007). Jensen and Emanuelsson(2016) stated in their study that gestures are classified by Ekman and Friesen encompasses illustrators, emblems, regulators, emotional state indicators and adaptors. These five markers are useful for studying kinesic behavior (Woolfson,1991). Among these, emblems and illustrators; Emblems have symbolic meaning and speech independent, while illustrators are speech dependent (Jensen and Emanuelson,2016), would be the focus of this study as it plays a significant role in providing context and clarification during interactions. There is rich literature of gesture analysis of these types in different contexts, however, analysis of gesture frequency, usage, and transfer in bilingual context narrowing in the code-switching context is underexplored. This study contributes to the pool of knowledge relevant to the role of dominant language of bilingual speakers in non-verbal context whilst code-switching.

Code-switching in layman terms means to alternate between languages within a conversation. (Nilep, C. (2006). It is a widely studied linguistic phenomena in the domain of bilingualism, however it is not merely a linguistic phenomenon but also a cognitive and sociocultural process, giving this article a cognitive and socio-cultural perspective. Hence, focusing on code-switching whilst observing the influence of dominant language on gestures can uncover how gestures act as bridges of cultural identity and repositories for cognitive load during code-switching. (Gullberg,2006)

Statement of the Problem

Communication and in particular verbal communication has been a vast area of research for linguists and researchers since the beginning, multiple researches has been carried out from different dimensions on the said area, however, role of non-verbal cues and their relation with communication and elucidating clarity and context has been studied much later. In bilingual settings, where speakers frequently engage in code-switching, gestures become even more significant, as gestures helps to bridge linguistic gaps in communication. However, the impact of a bilingual speaker's dominant language on their use of gestures during code-switching is an underexplored area in the existing literature. Gestures in nature itself has multifaceted layers and types that calls for a dire need of extensive research on gestures type, nature and role in facilitating communication.

While numerous studies have examined gesture types and their functions in general communication and in isolation, there is a lack of extensive and particular research on how dominant language influences gesture frequency and type during code-switching. Emblems which are speech dependent and illustrators which are speech independent might elucidate crucial understanding of this phenomenon.

This study aims to address this gap by exploring how dominant language influences the use and frequency of gestures among bilingual speakers during code-switching, highlighting cognitive and sociocultural dynamics of bilingualism and contributing to the broader understanding of non-verbal communication.

Significance of the study

The significance of the study lies in its effort to examine the already rich linguistic topic i.e bilingual communication, in the context of non-verbal cues, specifically gestures, during code switching. By highlighting the influence of dominant language on gestures, in particular emblems and illustrators, this study induces cognitive and sociocultural perspective. This research highlights how bilingual speakers

who use code-switching as "defense mechanism" to fulfill lexical gaps, use gestures as a tool to compensate for their linguistic limitations.

Analyzing gestures during code-switching uncovers the influence of dominant language, Jensen and Emanuelsson (2016) states that Gibb (1999) has observed that gestures lies on a continuum of intentional and unintentional gestures. Emblems are intentional ones. This research focuses on these gestures to deduce how intentionally or unintentionally dominant language of the speaker influence his gestures. This can uncover strategies for bilingual speakers to use them consciously to maintain fluency and coherence

Some researches (Woolfson,1991; Jensen and Emannuelson,2016) elucidates types of gestures and their influence on dominant language, specific focus on emblems and extended focus on illustrators have been understudied. It opens new avenues for future researches on the understudied dimension of bilingualism. In bilingual societies, where the alternation between languages is common, understanding the dynamics between verbal and non-verbal communication is essential for improving language teaching methods, enhancing communication skills. Despite its limitations, this research serves as a drop of knowledge to the vast body of knowledge on the relationship between gestures and bilingualism.

Research Questions

1. How does the dominance of one language over another influence the frequency and type of gestures among bilinguals during code-switching?
2. How do bilingual speakers use dominant language-based gestures during code-switching to convey their message?

