Bilingual Mental Lexicon and Translation: A Psycholinguistic Study of Bengali-English Language Pairs

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ABSTRACT

The study explores the cognitive processes involved in translating between two languages through a psycholinguistic approach, specifically by examining the bilingual mental lexicon. More precisely, the study intends to investigate how bilinguals' ability to perform translation tasks is impacted by their knowledge of both languages and the factors that influence this process. The findings indicate that a person's mental capacity to access words affects their ability to translate from one linguistic framework to another. Several factors come into play throughout this task, including proficiency level, targeted use case contexts, and other situational variables. Bilingual speakers vary in proficiency level, influencing which language paradigm they rely on the most robustly throughout the task. The study addresses disconnects in translation practices by improving our understanding of mechanisms impacting translator techniques and mental word representations. The study has practical implications for language education, processing, and translation.

Keywords*: psycholinguistics, translation, bilingualism, mental lexicon, language proficiency

INTRODUCTION

In pursuit of better comprehension concerning how individuals switch languages in multilingual settings for production and processing purposes, researchers have focused profoundly on studying the bilingual mental lexicon. Translation is an essential part of communication across languages; it requires transferring meaning from one language to another while being mindful of nuances unique to each language, thus making the utilization of our knowledge about multiple languages crucial; our use hence relies upon our bilingual mental lexicons. To this end, experts take a psycholinguistic approach, aiming not only at understanding but also delving deeper into cognitive processes related to translating words or sentences between two separate languages.

According to psycholinguistic theories on language learning and cognition studies, rendering a piece from one language into another entails tackling several cognitive processes, including word recognition, syntax understanding, and semantic analysis (Kroll & Tokowicz, 2005; Hatzidaki, 2013). All these mechanisms are dramatically influenced by a complex network known as "the bilingual mental lexicon," an intricate web brimming with linguistic data tagged under each language for easy retrieval during translation exercises.

The practice of code-switching refers specifically to how bilingual individuals alternate between their two languages based on given linguistic contexts. Specifically, concerning processing language, they can access both of their languages simultaneously (Grosjean, 2010). Other factors influencing this activation may include communication goals and interlocutors' degree of fluency (Kroll & De Groot, 2009).

The analysis of language translation from a psycholinguistic perspective has included an investigation into how cross-linguistic differences play a role in this process. These differences arise due to variances in

grammatical structures or semantic categories, leading to different discourse conventions across distinct languages. Consequently, bilinguals engaged in translating might encounter multiple new hurdles and get challenged with complex tasks such as lexical interpretation, idiomatic phrasing, or changes to word order (Deuchar & Quay 2001).

According to research studies conducted on bilingual mental lexicons, access to lexical items can be influenced by several factors. The frequency and proficiency levels in both languages, combined with any overlaps between them, affect how proficiently one can perform tasks related to translating verbal items. Generally, bilingual people tend to access terms from their more dominant language faster and with greater accuracy than when doing so from their less dominant language (Kroll & Stewart, 1994; Costa & Santesteban, 2004). Furthermore, while translating idioms or collocations, participants requiring a higher level of semantic overlap between languages found it more challenging than translating simple nouns or verbs (Titone et al., 2011).

By utilizing methods from psycholinguistics studies like employing response time metrics and monitoring eye movements concurrently in an investigation of one's cognitive processes concerning translation, it is possible to achieve valuable insights on the subject. Numerous types of research are conducted in the area of bilingual mental lexicon into how a bilingual individual processes translations of idiomatic expressions using eye tracking (Dimitrova, 2010). Similarly, in other follow-up research projects, participants showcased their capacity for accessing their mental lexicons during translation using reaction time metrics (Costa & Santesteban 2004).

Exploring language conversion within a psycholinguistic framework while examining the bilingual mental lexicon aids our comprehension of both cognitive and linguistic processes involved in translation. We must acknowledge the influence of this framework and highlight any inconsistent cross-linguistics that may affect or complicate accurate translations.

Research Questions

1. What are the cognitive processes involved in bilingual translation?
2. How does the bilingual mental lexicon affect translation performance in bilinguals?
3. What are the impacts of context and cultural knowledge on the translation performance of bilingual people?

Purpose of the Present Study

Our research delves significantly into the psycholinguistic processes involved in translation for bilingual individuals. Through analyzing the use of mental lexicon throughout the translation process of one language into another, we aim to understand how fluent bilinguals navigate between multiple languages. Moreover, our study considers language proficiency levels and dominance while exploring how lexical access aids contextual cue recognition employed during translations. Insights gained from our research will offer a comprehensive view of cognitive mechanisms surrounding multilingual communication, focusing on attention, memory retention, and cognitive control factors contributing to efficient multilingual communication. Our ultimate goal is to establish more efficient and effective strategies for bilinguals that may have more effective practical implementation within fields such as language education or translation services.

LITERATURE REVIEW

Our cognitive system is unique and shaped by various linguistic, cognitive, and cultural factors, such as the role played by bilingual mental lexicons, which are essential for understanding other languages effectively.

Accurate translation requires intricate cognitive processing involving culturally nuanced meanings. Furthermore, it is something you learn through translation courses or become skilled at automatically over time. Research across fields like linguistics, psychology, and translation studies has led to intriguing questions about how cognition mechanisms are involved in the activities related to language processing while translating from one language into another. These questions have led researchers down an enlightening path toward linguistic approaches. By exploring insights on the interactions between neuro-cognitive faculties associated with bilingualism and psycholinguistics, this literature review aims at summarizing theoretical perspectives for insights about elements influential during translations.

