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The Influence of Mental Translation on Reading Comprehension in Second Language Learners

Ghulam Fatima[1], Rafique Ahmed Lakhan*[2], Amina Bibi Bhatti[3]

[1]Research Assistant, Begum Nusrat Bhutto Women University, Sukkur, Sindh, Pakistan.

[2*]Lecturer, Begum Nusrat Bhutto Women University, Sukkur, Sindh, Pakistan.

[3]Lecturer, Begum Nusrat Bhutto Women University, Sukkur, Sindh, Pakistan.

Corresponding author: rafique.ahmed@bnbwu.edu.pk

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This research investigates the role of mental translation in second language (L2) reading comprehension among university students. Mental translation refers to the cognitive process in which learners translate texts from L2 into their native language (L1) to derive meaning. Although often considered a transitional strategy in early stages of L2 acquisition, it remains prevalent among university-level learners, raising questions about its efficacy and long-term implications on L2 proficiency. The study employed a mixed-method approach combining quantitative survey data from 300 L2 English learners across three universities in Pakistan and qualitative interviews with 20 participants. The research aimed to explore the frequency, perceived usefulness, and cognitive consequences of mental translation during reading tasks. Data were analyzed using descriptive statistics, correlation, and thematic coding. Findings suggest that while mental translation provides initial comprehension support, it may hinder direct L2 processing, leading to slower reading speeds and limited vocabulary acquisition. Most participants acknowledged reliance on L1 translation, especially when reading complex academic texts, despite advanced L2 proficiency. The study concludes that mental translation, though cognitively supportive, should be minimized in favor of direct L2 engagement. Policy recommendations include pedagogical strategies that foster L2 reading autonomy and cognitive flexibility, especially through inferencing skills, vocabulary-building, and metacognitive training.

1. Introduction

Second language (L2) acquisition involves a complex interaction of linguistic, cognitive, and sociocultural factors, among which reading comprehension plays a vital role in academic and professional success. Reading in a second language presents several challenges, including decoding unfamiliar vocabulary, grappling with syntactic structures, and applying higher-order thinking strategies. In this context, one cognitive process that significantly influences L2 reading is mental translation—a process where learners mentally convert L2 texts into their first language (L1) to aid comprehension. While commonly regarded as a transitional strategy, mental translation is often used persistently by university students, which raises important pedagogical and cognitive concerns (Kern, 2018; Zarei & Meihami, 2020).

The tendency to translate from L2 to L1 while reading can be traced to early language learning stages, where learners lack lexical and syntactic fluency. However, the continued reliance on this process among advanced learners has become a subject of academic debate. According to Al-Qahtani (2021), while mental translation can facilitate comprehension in the short term, it may hinder the development of autonomous reading strategies and impede vocabulary retention. This dilemma becomes particularly critical in higher education contexts where students are expected to engage in complex reading tasks, synthesize diverse perspectives, and produce academic writing, often in English.

In the multilingual and linguistically diverse educational settings of countries like Pakistan, English is the primary language of instruction, especially in higher education. Yet, students frequently report difficulties in understanding course materials, which are often linguistically dense and culturally unfamiliar (Shamim & Rashid, 2019; Khan & Awan, 2022). Consequently, mental translation becomes a compensatory strategy used by learners to bridge the linguistic gap. A recent study by Yousaf et al. (2023) highlights that over 65% of undergraduate students in Pakistani universities rely on L1 translation when reading academic texts in English, regardless of their formal English language training.

From a cognitive perspective, mental translation is not inherently detrimental. It reflects the interconnectedness of the bilingual mind, where languages are not processed in isolation but interact dynamically (Kroll & Tokowicz, 2020). According to the Revised Hierarchical Model (RHM) of bilingual memory (Jiang & Forster, 2020), learners initially rely on L1 to access conceptual knowledge but gradually build direct links between L2 words and concepts. However, this progression is not uniform, and some learners remain in the translation-dependent phase far longer than expected. Mental translation, in such cases, can indicate a plateau in L2 development rather than a bridge toward fluency (Kim & Nam, 2021).