Research Objectives

1. To analyze how dominant language impacts non-verbal cues, specifically gestures, during code-switching among bilingual speakers.
2. To explore how bilingual speakers use gestures influenced by their dominant language during code-switching to effectively convey their message.

Literature Review

Among Bilinguals and Multilinguals, Code-Switching is a well-documented phenomenon. Code-switching can be defined as alternating between two or more languages within single sentence or discourse (Alhazmi,2016). However, in the beginning, the concept of code-switching oscillated between viewed as linguistic incompetence and competence. Aldalbahy (2022) highlights this controversy in its study stating that some researchers such as Hymes (1962, as cited in Kelekoula & Pjaileb, 2019), considered code switching a sign of linguistic inadequacy. This idea in the infancy of code-switching highly contrasts with contemporary researches that view code-switching as a complex skill and international communicative strategy (Cedden et al., 2024). Building on this, a study by Albahoth, Abdul Jabar, & Mohd Jalis, (2024) further emphasizes the dynamic evolution of code-switching, this evolution spans explorations of language (Lee, 2010), culture (Simon, 2002), and cognition (Bosma & Blom, 2019). However, relationship between Code-switching and non-verbal cues; gestures in particular are understudied and underexplored. Furthermore, non-verbal communication role in complimenting verbal expression is essential (McNeil,1992), but research on how dominant languages affect nonverbal cues is limited.

Non-Verbal Cues are essential tools for communication, especially in bilingual context. Gestures are basically motion of several parts and articulators. Jensen & Emanuelsson (2016) delineates in their paper that gestures could include Head movements (Kendon, 2004), facial gestures (Quek et al., 2002) etc. Jensen & Emanuelsson, 2016 states that Ekman and Friesen (1967/1981; also Afifi, 2010) delineates

different types of gestures which includes Emblems; that links symbolic meaning with the word, Illustrators; that is used to point out what is being said, Regulators; like head movements to balance and regulate a communication and Adaptors; involving touching or tapping objects during speech.

The research has shown that gestures are very closely linked and tied to language use and often adapt to verbal communication (Jensen & Emanuelsson, 2016). Gestures helps to communicate better when language gaps exists (Fatima et al., 2024). This establishes the significance and need to study the nonverbal aspect of language in-detail, especially in bilingual context, when dominant language may or may not have impact on the gestures. Some relevant studies explored this aspect from different dimensions. One study notes that gestures may shift depending on the language being spoken, with non-dominant languages triggering more expressive gestures due to cognitive and verbal challenges. (Woolfson, 1991). This suggests that dominance of one or other language in bilingual setting influences gesture production. Additionally, this gesture production can also be influenced by bilingual's frequent use of gesture because of high gesture frequency language they speak. (So,2010). This phenomenon is known as Gesture Transfer as noted by Arslan et.al (2023). Gesture transfer happens when gesture from high frequency gesture language transfers to low frequency gesture language, hence further illustrating how language dominance influence non-verbal communication .(Pika et.al, 2006)

Another example includes a study that inculcates an animated conversational agent, named Kare that has range of non-verbal cues fed in it and examined how bilinguals in Mozambique and Sweden used gestures when switching between Portuguese that is a high-contact language and Swedish; a low-contact language. (King et al., 2003). This study found that speakers gestured more intensively when speaking Portuguese, demonstrating that dominant languages and language with high expressive nature influenced frequent and exaggerated gestures compared to subordinate languages.

Some studies suggest that Bilingual speakers use more exaggerated gestures to improve comprehension and gesture more as compare to monolingual speakers (woolfson,1991),(Pika et. al, 2006). This suggests that the cognitive challenges associated with code-switching likely influence nonverbal communication. This cognitive challenges refers to mental flexibility of bilingual speaker as they tend to rely more on nonverbal cues when shifting to the second language. Conversely, when using a dominant language, speakers may be more comfortable, leading to less reliance on nonverbal cues. (King et al., 2003) supports this view by proposing that gestures often act as facilitators during speech, particularly when the speaker is struggling with finding the right words.