The Bilingual Mental Lexicon

A crucial element facilitating seamless transitions between languages by bilingual individuals is their extensive lexical knowledge and representations, known as their "bilingual mental lexicon." This highly nuanced system allows them to select appropriate words during communication, regardless of the distinct languages they speak. Educators can develop a comprehensive understanding of how this complex mechanism operates to design tactics that favorably enhance second language acquisition endeavors and execute successful techniques in educating linguistically diverse learners.

One of the vital components significant for bilingual people's cognitive processing is lexical access, meaning individuals can retrieve appropriate vocabulary from their complex storage with the relevant meaning assigned into symbolic representations inside our brains arranged as linguistic terms, called a "mental lexicon." Research conducted by Dijkstra and van Heuven (2002) shows that there are two potential avenues that multilingual individuals might apply regarding retrieving ways and articulating ideas: Either by employing related dialect-based technology through a language-specific lexicon or by using common lexicon-typical words occur in both dialects. They are probably more inclined to opt for language-specific lexicons when conversing or reading in one language and shared ones when communicating in another.

In delving deeper into understanding the bilingual mental lexicon, it is essential to consider lexical representation—how words are represented mentally. Theories suggested by Kroll and Stewart (1994) propose that bilinguals store their languages either separately in their minds (the Separate Stores Hypothesis) or together in a single lexicon (the Integrated Store Hypothesis). Later studies indicate that both of these hypotheses hold some truth, implying that factors like age of acquisition, proficiency level, and language dominance can impact its organization.

The degree of proficiency in each respective language can immensely influence an individual's grasp over their bilingual mental vocabulary; this is referred to as 'language dominance.' As Marian & Spivey (2003) point out, individuals with one dominant language can access terms via said dominant language while communicating in daily interactions.

Several studies reveal insight into the bilingual mental lexicon's significance in language processing and translation. The research of Costa et al. (1999) hints at two distinct lexical representations for each language within a bilingual brain, while Kroll and Stewart (1994) propose a unified theory suggesting both languages are activated at once during speech comprehension. Recent studies show that language dominance and proficiency account for integration and variation with dynamic flexibility (Abutalebi & Green, 2016). The Revised Hierarchical Model (RHM), advanced by Kroll and Stewart (1994), emphasizes the involvement of shared semantics and syntactic processes utilized across both languages concurrently; however, individualistic communicational features get preserved via differing lexical representations. Psycholinguistic data uncovers that numerous components like word frequency or usage context seem to impact how words are processed in the bilingual brain (Dijkstra & van Heuven, 2002).

Cognitive Mechanisms Involved in Translation

The translation is a multifaceted process that demands the engagement of several cognitive mechanisms. These mechanisms facilitate language comprehension, lexical processing, syntactic understanding, active memory utilization, and attention—all critical components throughout the translation tasks. Understanding these functions is integral to effective translation strategies, which improve overall performance.

Researchers Alves and Gonçalves (2013) report that translating involves numerous mental tasks, including interpreting the initial reading of a text and selecting correct vocabulary usage while respecting syntax arrangements and semantic processing before completing the final version of translated texts. How each action interconnects with others during this intricate process may result in translating being viewed as an arduous task.

Translation requires many cognitive mechanisms to come together when interpreting a message accurately, including working memory, which helps hold onto information while navigating through different linguistic frameworks as part of the overall task. Shreve and Angelone (2010) found that, given its importance in multitasking aspects of thought processes like deciphering source content while generating target content via language conversion efforts, making it a central capacity underlines effective translation practices in this domain overall.

Moreover, lexical processing plays a vital role in uncovering insights related to word meanings across multiple languages. According to Kussmaul's (1995) research findings, accessing language lexicons in both source and target languages is necessary for translating text with the appropriate contextual meaning and nuance.

The syntactic processing mechanism also includes understanding sentence structures across different languages. The study by Ruiz et al. (2008) highlights the importance of recognizing equivalents between syntactic forms in distinct linguistic frameworks when aiming for exceptional translation output.

In the process of translation lies an essential cognitive mechanism known as attention. It plays a crucial role in filtering out irrelevant information while facilitating the selection of only relevant elements from inputs. The research of O'Brien (2013) confirms that attention is critical as it enables translators to concentrate on vital aspects within source texts while disregarding less effective components. Since translations are complex assignments that require navigation through multiple languages and communicative contexts, individuals must make strategic decisions based on intended audiences (Pym, 2010).

Studies have shown the activation of various language systems, such as the lexical processes of translations (Christoffels et al., 2006; Costa & Caramazza, 1999; Green, 1998). It is also noteworthy that bilingual individuals experience simultaneous activation of both languages when translating. This occurrence potentially leads to cross-linguistic interference and competition, an idea supported by several studies like Dijkstra & van Heuven (2002) and Kroll et al. (2006). Cognitive control plays a crucial role in managing this interference and maintaining the goal of the translation task (Abutalebi & Green, 2016; Blumenfeld & Marian, 2013).

Studies on psycholinguistics have investigated how our minds work when we translate texts and underscored the crucial role of cognitive control, working memory, and attention in achieving good results(Costa et al., 2006). In particular, the research of Costa et al. (2006) reveals that inhibiting irrelevant thoughts is essential for efficient translation. Additionally, high-performing translators tend to have more working memory

capacity and better cognitive control than their lesser-performing counterparts (Moser-Mercer, 1994; Padilla et al., 2005).

Given the complexity involved, successful translation requires managing multiple language systems within the bilingual brain, activating some while inhibiting others. Kroll and Tokowicz (2001) suggest that one must consider structural and organizational aspects of the mental lexicon specific to each language involved in communication. The degree of overlap in meanings across languages can also impact the ease of translation; this factor may facilitate or make this activity more challenging (Costa & Santesteban, 2004).