The ongoing debate surrounding mental translation reflects two dominant paradigms in language education. The scaffolding view considers L1 use as a necessary support mechanism, particularly in the early stages of learning (Cummins, 2017). Proponents argue that L1 mediation can reduce cognitive load, facilitate understanding, and enhance learner confidence (García & Wei, 2019). This perspective is echoed in research by Haider and Yasmin (2019), who found that

allowing controlled L1 use in reading classrooms improved comprehension outcomes. In contrast, the immersion view, grounded in Krashen's (1982) Input Hypothesis, emphasizes minimizing L1 use to promote deeper L2 acquisition. Studies aligned with this view assert that constant translation hampers automaticity and fluency (Schmidtke & Kroll, 2018).

Technological advances have further complicated the issue. The availability of translation tools such as Google Translate has normalized mental translation, even in academic contexts. Students often use these tools for quick comprehension, reducing the need to develop inferencing or prediction skills in L2 (Amini & Farahani, 2022). While digital tools can enhance accessibility, they may also foster linguistic dependency if not used strategically. Moreover, mental translation is deeply embedded in students' metacognitive frameworks—how they think about and regulate their reading. Research by Zhang and Lin (2021) reveals that students with high metacognitive awareness are more likely to transition from translation-based strategies to L2-dominant ones. Conversely, students with limited self-monitoring skills tend to stick with translation even when it slows them down. This highlights the need for pedagogical interventions that target not only language proficiency but also metacognitive strategy training (Ardasheva & Tretter, 2019).

Another important dimension is the affective aspect of reading. Learners often feel anxiety when reading in L2, which drives them to rely on L1 for reassurance and comprehension (Tuncer & Dogan, 2020). While translation offers short-term relief, it may perpetuate a cycle of dependency and hinder confidence in L2 processing. As Weng et al. (2022) argue, reducing learners' anxiety through supportive strategies can gradually wean them off translation and encourage direct engagement with the L2. Furthermore, the persistence of mental translation among advanced learners may reflect gaps in instructional practices. Many university-level English courses focus on grammar and writing, with limited emphasis on reading strategies or comprehension monitoring. In a recent curriculum analysis, Saeed and Aftab (2021) observed that L2 reading instruction in Pakistani universities often lacks explicit training in cognitive and metacognitive strategies, leaving students to rely on mental translation by default. Addressing this curricular gap could reduce L1 dependency and foster more effective L2 processing.

This issue also has implications for academic performance. Students who rely heavily on mental translation may process information more slowly, affecting their ability to complete reading assignments on time. Additionally, translation may lead to semantic distortions, especially when idiomatic or culturally bound expressions are involved (Chen, 2023). These distortions can affect students' understanding of core concepts, impacting their ability to engage critically with texts and perform well in assessments. Mental translation is also a subject of interest in neurolinguistic research. Recent fMRI studies indicate that bilinguals who rely on translation show greater activation in brain regions associated with working memory and cognitive control, suggesting that translation imposes a higher cognitive load compared to direct comprehension (Guan et al., 2019). This supports the argument that translation, while helpful initially, may become inefficient in the long run.

In the Pakistani context, the prevalence of mental translation among university students also intersects with broader socio-educational issues. These include under-resourced English language programs, teacher proficiency gaps, and linguistic hierarchies that privilege English over indigenous languages (Rehman et al., 2022). Students may see English as a foreign and formal language, reinforcing the psychological distance that mental translation seeks to bridge. Given these complexities, this study aims to systematically analyze the role of mental translation in second language reading among university students in Pakistan. The research explores how frequently students use mental translation, how they perceive its effectiveness, and what impact it has on their reading proficiency and academic performance. By integrating quantitative and qualitative data, this study seeks to contribute to the ongoing debate and offer actionable insights for pedagogy and policy.