Furthermore, Cultural norms shape the use of nonverbal cues. The cultural expectations linked to the language may influence the gestures of a bilingual speaker. The 2003 study explored how different cultures use gestures to convey agreement and disagreement, highlighting how cultural differences in nonverbal communication may affect bilinguals when switching between languages. (King et al.,2003). This cultural ties with gestures and language suggests the role of dominant language influencing nonverbal cues to meet social expectations.

The relationship between speech and gesture is a long going debate, that produced multiple hypothesis and models on it. The idea that non-verbal cues are supplementary in communication is negated by many researches that considers it as crucial part of the communication and actively contribute to the meaningmaking part of communication (Jensen and Emanuelsson, 2016). This study suggests that speech and gestures are unified system. This idea aligns with the view that nonverbal cues and verbal communication are deeply integrated. However, language dominance could affect the balance between speech and gesture. Krauss (1999) further support this by suggesting that gestures may even precede speech, particularly in situations where the speaker is struggling to find the right words. This dynamic suggests that bilinguals may gesture more intensely when speaking a language that invites more cognitive load.

The study by Jensen and Emanuelsson (2016) explores the concept of kinesic code-switching among bilingual speakers, which is important for understanding relationship between speech and non-verbal cues. Their research supports the hypothesis that gestures and speech form a unified communication system. They used motion capture to identify gesture variations and provides a methodological foundation for examining these shifts.

While, significant research has been conducted on gesture types, their functions, and their interrelation with bilingualism, the specific role of dominant language in shaping gesture usage during code-switching remains underexplored. Existing studies have largely focused on general gesture analysis, or limited gesture analysis of the languages, particular focus on each of the multifaceted types and nature of gestures and their relation with bilingualism in different scenarios of bilingual communication eg. Codeswitching has been under investigated, this leaves a gap in understanding how gestures function as cognitive and sociocultural tools in bilingual interactions. By addressing this gap, this study aims to contribute in the extensive and vast area of gesture analysis and non-verbal communication in linguistics and in the growing body of research on bilingual communication, providing new insights into the influence of dominant language on gesture patterns. This research not only builds on previous researches but also extends the discussion by focusing on less-examined dimensions of emblems and illustrators in codeswitching and gesture context, paving way for future investigation and contribution in the field of linguistics, education and concerned multidisciplinary areas.

METHODOLOGY

Research Philosophy

This study follows pragmatist philosophy to investigate the influence of dominant language on non-verbal cues during code-switching among bilinguals. Rather than fixating at one philosophical framework, pragmatism emphasizes selecting methods that best address the research problem. (Tashakkori & Teddlie, 1998; Creswell & Plano Clark, 2011). A major underpinning of this philosophy is that knowledge and reality is socially constructed and meaning is inseparable from human thoughts and experiences. Hence, this study aims to explore into the bilinguals' experiences with language dominance over non-verbal gestures. The philosophy understudied here provides a balanced exploration of bilingual communication.

Research Approach and Paradigm

To guide the study, deductive approach is adopted by relying on existing theories of bilingualism, gestures and kinesics in order to study the relationship between dominant language and gesture types during code-switching. This study adapts Ekman and Friesen's Gesture Classification Framework that categorizes gestures into types such as emblems, illustrators, regulators, adaptors and affect displays. This study focuses on emblems and illustrators to understand this phenomenon. Furthermore, the study relies on Gesture Transfer hypothesis that explains how gestures are associated with dominant language and how this relation can influence or "transfer" elements into non-dominant language. Multimodal Communication theory posits that speech and gestures forms a unified system for meaning-making, building on these, a mixed-method approach, combining qualitative and quantitative techniques was employed to address the research objectives effectively. The study combines quantitative analysis of gesture frequency with qualitative findings of effect of dominant language on gestures particularly emblems and illustrators while code-switching. This mixed method paradigm employed in the study ensures that research captures both statistical data along with interpretative characteristics, in order to enrich the findings.