Research on Psycholinguistic Approaches

Research on psycholinguistics brought cognizance to light about cognitive mechanisms connected with language interpretation tasks. Researchers have implemented varied methodologies and techniques to assess the processing methods involved in translations and analyze factors contributing to better decisions among translators. Cognitive strategy analysis through "Think Aloud Protocols" enables interpreters or translators to express their experiences via oral interpretation assistance tasks, hence identifying psychological systems that improve decision-making task-related efficacy effectively (Alves & Gonçalves, 2013).

Psycholinguistics employs several techniques to gain a robust grasp of the cognitive mechanisms involved in translation studies. According to eye-tracking studies, multiple language systems are implemented or curtailed, such as lexical, semantic, or pragmatic processes (Garcia et al., 2021), making it easier to figure out where a translator focuses their attention. Reaction time assessments provide clues about the far-fetched timing involved with linguistic conversion. These tests make us aware of the multitudinous processes that happen while translating, gaining entry for lexis, or performing semantic analysis and syntactic processing (Green, 2018). These assessments shed light on the cognitive mechanisms that make translating possible.

The Role of Individual Differences in Translation Performance

The importance of individual differences in enhancing one's translational aptitude is gaining steam within the academic community engaged in translation studies. Scholars pursuing this field demonstrate a growing interest in investigating how nuances like cognitive abilities, personality traits, or even linguistic proficiencies impact an individual's capability to translate more effectively.

Amongst these factors, notably, high levels of competence across both source and target languages are considered a vital determinant shaping overall performance quality. Furthermore, according to experts, honing specific competencies such as extensive vocabulary knowledge or efficient reading comprehension skills could prove game changers for ensuring superior translations (Sun, 2019).

Academic research has identified that various personality traits can impact an individual's translation skills. Specifically, an open mind and a good work ethic have been linked with more successful translation abilities than those without such character traits. Furthermore, outcomes indicate that anxieties or perfectionist tendencies readily hinder individuals from meeting the same level of success shown by non-anxious individuals during professional translations (Bachman, 1990).

Various factors interplay for individuals to perform successful translations: cognitive control, working memory, and language ability are essential. Critical findings specifying the importance of language proficiency in both first- and second-language skills within translation processes were found in research performed by Gile (2009) and Kuo & Anderson (2010). Bilingual individuals with better cognitive control and working memory tend to perform better in translation tasks (Bialystok & DePape, 2009). In addition

to these studies, linguistic skills became an excellent contributor to higher levels of accuracy and efficiency in research analyzed by Christoffels et al. (2006), Hervais-Adelman et al. (2011), and Bialystok, Craik, and Luk (2012). Another contribution highlighted would be variations coming through each participant's level of language proficiency, which proves active levels of inhibition toward cross-linguistic interference between both languages during translation tasks, as articulated by Kroll et al. (2006).

Cultural Differences in Translation

Precision in translation necessitates extensive knowledge of both languages involved and the intricacies of their respective cultures; it is not as simple as simply shifting words from one language into another. Idiomatic expressions specifically can present significant challenges when they do not translate from one language to another smoothly or with an exact equivalent available in both languages involved in the translation work. Adequate preparation around this challenge involves education around idioms within both cultures—preparedness, which Katan (2014) has extensively researched for its importance in producing accurate translations even through complexity like this.

In the world of translation, avoiding misunderstandings is vital when working on projects that involve various languages and cultures. Given this reality, one issue requiring great care regarding sensitivity towards those differences is metaphors—figures of speech that use comparisons between two diverse elements to convey a deeper meaning. Sometimes equivalent expressions cannot be found due to their unique cultural contexts (Bassnett, 2014), making it difficult to translate them accurately without proper knowledge and background information about those cultures.

Translators should always consider how cultural differences impact the translation of humor or dialects. Since these aspects lack universal definitions, the translator must make analogous or acultural explanations available while preserving portrayals with precision, according to Baker's perspective (2014). Translators must maintain an awareness of social conventions—including context-specific details—when translating humorous content or dialects for more accurate translations. If something amusing in one community may not be funny in another, then an alternative approach is typically required by a translator who wants someone new to understand it.

Multiple studies have found that cultural competence is vital for successful translation when communicating culturally specific notions. Translation requires transmitting cultural, social, and linguistic meaning (Baker, 2011). Translation entails more than just translating words from one language to another; it also involves understanding the cultural context in which the source text was produced and having the capacity to effectively and appropriately represent that context in the target language (Mihaela, 2020).

Bilingual individuals with higher degrees of cultural awareness tend to be more accurate in translating idiomatic expressions and nuances. Those with a lower cultural familiarity face challenges with specific idioms or regular expressions (Munday, 2012; Sidiropoulou, 2019). Even translators with knowledge of a foreign culture can produce translations that fail to capture the original cultural significance due to their background influences (Venuti, 2008). According to Byram (1997), cultural competence is a crucial component of translation competence. A translator must have linguistic and cultural competence together to convey the intended meaning of a text (Byram, 1997). According to Pym's (2012) proposed model for cultural translation, translators must understand and work through cultural disparities between source and destination language cultures.

Research into psycholinguistic approaches to translation has given us new understandings of the intricate

cognitive and linguistic mechanisms at work during translation. Understanding the cognitive and neural underpinnings of the bilingual mental lexicon is crucial for improving our comprehension of the translation process because it plays a significant role in translation.