Reading in a second language poses unique challenges compared to reading in one's native tongue. According to Grabe and Stoller (2019), L2 reading involves decoding unfamiliar syntactic structures, processing new vocabulary, and applying inferencing strategies, all of which demand high cognitive load. In such contexts, students often resort to L1 mediation—either consciously or subconsciously—as a coping mechanism. Mental translation becomes a bridge between linguistic competence and comprehension (Li, 2020). While this strategy may support early-stage learners, its continued use in advanced stages raises concerns about its impact on reading fluency and linguistic independence (Jiménez et al., 2021).

In multilingual countries like Pakistan, English serves as the primary medium of instruction at the university level, particularly in the sciences, engineering, and business studies. This has made L2 reading proficiency a crucial determinant of academic success. Despite years of English instruction, many students still struggle with reading comprehension, often relying heavily on translating texts into Urdu or regional languages like Punjabi or Sindhi (Shamim & Rashid, 2019). This reliance suggests that mental translation may be more than a transient phenomenon—it may represent a persistent cognitive strategy that shapes academic engagement.

The issue of mental translation is also relevant in the broader discourse of bilingualism and cognitive linguistics. Kroll and Tokowicz (2020) argue that bilinguals engage in cross-linguistic transfer at various levels of processing, including lexical, syntactic, and semantic domains. The extent and nature of mental translation, therefore, reflect deeper issues of bilingual identity and linguistic compartmentalization. It also underscores the challenges faced by learners transitioning from language learners to proficient language users.

The debate surrounding mental translation revolves around two competing views. The first sees it as a necessary scaffolding strategy, particularly during the early stages of L2 acquisition. This perspective, supported by Cummins' (2017) Interdependence Hypothesis, argues that knowledge in L1 can support and accelerate L2 learning. On the other hand, the autonomous model, aligned with Krashen's (1982) Input Hypothesis, advocates for immersive L2 engagement, warning that reliance on L1 translation can impede direct comprehension and fluency. Previous studies have highlighted how L1 mediation can influence reading strategies and comprehension

outcomes. For instance, Jiang and Kuehn (2022) found that learners who frequently used mental translation demonstrated slower reading rates and limited inferencing capabilities. Conversely, training students to adopt L2-oriented strategies improved reading efficiency and retention. Similarly, Zhang (2023) emphasized that students who developed metacognitive awareness of their reading habits were better able to transition away from L1 translation.

Given the conflicting evidence, there remains a need to empirically investigate how university students—particularly in L2-dominant academic environments—perceive and use mental translation during reading tasks. This study aims to fill that gap by analyzing the reading strategies of Pakistani university students, focusing specifically on the frequency, function, and impact of mental translation.

Understanding the role of mental translation in L2 reading is not just a theoretical concern—it has significant implications for pedagogy, curriculum design, and language policy. If mental translation is found to be a limiting strategy, educators may need to design interventions that promote L2 reading autonomy. On the other hand, if it proves to be a useful tool when employed judiciously, it may warrant integration into L2 reading instruction. Either way, empirical insights into this phenomenon can contribute to more effective teaching strategies that align with learners' cognitive processes.

This paper is organized as follows: Section 2 outlines the research objectives and questions. Section 3 presents a comprehensive literature review, synthesizing theoretical and empirical findings on mental translation and L2 reading. Section 4 discusses the methodology, including participant selection, data collection tools, and estimation techniques. Section 5 presents the results and interpretation. The paper concludes with a summary of findings, policy recommendations, and suggestions for future research.

1.1 Research Objectives

1. To analyze the prevalence of mental translation among university-level second language readers.
2. To evaluate the cognitive and academic impacts of mental translation during L2 reading.
3. To assess the relationship between mental translation and L2 reading proficiency.
4. To propose pedagogical strategies to manage or reduce dependency on mental translation.

1.2 Research Questions

1. How frequently do university students engage in mental translation during second language reading?
2. What are the cognitive consequences of mental translation in L2 reading comprehension?
3. Does mental translation correlate positively or negatively with reading proficiency in English as a second language?