Research Design

The study however, uses a mixed-methods approach, incorporating both qualitative and quantitative paradigms but it also focuses on the relationship between language dominance and non-verbal cues. As Exploratory, Descriptive and Correlational research design aims to examine the relationship between two variables (Ghanad, 2023) this study unfolds by exploring a change in one variable (language dominance) affecting changes in another (gesture frequency and type) without manipulating the variables and explores the two variables. The particular plan is thus best described as employing a correlational design within a mixed-methods paradigm. This design enables the study to explore and investigate the relation between the two variables whilst maintaining meaningful patterns.

Data Collection Tool

The primary tool for data collection in this study is video recordings of ten bilingual speakers engaged in a conversation, prompted by a case study given to them. These recordings are raw data to explore the interplay between language dominance and non-verbal cues.

Data Collection Procedure

The study focuses on a bilingual target population proficient in both languages i.e Urdu and English between age 18-30. Participants were selected based on their ability to alternate between a dominant and a non-dominant language. The study ensured a homogenous sample of ten participants through purposive sampling. Participants were recorded in the environment familiar to them to eliminate any artificiality in their conversation. Moreover, participants were presented a case study to talk about, while recording their conversation to analyze gestures during codeswitching. Approximately 2-4 minutes, the recording session lasted. Then the recordings were stored securely while ensuring anonymity of the participating by blurring their face. Moreover, to ensure compliance with research ethical standards, ethical approval for the study was obtained, and participants provided informed consent.

Strategies of Data Analysis

The analysis will be conducted in two stages by combining quantitative and qualitative methods to provide a comprehensive understanding of the data.

Quantitative Analysis – Gesture frequency will be analyzed by uploading the collected data on NEUROGES ELAN software. Gestures will be categorized into emblems and illustrators based on customized coding scheme, and their occurrence will be recorded.

Qualitative Analysis – An exploratory analysis will be conducted to investigate the influence of dominant language over non-verbal cues. Central to this analysis is the use of NEUROGES ELAN software, an advanced, multimodal annotation tool for digital audio and video media. The combination of the NEUROGES coding system and ELAN creates an effective tool for reliable research on gestural behavior. (Lausberg & Sloetjes, 2009). For focused research on emblems and illustrators and to target the research objectives, the coding scheme is customized, aligning the analysis directly with the study's aim of understanding their role in bilingual communication and code-switching contexts.

By employing these strategies, this study aims to ensures a rigorous and tailored approach to analyzing the interplay between dominant language and non-verbal cues among bilinguals.