Theoretical Framework

The current study is relevant to several theoretical frameworks, including linguistic theory, psycholinguistics, and cognitive psychology. The psycholinguistic approach, which is related to translation, emphasizes the cognitive mechanisms of the translation process that contribute to the comprehension and production of language. They are as follows:

A cognitive model of bilingual language processing is the Revised Hierarchical Model (RHM) by Kroll and Stewart (1994). According to the concept, bilinguals have separate mental lexicons for each language while complementing each other. The RHM states that when bilinguals process language, they first activate the lexical representations unique to each language in their mental lexicon. These representations are arranged hierarchically, with the most common and well-practiced words at the top and the least common and poorly practiced words at the bottom.

Van Hell and De Groot's (1998) word association model postulates that when learners process language in their second language (L2), they first access the L2 word form before translating it into its equivalent in their first language (L1). The meaning of a sentence can be determined from its L1 equivalent by using related L1 lexical items, such as idiomatic expressions, which are activated once the L1 equivalent is engaged.

According to Green's (1998) Inhibitory Control Model, bilinguals manage and regulate their two languages through inhibitory control mechanisms. Bilinguals can activate the proper language system for the current context while suppressing interference from non-target languages. The model suggests that bilinguals should focus more attentional resources on processing the second language and choosing the appropriate morphological and conceptual representations from their mental lexicon.

According to the Lexicalization Process Control (LPC) model developed by Costa et al. (2006), L1 words are kept in the mental lexicon in an integrated and automatic manner, facilitating easy access. The L1 words are more likely to be processed automatically and unconsciously without requiring much conscious attention because they are simple to activate. L2 lexical items are less accessible and require more effort to retrieve because they are stored in a less integrated and spontaneous way. Because of this, L2 processing focuses more on structure, meaning, and grammatical rules and is typically more analytical and deliberate.

Pym's (2012) model is a cultural translation model that focuses on the translation process and how translators can mediate between various cultures rather than being a cultural competence theory. According to to Pym, cultural competence involves several factors, such as:

1. Being aware of both the source and target languages' cultural contexts
2. Being conscious of cultural variations and how they may affect communication
3. Taking into account and respecting cultural diversity
4. Cultural context-specific communication styles and tactics

METHOD

The current study used a psycholinguistic approach to examine the cognitive processes involved in translation and the role of individual and cultural differences in translation performance within the bilingual mental lexicon framework. The research employed a mixed-methods approach and combined quantitative

and qualitative data.

Participants

The study enrolled thirty bilingual individuals who speak English and Bengali fluently. To classify participants within this group, the study utilized a specially designed tool that measures these skills accurately and fairly. Recruitment took place via a convenient sampling process.

Procedure

A careful investigation was performed utilizing three distinctive phases for this research project. During phase one, participants engaged in psycholinguistic assessments that entailed word association activities, picture-naming puzzles, and sentence completion challenges designed to examine the extent of cohesiveness and convergence within their mental lexicon for both languages analyzed during this research study. The second phase of the current study involved giving participants a demanding task that required translating English sentences into Bengali and vice versa. We recorded all translations performed by each participant using audio technology while encouraging them to explain their decision-making process after completion. We transcribed all recordings meticulously for any inaccuracies or unique translation techniques visualized by any participant.

Data Analysis

Our study has investigated several variables, including language overlap between the mental lexicons of translators, any differences regarding culture, and how these variables relate to performance. We analyzed all this through quantitative methods akin to correlation analysis and using regression and descriptive statistics during our first and third research phases. The second phase gathered qualitative data through content-analyzing transcripts from interviews with participants discussing their thoughts while translating.

Ethical Consideration

We went to great lengths to ensure that every participant gave us informed consent before taking part and assured them that they might withdraw at any stage throughout the study.

Limitations of the Study

We noted some limitations within this research project: we relied on self-reported measures for assessing cultural competence and working memory capacity, an approach subject to individual preference biases leading to inconsistent interpretations among different people and impacting accuracy checks, particularly among diverse groups such as those involved here. Additionally, these measures may fail to fully capture the complexity and variability of these constructs, which may limit the generalizability of the findings.

Additionally, our study was confined to convenience sampling, limiting projection onto other bilinguals outside of the examined region or cultural group, further curtailing any implications on cultural influence in translation performance.

A limitation of the current study is that it did not include neuroimaging tests to evaluate the brain mechanisms involved in translation and the bilingual mental lexicon. While this investigation has furnished us with informative data concerning how cognitive and cultural factors could influence someone's performance during translation tasks, there has not been much investigation carried out into what goes on within our brains when performing said tasks. Future research can develop insight using tools like functional magnetic resonance imaging (fMRI) or electroencephalography (EEG). This would lead to a substantial comprehension of the cognition involved in translation and the neural bases of distinct translation

capabilities among individuals and communities.

The investigation focused on English and Bengali; however, it is crucial to remember that it may not necessarily hold for all other language pairings.

Moreover, while this study concentrated on cognitive mechanisms associated with interpretation skills like attentional control or mental flexibility, it omitted considerations about motivational incentives impacting translators' performance. Further research might explore such interpersonal dynamics alongside cultural influences on their varying attitudes toward translating activities.

RESULTS

Bilingual people often face situations where they need to transfer meaning from one language to another; accessing their "mental lexicon" becomes crucial because it holds all the essential vocabulary knowledge required for successful results. This study employed a psycholinguistic approach to investigate how bilinguals utilize their mental storehouse during translations, focusing on thirty fluent participants in both Bengali and English. Notably, the study concluded that translation accuracy depends on many psycholinguistic factors.

Proficiency in Both First and Second Languages

As per the findings of this study, it is notable that most bilingual individuals exhibit better mastery over their first language than the second one they learn. From the perspective of Bangladesh, those learning a new language have attainments ranging from level A2 to level B1, indicating entry-level to moderate-level competency. However, such levels vary among learners depending on individual factors such as age during acquisition and the type of learning context followed. For some people, higher exposure during their early formative years or rigorous formal immersion-driven education led them to acquire a high level of proficiency in their second languages. Individuals with balanced exposure during childhood tend to excel at two diverse languages, exhibiting knowledge about grammar, vocabulary, and syntax peculiarities prevailing amidst cultural differences.