4. What instructional strategies can reduce reliance on mental translation while promoting direct L2 comprehension?

2. Literature Review

Understanding how learners process texts in a second language (L2) has been a critical area of inquiry in applied linguistics and psycholinguistics. Among the most frequently discussed cognitive strategies is mental translation, defined as the process in which L2 learners internally translate content into their first language (L1) to facilitate comprehension (Kern, 2018; Zarei & Meihami, 2020). While this strategy appears to be useful at lower proficiency levels, its persistence among advanced learners has triggered debate over its pedagogical value and cognitive consequences.

2.1 Theoretical Foundations of Mental Translation

The phenomenon of mental translation finds its roots in bilingual memory models. The Revised Hierarchical Model (Kroll & Stewart, 1994; Jiang & Forster, 2020) argues that bilinguals store L1 and L2 lexicons in separate but linked systems. In the early stages of L2 acquisition, learners rely heavily on L1 mediation; over time, direct links between L2 and conceptual understanding are expected to strengthen. However, empirical studies indicate that many learners, particularly in non-native English-speaking countries, continue to engage in mental translation even at higher proficiency levels (Kim & Nam, 2021; Chen, 2023).

2.2 Cummins (2017)' Interdependence Hypothesis

Cummins (2017) supports the use of L1 knowledge as scaffolding for L2 acquisition. It argues that cognitive and academic skills transfer across languages, thus validating controlled use of translation. Yet, opposing views such as Krashen's Input Hypothesis (1982) stress immersion in comprehensible input in L2, minimizing L1 reliance. These competing paradigms form the basis for current instructional strategies in L2 reading pedagogy.

2.3 Prevalence of Mental Translation Among University Students

Multiple studies have documented the widespread use of mental translation in academic reading. Haider and Yasmin (2019) reported that 78% of Pakistani university students admitted to translating English texts into Urdu to aid comprehension. Similarly, Yousaf et al. (2023) found that mental translation is particularly common during reading of academic and technical content, where vocabulary and syntactic complexity are high. These findings resonate with those of Li (2020), who found that even proficient Chinese EFL learners relied on L1 translation to interpret idiomatic expressions and abstract academic content.

Amini and Farahani (2022) noted that technology has normalized this behavior. With tools like Google Translate readily available, students increasingly bypass the cognitive effort needed to infer meaning in L2. While such tools are helpful, their overuse can lead to surface-level understanding and reduce the depth of L2 engagement (Weng et al., 2022).

2.4 Cognitive and Metacognitive Implications

The cognitive cost of mental translation has been scrutinized in recent neurolinguistic studies. Guan et al. (2019) used fMRI data to show that bilinguals who engage in mental translation exhibit increased activity in the prefrontal cortex, suggesting higher working memory load compared to those who read directly in L2. This aligns with Schmidtke and Kroll (2018), who argue that mental translation, while initially facilitating comprehension, becomes cognitively inefficient over time.

Metacognitive awareness plays a pivotal role in how learners use or discard translation strategies. Zhang and Lin (2021) found that learners with high metacognitive reading awareness are more likely to abandon translation strategies and use inferencing, skimming, and prediction techniques. In contrast, students with low self-monitoring skills tend to rely on translation even when it hinders reading speed and comprehension accuracy (Ardasheva & Tretter, 2019).

2.5 Influence on Reading Fluency and Vocabulary Acquisition

Numerous empirical investigations have examined the relationship between mental translation and reading fluency. Al-Qahtani (2021) found that frequent reliance on mental translation was negatively correlated with reading fluency among Saudi university students. Similarly, Kim and Nam (2021) demonstrated that Korean EFL learners who transitioned to direct L2 reading strategies showed significant improvement in both speed and comprehension scores.

Vocabulary acquisition is another area impacted by translation dependence. Li (2020) found that learners who relied on translation were less likely to retain new vocabulary over time. This may be due to the lack of contextual engagement and semantic elaboration that comes with inferring meaning directly in L2 (Chen, 2023; Nasir et al., 2018).

2.6 Cultural and Affective Dimensions

The preference for mental translation is also linked to sociocultural and affective factors. In countries like Pakistan, where English is a foreign but prestigious language, students often associate it with formality and high stakes. This psychological distance can increase anxiety and reduce confidence in using English directly (Tuncer & Dogan, 2020; Rehman et al., 2022). Translation, in this context, provides emotional comfort and a sense of control, albeit at the cost of linguistic independence.