DATA ANALYSIS

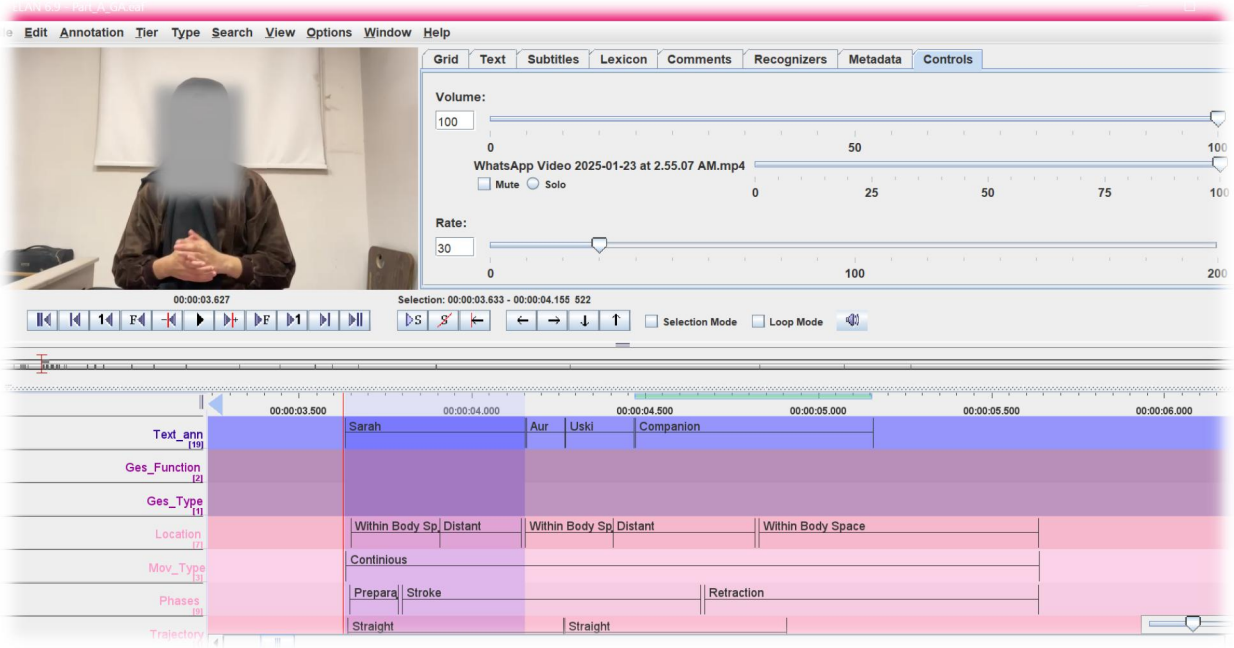
Introduction to Data Analysis

This section presents the analysis of gesture patterns among Eng-Urdu Bilingual participants during code-switching. The 10 participants are marked A-J accordingly. I used ELAN software with the NEUROGES coding system (module 1 and 2) and customized it to analyze illustrators and emblems in particular. The software allows to make customized tiers or import them and color code tiers according to the module used. In my analysis, I chose pink as Module 1 tiers and Purple as marking for Module 2 tiers while Blue is used to mark the text annotation tier, this effectively helps to annotate gestures further. The customized tier includes Gesture types as illustrators and emblems. Further classification of gestures as Urdu or English dominant was based on language framing patterns that includes Verb-framed and Satellite-framed languages (Hussain, 2014) and gestures and also cross referenced with previous research on Urdu/Asian and English gesture typologies (Imai, 2002.) The goal was to examine whether the dominant language influences gesture production when switching between Urdu and English.

The tiers created in ELAN can be represented as below:

Tier Type	Shortened Tier Name	Controlled Vocabulary Linked
Movement_Type	Move_Type	Phasic, Continuous, Repetitive
Trajectory	Trajectory	Straight, Curved
Location	Location	Distant, On Body, Within Space
Phases	Phases	Preparation, Stroke, Retraction
Gesture_Function	G_Func	Pointing, Depiction, Emphasis, Illustrating
Gesture_Type	G_Type	Emblem, Illustrator
Language_Dominance	Lang_Dom	Urdu Dominant, English Dominant
Gesture_Language_Alignment	Lang_Align	Matched, Mismatched

Snapshot of ELAN window:



Verb framed and Satellite framed Gestures

English is considered as Satellite framed gesture language while Urdu as Verb frames gesture language. This difference further untangles the gesture analysis and helps to put them into right categories. In motion event typology, languages are categorized as either **satellite-framed (S-framed)** or **verb-framed (V-framed)** based on how they encode motion (Talmy, 1985). S-framed motion is encoded in satellite phrases rather than main verb. The main verb describes the manner and the path is expressed separately while path and motion can co-occur too in S-frame languages. While Verb Framed is mainly encoded in main verb, manner is often omitted, Path is central to the verb. Language like Urdu are V-frame languages producing V-frame gestures. For example, the phrase “wooden chest kay andr” , the motion of “andr” (into) denotes path only making it a verb frame gesture , and as Urdu is a verb frame language, we can tag it as Urdu gesture (V-frame gesture) in this scenario.

Some examples of other gestures tagged as satellite or verb framed in analysis:

Gesture Description	Satellite-Framed or Verb-Framed?	Reason for Tagging
"Chest kay andar" (Hand moving downward into space)	Verb-Framed	The verb "andar jaana" (to go inside) already includes path, and the gesture reinforces the path rather than manner.
"Path" (Zigzag hand movement)	Satellite-Framed	The word "path" itself does not describe motion; instead, the hand movement adds manner (zigzag shape), making it satellite-framed.
"Companion" (Hands merging together)	Neither	This is a metaphoric/universal gesture, not related to motion events, so it doesn't fit S/V-framing.