In the study, the researcher found some motivating insights regarding participant experiences. Some individuals exhibited indications of language dominance, where Bengali held more sway over their cognitive functions than English did. Unfortunately for these individuals, such challenges impeded successful translation into Bengali. To mitigate these obstacles and enhance accuracy levels, the participants often sought support from outside sources, such as bilingual dictionaries or professional linguists who could assist them in finding suitable translations from English.

Word-for-Word and Contextual Translation

In contemporary research focused on translation and cognitive linguistics, it has been determined that an approach used by participants involves reflecting on both the setting within which a given text originates and distinct linguistic and cultural characteristics specific to its destination language. In contrast with word-for-word conversion processes often seen before, those performing translations instead engage in nuanced routines, prioritizing intentional expression through deep work regarding vocabulary selection alongside alteration considerations for conveying intended meaning appropriately.

Furthermore, it was discovered that the syntax and meaning of sentences influenced participants' sentence comprehension. These findings suggest that subjects for investigation considered context and overall impact of sentences rather than relying solely on translation word-for-word. It became clear that participants focused significantly on identifying the primary subject noun or pronoun and the main verb when attempting

to extract sentence structure and meaning, an essential guide during the translation process. Several approaches implemented during translations were identified since they were based on different factors such as competence level in both languages being utilized, type and nuance of text under consideration, and target end-users' purpose behind each respective translation endeavor. Some translators resorted more specifically to a literal interpretation approach, keeping grammatical structure and vocabulary consistent with the source language.

The study has revealed that those proficient in both languages—native and target—tended to adopt a contextual approach toward translation. These translators did not just convert words but gave importance to cultural influences and subtle linguistic details like idioms or colloquial slang used within the original content. Such an approach ensured that translations turned out as natural as possible while retaining fluency in communication.

Differences in Mental Processes When Using the First and Second Languages

Participants in this study noted that utilizing their native language in contrast with their second language caused them to notice variations in their brain processes.

Using their first language (Bengali) during translation gave participants a sense of more ease and automaticity, which was one of the most often mentioned differences. Because the first language was generally mastered earlier in life and was more imprinted in their mental lexicon, it was easy and quick to recall words, sentences, and grammatical structures. They stated that they felt a stronger emotional connection to their native language. This was because it was intimately connected to their identity and cultural heritage and frequently evoked emotional memories and childhood experiences.

Participants also noted a difference in how they processed information in their first language as opposed to their second language. Some participants claimed that when using their first language, they relied more on intuition and automatic processing while using their second language required more analytical processing and deliberate effort.

When using their first language as opposed to their second language, participants experienced variations in their attentional processes. Because they had to use more attentional resources to understand the language when speaking in their second language, participants said they were more susceptible to getting distracted.

The level of skill, the amount of exposure to the language, and the cognitive demands of the activity, among other things, all contributed to participants' increased effort and cognitive load when using their second language. As a result, utilizing a second language needed more conscious effort and attention throughout the mental processes involved, such as checking for mistakes, making up for a restricted vocabulary or understanding of syntax, and looking for the appropriate words or expressions.

Expressing Certain Ideas during Translation

The ability to articulate emotions or cultural ideas that are more prominent or ubiquitous in one language than the other was reported to be convenient by the participants. The idea of "familism," which emphasizes the value of family and extended social networks in Bengali cultures, was favorable for participants to articulate.

Depending on their acquaintance with the cultural allusions and wordplay employed in a language, participants found it easier to comprehend and convey particular types of humor or sarcasm in that language than in the others. Participants found it simpler to grasp and apply puns and wordplay in Bengali since they

were more popular and valued there.

Which language participants found more comfortable using to express particular thoughts or concepts was also influenced by their preferences. When addressing specific cultural customs or family dynamics, participants who spoke Bengali and English as a first language preferred to use Bengali; nevertheless, they chose to use English when speaking on more formal or academic subjects. Because Bengali was the language they initially learned to link with these notions, some participants found it simpler to convey their emotions and feelings in Bengali. However, because they had studied these notions in English, they discovered that it was simpler to communicate technical or scientific ideas in that language. This was frequently noticed in participants who had learned English in academic or professional settings.

Changes in the Mental Lexicon When Switching Between First and Second Languages

According to the task's cognitive requirements, participants experienced changes in their mental lexicon. The translators of this study had slower processing speeds, an increase in cognitive load, and mental exhaustion due to changes in their mental vocabulary. To concentrate on the linguistic and communicative parts of the task when translating a text from Bengali to English or vice versa, participants had to inhibit the activation of the other language. This involved the processing and retrieval of linguistic knowledge from the mental lexicon, which involved cognitive mechanisms like attention, inhibition, and working memory.

In the participants' mental lexicon, there was cross-linguistic interference. Inadvertently using English terms or sentence constructions in the Bengali translation was a frequent phenomenon among participating speakers while translating from English to Bengali. This was because when a participant utilized Bengali, even when English was not being used directly, the mental lexicon activated lexical and grammatical knowledge of English.

The findings indicated that the participants relied on English while translating from Bengali to English, the more adept they were in the language. As a result, English interfered with how well they performed in Bengali, as shown by slower processing times, a rise in fixations, and more mistakes while translating from Bengali to English. Conversely, bilinguals who spoke English poorly did not encounter this interruption and completed the job more quickly.