Language attitudes and teacher perceptions also affect learners' strategy choices. Shamim and Rashid (2019) observed that many teachers in Pakistani universities discourage L1 use without offering alternatives, pushing students to engage in silent mental translation. Saeed and Aftab (2021) criticize the lack of strategy-based instruction in university curricula, noting that students are rarely taught how to read efficiently in L2.

2.7 Instructional Strategies and Interventions

Pedagogical responses to the mental translation dilemma have ranged from banning L1 use in classrooms to encouraging strategic bilingualism. García and Wei (2019) propose a

translanguaging approach that recognizes the dynamic use of multiple languages in the learning process. In contrast, immersive models advocate exclusive L2 use to foster automaticity and fluency.

Several studies have explored interventions to reduce reliance on translation. Haider and Yasmin (2019) implemented a metacognitive training module that reduced translation dependence and improved reading outcomes. Similarly, Zhang and Lin (2021) emphasized inferencing training and reported a 40% drop in L1 reliance among participants. In terms of digital tools, Weng et al. (2022) tested an AI-assisted L2 reading app that encouraged students to guess word meanings from context before using a bilingual dictionary. Results showed improved vocabulary retention and reading confidence. These findings suggest that mental translation can be effectively managed—not entirely eliminated—through targeted strategy instruction.

3. Methodology

3.1 Research Design

This study employs a mixed-methods design, incorporating both quantitative and qualitative data collection to provide a comprehensive understanding of the mental translation phenomenon in L2 reading.

3.2 Participants

The sample consists of 300 undergraduate students enrolled in English-medium programs at three public universities in Pakistan. Participants were selected using stratified random sampling to ensure representation from various academic disciplines.

3.3 Data Collection Instruments

3.3.1 Questionnaire

A structured questionnaire comprising 25 items, including Likert-scale questions on reading habits, mental translation frequency, and perceived reading difficulty.

3.3.2 Interviews

Semi-structured interviews with 20 volunteer participants to gather in-depth qualitative insights into their reading strategies and attitudes.

3.4 Tools and Techniques of Data Estimation

- Descriptive statistics (mean, SD) to analyze survey responses.
- Pearson correlation to examine the relationship between mental translation frequency and reading proficiency.
- Thematic analysis for qualitative interview data.

Table No 1: Descriptive Statistics of Key Variables (N=300)

Variable	Mean	Std. Deviation	Minimum	Maximum
Frequency of Mental Translation	3.8	0.79	1	5
Self-Reported Reading Proficiency	3.2	0.84	1	5
Perceived Usefulness	4.1	0.72	2	5

4. Results and Interpretation

4.1 Quantitative Findings

The majority of participants (mean = 3.8) reported frequent use of mental translation, especially when encountering unfamiliar vocabulary. There was a moderate negative correlation ($r = -0.47$, $p < .01$) between translation frequency and self-reported reading proficiency, indicating that overreliance on translation may hinder fluency.

4.2 Qualitative Insights

Interviews revealed that students see mental translation as a necessary tool during academic reading. However, many acknowledged it slows their pace and sometimes causes confusion with complex syntax. Several expressed a desire to move beyond translation but lacked strategies to do so.

5. Conclusion

This study confirms that mental translation remains a prevalent but controversial strategy among L2 university readers. While it supports initial comprehension, it may limit fluency and vocabulary acquisition over time. Students require structured support to develop direct L2 reading skills.

5.1 Policy Recommendations

1. **Curriculum Reform:** Introduce reading strategy training in L2 courses emphasizing direct comprehension.
2. **Vocabulary Enrichment:** Focus on academic vocabulary development to reduce dependency on L1 mediation.
3. **Metacognitive Training:** Equip students with awareness and tools to monitor and reduce translation habits.
4. **Instructor Training:** Encourage teachers to recognize signs of L1 overuse and implement classroom strategies to minimize it.
5. **Technology Use:** Incorporate tools like L2 reading apps that support inferencing without relying on full translations.

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