Gesture Categorization

Gesture Type	Urdu-Dominant	English-Dominant	Total Count
Illustrators	27	25	52
Emblems	3	7	10
Total	30	**32**	**62**

Gesture Analysis: Urdu and English Influence in Code-Switching

A total of 62 gestures were identified among the participants, consisting of 52 illustrators and 10 emblems. Among the illustrators, Urdu-dominant gestures were more frequent than English-dominant gestures, indicating a strong influence of the participants’ dominant language even when switching between Urdu and English.

Gesture Framing Patterns: Urdu vs. English Influence

Urdu Influence on Gestures During English Speech

Urdu, being a verb-framed language, encodes motion within the verb, whereas English, a satellite-framed language, separates manner and path. Several participants exhibited Urdu-dominant gestures while speaking in English, suggesting that their native gestural framework persisted despite code-switching.

Participant A, while narrating in English, said “They entered the forest” and used a parallel-hand movement moving forward at “entered.” This goes with Urdu’s verb-framed gesture system, where the path is encoded within the verb rather than expressed separately. This demonstrates the influence of Urdu gestural patterns even in an English-speaking context.

Participant A

Participant B, while describing the “path” to the forest, used a gesture depicting only the path, making it a verb-framed gesture.

Participant B

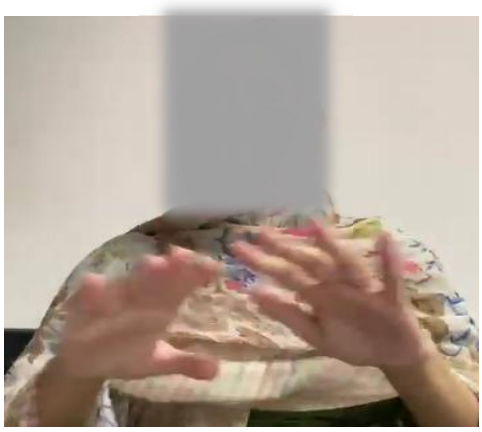
Similarly, Participants E and F both used path-only gestures when describing “steep path” reinforcing the prevalence of Urdu’s verb-framed structure.

Participant E Participant F

Beyond categorization based on verb- vs. satellite-framed patterns, gestures were also classified as illustrators or emblems based on their preparation, stroke, and retraction phases in NeuroGES coding (Modules 1 & 2 in ELAN). They were then tagged as Urdu-dominant or English-dominant accordingly.

Illustrators: Urdu Gestures in English Speech

- Participant H, while code-switching to English and saying "You should have gone straight," pointed with an index finger in that direction. In Urdu/Asian cultures, using the index finger for pointing is common, whereas in English-speaking cultures, pointing is typically done with an open palm, as index-finger pointing is considered impolite (Imai, 2002). This gesture reflects Urdu gestural dominance during English speech.
- Participant B and others frequently used representational illustrators to explain parts of the story, such as describing a "wooden chest."



Participant B

In English, representational illustrators are used less frequently and within a smaller gesture space. (Al subhi, 2018). However, to enhance the storytelling, participants amplified their gestures. For example, Participant C used a high-space gesture while saying "exciting."

Participant D

Emblems: Urdu Gestures in English Speech

- Participant I, while switching to English and saying "Stop arguing now," used a palm-outward gesture before speaking. This gesture is commonly recognized in Urdu as an emblem for "bas" (enough) but is considered rude in English-speaking cultures (Imai, 2002). This showcases an Urdu emblem being used within English speech, further highlighting Urdu gestural dominance.
- Participant H used a culturally rooted Urdu emblem while speaking in English, Instead of saying "Let it go," the participant performed a hand flick—a gesture historically associated with Mughal royals, signifying dismissal.This emblem replaced spoken words, reinforcing how Urdu-dominant gestural patterns persist even in English speech.