Bengali activation competed for participants' attention and cognitive resources when they tried to use English, which interfered with their speech and caused delays, mistakes, or confusion. Participants, however, experienced facilitation when speaking Bengali because the varied lexical and grammatical possibilities of Bengali helped them be more flexible in their thinking, more creative, or better able to solve problems.

Lexical access problems were a frequent occurrence for participants, and they were defined as the momentary inability to recall a term or to locate a suitable phrase in one of their languages to communicate a specific notion or concept. This happened when the individuals tried to use a second language or switch between languages.

Furthermore, depending on the language, participants used a variety of word identification and interpretation approaches. Participants relied more on phonological information (the sound of words) when reading in Bengali, whereas they relied more on orthographic information (the visual appearance of words) when reading in English.

Cultural Differences between the Source and Target Languages

Participants switched between languages or dialects to express the cultural identity of the source text or to explain cultural concepts that were not equivalent in the target language. They used translation techniques such as code-switching, in which they shifted between languages to convey certain cultural notions, and cultural adaptation, in which they altered the source text to suit the cultural norms and values of the target language.

The study also found that the translation quality and accuracy of the participants were impacted by cognitive conflict or distraction when translating between languages with distinct cultural norms. Participants actively self-monitored and corrected themselves during the translation process or asked for input from others to verify the accuracy of their translations to reduce this cognitive conflict.
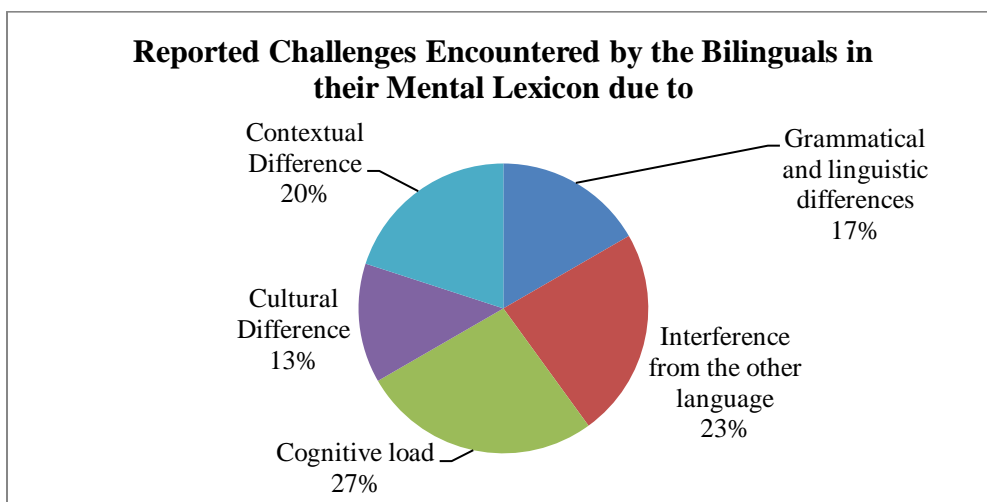

Reported Challenges Encountered by the Bilinguals in their Mental Lexicon due to

- Contextual Difference 20%
- Grammatical and linguistic differences 17%
- Cultural Difference 13%
- Interference from the other language 23%
- Cognitive load 27%

Figure 1

DISCUSSION

The mental lexicon represents an individual's stores of vocabulary knowledge, encompassing definitions alongside grammatical usages within a specific language system. Bilingual associations consequently have two unique mental lexicons resulting from their mastery of several languages. Through methods of interaction between these various linguistic resources, researchers have identified connections within these discrete linguistic resources.

To assess probable links between separate mental lexicons among Bengali-English bilinguals, the researcher observed participants completing picture-word pairings via Bengali (L1) – or English (L2)-language explanations. The goal was for participants to quickly name associated images based on visual prompts linked to given words, with the researcher monitoring accuracy and response times related to those prompts. Results showed that using L1 to recognize images did not cause any influence from L2, yet interference existed upon identification using L2 explanations, particularly relating to "cognates" (words sharing similarities across distinct languages). The degree of interference noted varied based on the frequency of general usage and adequate proficiency levels across both linguistics.

Such findings align with Kroll and Stewart's (1994) Revised Hierarchical Model (RHM) (Figure 4), indicating that bilingual participants possess two discrete mental lexicons for each language. But these

resources are linked at the semantic level, resulting in competition between their respective representations. Nonetheless, there were also facilitation effects when cognates were employed, supporting earlier research that implies overlapping connectivity between these cognitive resources for each language (Costa & Caramazza, 1999).

Research states that translation considers the context of the source text and linguistic and cultural norms in target languages. The results showed that participants made translation errors when sentences contained colloquial terms. Findings highlight how participants processed sentences based on L1 idioms instead of producing related equivalents for L2. Van Hell & De Groot's (1998) word association model (Figure 2) stresses how cross-linguistic similarity between languages and the proficiencies of bilinguals activate their lexical-conceptual representations (Figure 3), affecting translation outcomes concerning idiomatic expressions.

Bilingual individuals grasp their first language (L1) sooner than monolinguals, leading to a broader knowledge of the initial language. This is why retrieving expressions and phrases comes easily and faster for them than in their second language (L2). When studying such people's translation abilities, the researcher observed that converting terms from L1 into L2 consumed more time than when such participants translated into their primary dialect. Such results imply challenges when recalling words stored in memory regarding L2 other than L1. This finding is in line with the studies of Costa and Santesteban (2004) and Kroll and Stewart (1994), which found that L1 words are more readily accessible in the mental lexicon than L2 words.

In addition to the findings of Gollan et al.'s (2005) study, it is apparent that bilingual speakers' mental lexicons for their first language are more advanced than for their second language. Consequently, bilingual participants could name pictures in their L1 faster than in their L2. This research further observed interference effects when participants named shared category picture membership with L1 words while performing picture naming tasks in L2, supporting Kroll and Stewart's (1994) category interference model, thus implying stronger associations between category concepts with primary language words, resulting in simple accessibility from the mental lexicon as compared to second language terms.

As opposed to using identical cognitive strategies while switching between languages, bilinguals employ distinct approaches depending on the use within their L1 or L2. During this research project, participants received a lexical decision task administered in Bengali (their first language) and English (their second language). The results pointed towards quicker response times for those participants responding during L1 activity, thus reflecting an increased dependence on subconscious processing within one's native language. Conversely, during L2 tasks, participants' responses proved slower, highlighting more significant reliance upon cognitive analytical efforts with an emphasis on grammar as introduced by the Lexicalization Process Control (LPC) model developed by Costa et al. (2006). According to this theory, bilinguals largely depend upon the natural intuitive reasoning underpinning intuitive communication methodologies, with little reliance on conscious intent. However, second language tasks compel decisive mental examination regarding regulations surrounding meaning structure.

According to a group of participants who participated in the study, using a second language causes more distractions, requiring further attentional resources since mental processing is required during translations within their bilingual mental lexicon. The technical term for this issue is "bilingual cost" or "language switching cost," which indicates an augmented cognitive effort when using a secondary instead of a primary language (Kroll & Bialystok, 2013). Observations made by participants are consistent with Green's Inhibitory Control Model (Figure 5), where bilingual individuals are faced with allocating more attentional resources to identify appropriate lexical representation and concepts from their mental lexicon when using second languages, leading to poor outcomes on other tasks besides increased distraction symptoms. Such instances correlate with second language proficiency, where higher skill levels mean more efficiency, reducing load and leading to improved task performances requiring demanding resource management

compared to those with lower levels experiencing more substantial negative impacts. This occurrence defines the concept of bilingual cost due to its fundamental-based inhibitory control, attentional switching, and monitoring essential for managing two languages simultaneously.

Undoubtedly, encountering cross-linguistic interferences while performing translations is a widely known phenomenon, regardless of whether you speak fluently or are just learning a second language. The particular interest of the researcher in this study was in the interferences caused by Bengali (L1) on English (L2). The findings suggested that Bengali-English bilinguals experienced difficulties translating from L2 to L1, indicating intricate L1 interference. Surprisingly despite the expected interferences encountered from one language to another, the research showed that more proficient bilinguals had higher probabilities of experiencing reverse directions. Specifically, utilizing their advanced L2 when translating to their native language resulted in inverse interference, where L2 (English) interfered with their understanding and expressive skills in Bengali.

The results of this study are consistent with the bilingual language processing model suggested by Marian and Spivey (2003), as cross-linguistic facilitation was observed during translation. Participants were faster at naming pictures in Bengali after categorizing them in English, showing that L2 use may assist L1 processing.

It is common for bilingual individuals to encounter lexical access difficulties, or what is referred to as tip-of-the-language (TOT) states. This occurs when a person has difficulty partially memorizing certain phrases or using suitable vocabulary to explain specific topics in one language over another (Golan et al., 2011). Bilinguals have more T0T states than monolinguals, especially in weaker language-communication domains. According to the Gollan et al. (2011) study, these conditions appear to be more common among persons who primarily use English for communicating particular ideas, as compared to Bengali (like its counterpart dominant language). This proves the correlation between our learning speeds or capacities and how efficiently we process information daily. Various contextual factors also influence accessibility indices of our lexicons, such as conversational nuances, attributes of the words one communicates, and age differences (evident in Figure 6) among bilingual participants. It is quite observable that older individuals with considerable age gaps have higher frequencies of experiencing TOT states than younger ones.

Translating tasks include much more than simply transposing words from one language into another; they demand familiarity with the nuances in culture and values across languages. This study analyzed how Bengali idioms could be translated accurately into English without losing their original meaning within a formal context. Results highlighted that such translations were heavily dependent upon negotiable factors encompassing the surrounding cultural milieu, contextual cues, and social implications, thereby requiring translators who are well-versed in handling these complex aspects while working towards effective versions of translations. Pym's (2012) theory of cultural mediation echoes this methodology as an essential part of ensuring successful cross-cultural exchanges during the translation process.
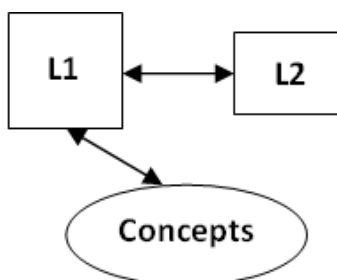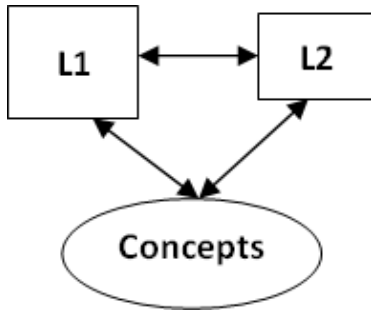