English Influence on Gestures During Urdu Speech

While Urdu's influence was evident in English speech, English-dominant gestures also appeared in Urdu speech, though to a lesser extent.

- Participant A, while saying "Sarah aur uski companion," used an open-palm gesture for pointing. In Urdu/Asian cultures, pointing is usually done with the index finger, whereas in English-speaking cultures, an open-palm gesture is preferred (Imai, 2002). This suggests English influence in Urdu communication.
- Participant B, while saying "lift mangna" (hitchhiking), used the English emblem of hitchhiking—a thumb moving to and fro. This emblem is culturally rooted in Western societies and is not commonly used in Urdu-speaking contexts. This suggests that exposure to English cultural norms may have influenced emblematic usage in Urdu speech.

- Participant D, while speaking in Urdu and saying "kaafi time baad", used a satellite-framed gesture, which is more typical of English.
- Participant G, while saying "ye to kaafi asaan tha", used air quotes to emphasize or satirize the statement. Air quotes are a common English emblem and are not traditionally used in Urdu,

showcasing English's gestural influence.

Gestural Consistency

During English speech, participants predominantly used satellite-framed gestures when explaining concepts like "steep climb," "narrow bridge," and "ladder climbing."

During Urdu speech, participants continued using verb-framed gestures, maintaining Urdu's natural gestural framework.

DISCUSSION

This section discusses the findings in relation to the research questions.

The first research question explored how language dominance affects gesture frequency and type. The findings indicate that Urdu-dominant gestures were more frequent than English-dominant ones, particularly among illustrators. Participants speaking in English often retained Urdu's verb-framed gesture system. While some English-dominant gestures appeared in Urdu speech, their occurrence was significantly less frequent. These findings align with previous research suggesting that bilinguals often rely on their primary language's cognitive framework when structuring gestures.

The second research question examined how bilingual speakers use dominant language-based gestures during code-switching. The findings demonstrate that even when participants switched languages, many gestures remained rooted in the dominant language. Urdu-based emblems, such as the "hand flick" to indicate dismissal or the palm-outward gesture for "stop arguing now," were used during English speech, this reflects a deep cultural integration of gesture patterns. Similarly, some English gestures, such as using the palm for pointing instead of the index finger or employing air quotes for emphasis, were incorporated into Urdu speech. This suggests that while dominant-language gestures persist during code-switching, certain gestures associated with the second language can emerge when they align with specific communicative needs. The use of English-based emblems during Urdu speech may indicate an adaptive strategy where speakers associate particular gestures with the language in which they are more conventionally used as most of the English emblems are also universally understood and used.

CONCLUSION

Overall, these findings reinforce the idea that gesture systems are not entirely language-independent but are closely linked to a speaker's dominant linguistic and cognitive structures. The occurance of Urdu gestures in English speech supports the fact that gesture production is embedded in a bilingual's first language. These results have implications for understanding bilingual communication, as they highlight how nonverbal elements of language can persist despite linguistic shifts.

LIMITATIONS

The study uses small sample size, which make this study non-generalizable. Further despite giving prompts, less emblems were recorded for urdu, this might be because study in urdu emblems is a heavily understudied area. No emblem inventory or dictionary has been made in Paksitani region.(Furthermore, the study only focuses on illustrators and emblems, excluding other types of gestures that may also be relevant, such as regulators or affective gestures. Influence of other external variables like gender also influenced gesture data collection. Men being less expressive uses minimal gestures, and their conversation was found to be filled with beat gestures. This might be a future research direction to look at gendered gesture analysis from the perspective of beat gesture.

RECOMMENDATIONS

Future research could explore whether gesture dominance varies depending on a speaker's level of fluency in both languages or how gesture patterns evolve over time in bilinguals with extensive exposure to their second language. Advanced motion-tracking tools and context-based analyses can further refine understanding of bilingual gesture use and large sample size can help in generalizing the study.