Figure 2: Word Association
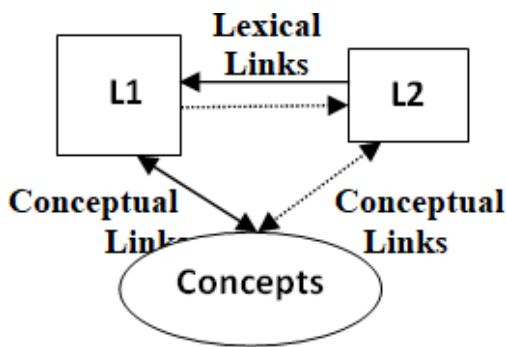
Figure 3: Conceptual Association
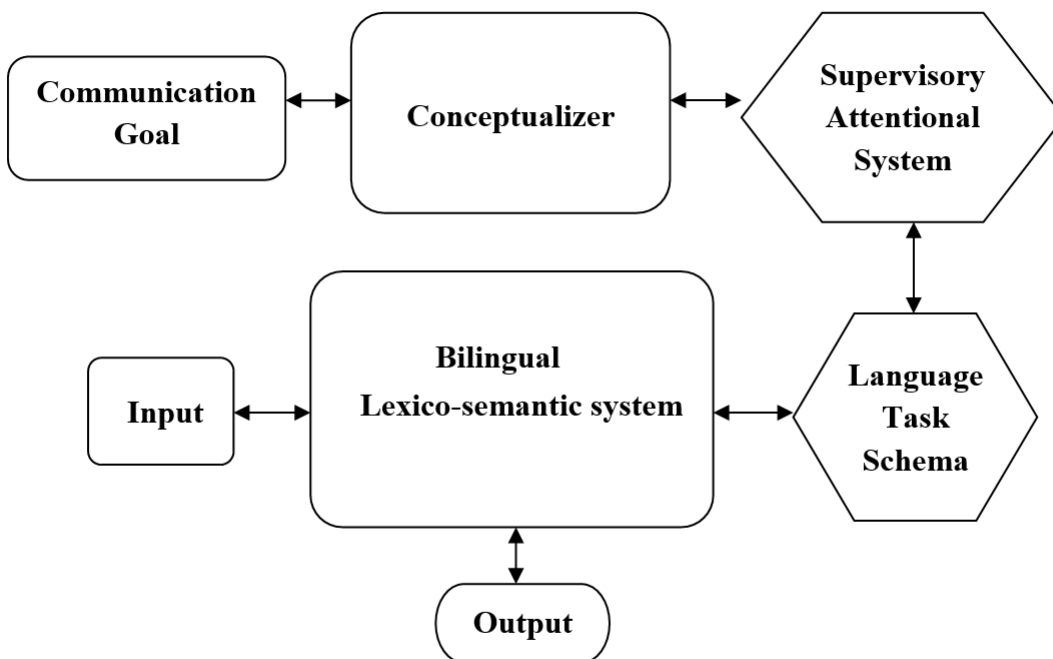

Figure 4: Revised Hierarchical Model

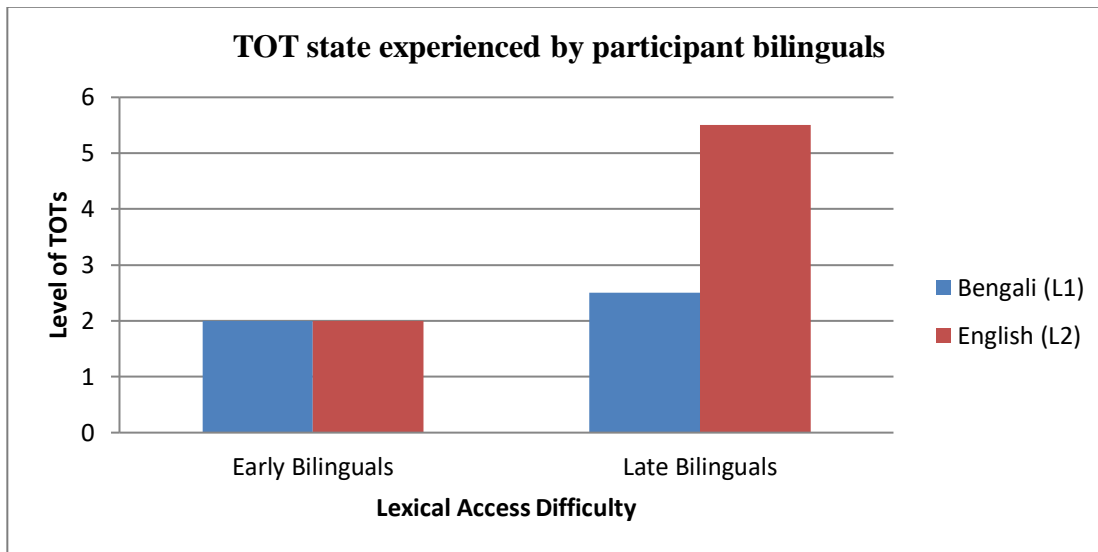**Figure 5: The Inhibitory Control Model (Green, 1998)**

Figure 6

CONCLUSION AND RECOMMENDATION

Taking a thoughtful approach to exploring the cognitive processes behind bilingual translations, this study focused on how the bilingual mental lexicon operates from a psycholinguistic perspective. Investigating further led to noteworthy findings, contributing valuable insights about what affects the mechanisms used for translation and shedding light on how those speaking multiple languages access their language skills to

navigate translation tasks. Specifically, it was found that relying on different languages depended largely on individual proficiency levels, the context of use, and other task-specific factors influencing agility with comprehension and translation activities. These conclusions may assist in advancing our knowledge of psycholinguistics with practical benefits within several fields, including education and training focused on comprehension work.

The findings made through this study highlight key topics that may further research efforts moving forward. It would be insightful to delve into how early vs. late bilingual heritage speakers and second language learners differ in their approaches to translation tasks and to see how this difference may affect their mental lexicons. To build on this, the contextual impact and task demands on translation performance also warrant further examination, especially in real-world applications where exploring elements such as document type or contextual details could greatly inform our understanding. In addition, investigating the correlation between language proficiency and translation aptitude could give us valuable insights with far-reaching policy implications. This research could have implications for language education, the training of professional translators, and language policy.

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