REFERENCES

Albahoth, Z. M., Jabar, M. B. A., & Jalis, F. M. B. M. (2024). A Systematic Review of the Literature on Code-Switching and a Discussion on Future Directions. *International Journal of Academic Research in Business and Social Sciences*, *14*(2).

Aldalbahy, K. K. (2022). The Relationship between Code-switching and the Level of Language Proficiency in the Second Language of Saudi Female Students. *Arab World English Journal*, *13*(4), 309-324. DOI: https://dx.doi.org/10.24093/awej/vol13no4.

Alhazmi, A. (2016). Linguistic Aspects of Arabic-English Code Switching on Facebook and Radio in Australia. *International Journal of Applied Linguistics and English Literature*, *5*(3). https://doi.org/10.7575/aiac.ijalel.v.5n.3p.184

Alsubhi, M. S. (2018). How language and culture shape gesture in English, Arabic and second language speakers (Doctoral dissertation, University of Birmingham).

Arslan, B., Aktan-Erciyes, A., & Göksun, T. (2023). Multimodal language in bilingual and monolingual children: Gesture production and speech disfluency. *Bilingualism: Language and Cognition*, *26*(5), 971-983.

Cedden, G., Meyer, P., Özkara, B., & von Stutterheim, C. (2024). The "code-switching issue": transition from (socio)linguistic to cognitive research. *Bilingualism: Language and Cognition*, 1–14. doi:10.1017/S1366728924000737

Creswell, John W., and Vicki L. Plano Clark. (2011). Designing and Conducting Mixed Methods Research, 2nd ed. Thousand Oaks: Sage.

Fatima, I., Ajmal, M., & Khan, I. (2024). Cultivating Communication Skills through Non-Verbal Communication: A Case Study. *Annals of Human and Social Sciences*, *5*(1), 79-88.

Ghanad, A. (2023, August 24). An Overview of Quantitative Research Methods. ResearchGate; Everant Journals. https://www.researchgate.net/publication/373370007_An_Overview_of_Quantitative_Research_Methods

Hussain, M. (2014). Cross linguistic variation in the gestures accompanying manner of motion event descriptions by native speakers of English and Urdu. *Balochistan Journal of Linguistics*, 2, 139-167.

Imai, G. (2002). Gestures: Body language and nonverbal communication.

Jensen, Mikael & Emanuelsson, Linnéa. (2016). Integrated Communication Systems and Kinesic Code Switching in Interpersonal Interaction. *Journal of Studies in Social Sciences*, 14, 127-165.

King, S. A., Knott, A., & McCane, B. (2004). Language-driven nonverbal communication in a bilingual conversational agent. *IEEE Xplore*. https://doi.org/10.1109/casa.2003.1199299

Krauss, R. M., & Hadar, U. (1999). The role of speech-related arm/hand gestures in word retrieval. Gesture, speech, and sign, 93.

Lausberg, H., & Sloetjes, H. (2009b). Coding gestural behavior with the NEUROGES-ELAN system. *Behavior Research Methods*, *41*(3), 841–849. https://doi.org/10.3758/brm.41.3.841

Pika, S., Nicoladis, E., & Marentette, P. F. (2006). A cross-cultural study on the use of gestures: Evidence for cross-linguistic transfer? *Bilingualism: Language and Cognition*, *9*(3), 319-327.

So, W. C. (2010). Cross-cultural transfer in gesture frequency in Chinese–English bilinguals. *Language and Cognitive Processes*, *25*(10), 1335-1353.

Talmy, L. (1985). Lexicalization patterns: Semantic structure in lexical forms. Language typology and syntactic description, *3*(99), 36-149.

Tashakkori, Abbas, and Charles Teddlie. (2008). Mixed Methodology: Combining Qualitative and Quantitative Approaches. Thousand Oaks: Sage Publications.

Woolfson, P. (1991). Aspects of Non-Verbal Accommodation to Language in a Bilingual Montreal Hospital Setting. *Journal of Linguistic Anthropology*, *1*(2), 178–188. http://www.jstor.org/stable/43102127