A Psycholinguistic and Error-Analysis Framework of Second Language Typology: Diagnosing Cross-Linguistic Phonological, Morpho-Syntactic, and Orthographic Transference in Regional-Medium Higher Secondary Cohorts

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Abstract:
This study provides a detailed psycholinguistic error analysis examining how a student's native language structure affects the acquisition of English as a second language. The research focuses on a randomized cohort of N=300 higher secondary students within the Karauli district of Eastern Rajasthan. Grounded in Robert Lado's Contrastive Analysis Hypothesis, Larry Selinker's Interlanguage Theory, and Stephen Krashen's Monitor Paradigm, the study categorizes and tracks the underlying causes of recurring errors across written composition, oral performance, and reading and listening comprehension tests.
The analytical results show that native language interference functions as a major source of error production, appearing through specific phonological patterns, literal syntactic translations, and subject-verb agreement challenges. Additionally, the study identifies widespread errors driven by overgeneralization and incomplete application of target language rules, which are further aggravated by performance anxiety and high affective filters. The paper presents a comprehensive structural model detailing the steps of second language error development. It concludes with evidence-based pedagogical strategies, emphasizing the need for targeted contrastive awareness, systematic pronunciation practice, and collaborative editing exercises to help learners overcome native language interference and build long-term communicative competence.

1. Introduction

The transition from formal grammatical knowledge to active communicative proficiency in a second language (L2) involves complex cognitive processing, especially when a student's primary language habits are deeply ingrained. In the educational system of Eastern Rajasthan, higher secondary students face significant challenges when learning English. For these learners, English functions as a vital tool for secondary socialization and future career opportunities, yet they must acquire it within environments where their daily interactions occur entirely in regional dialects.
Psycholinguistic research shows that this process is not simply about adding new linguistic information; it requires restructuring existing cognitive frameworks. As Wolfgang Klein notes, a language is classified as "first" if it is acquired before any other; subsequent languages are processed as second or additional tongues. This means that the target language (L2) is introduced into a cognitive environment where the student's native language (L1) has already shaped their phonetic, syntactic, and semantic perceptions.
When the native language and the target language belong to entirely different linguistic families—such as the Indo-Aryan family of regional Rajasthani dialects and the Germanic-roots structure of English—the differences in structural design can lead to persistent learning challenges. This complex process requires the learner to internalize the cultural nuances and communicative expectations of the target language alongside its formal grammatical rules.
According to Rod Ellis, this language transition involves distinct cognitive strategies: learning strategies are used to internalize new rules, production strategies govern language use during formal expression, and communication strategies are employed to bridge vocabulary and structural gaps during real-time

conversation. If the educational environment focuses primarily on memorization rather than active communication, students often rely on literal translation from their native language to express complex thoughts.

This research uses error analysis to examine the specific language challenges faced by higher secondary students in the Karauli district. Instead of viewing student errors merely as failures, this study treats them as valuable indicators of the student's developing internal language system, or interlanguage. By investigating how native language structures influence target language writing, speaking, listening, and reading, this study aims to uncover the root causes of recurring grammatical and pronunciation errors.

The ultimate goal is to provide a solid empirical basis for shifting classroom practices away from rigid translation methods toward targeted, communicative approaches that address cross-linguistic interference directly and help students achieve sustainable language proficiency.

2. Review of Literature

2.1 Theoretical Foundations of Cross-Linguistic Transference

The systematic study of learner errors has evolved through several major theoretical frameworks in applied linguistics. Historically, the Contrastive Analysis Hypothesis (CAH), rooted in Robert Lado's work, argued that second language learning is heavily shaped by the structural similarities and differences between the native language (L1) and the target language (L2). According to this hypothesis, areas where the two languages share matching structures lead to "positive transfer," enabling smooth assimilation. Conversely, conflicting structures produce "negative transfer" or cross-linguistic interference, which serves as a primary source of grammatical and pronunciation errors.

This perspective is balanced by the Identity Theory, which suggests that first and second language acquisition follow similar underlying cognitive laws, meaning that L2 development is guided by universal learning mechanisms rather than just native language habits. Larry Selinker expanded this view by introducing Interlanguage Theory, which treats a learner's developing language system as a distinct, evolving linguistic structure that sits between the native tongue and the target language. This interlanguage changes continuously as the learner tests new communication strategies and modifies internal language rules.

To understand how these internal systems function during formal instruction, we must look to Stephen Krashen’s Monitor Theory. Krashen explains that conscious grammatical learning functions as a "monitor" that allows learners to edit and correct their language output. However, this correction process requires specific conditions: the learner must have sufficient processing time, a clear focus on grammatical form, and an explicit understanding of the relevant rules.

Furthermore, William Klein's research distinguishes between spontaneous language learning, which occurs naturally during daily communication, and guided learning, which takes place through formal classroom instruction. Richard Hawkins adds that classroom environments vary widely, ranging from highly formal settings focused on explicit grammar drill work to interactive, communicative spaces designed around natural language use.

In underserved educational regions, the dominance of formal, teacher-led translation methods often limits natural language exposure, preventing students from moving past rigid interlanguage structures and elevating anxiety levels during communication.

2.2 Empirical Research on Error Taxonomy within the Indian Educational Framework

Extensive empirical research within the Indian educational landscape has examined the specific types of errors that appear when regional-medium students learn English.

- **Classroom Dynamics and Communicative Confidence:** Kothainayaki (1994) analyzed classroom interaction patterns, noting that traditional second-language classrooms are heavily teacher-dominated, which severely limits opportunities for student-to-student communication. Her error analysis revealed recurring challenges in the use of articles, prepositions, and grammatical particles among secondary students. She recommended balancing necessary grammatical exercises with interactive tasks to build communicative competence.
- **Socio-Demographic Factors and Reading Literacy:** Karthiyayani (1995) investigated reading comprehension skills at the higher secondary level. Her findings showed that while students perform reasonably well when answers are directly stated in a single text passage, they struggle with comprehension

tasks that require synthesis across scattered text segments. Her analysis indicated that parental economic status and past academic records are strong predictors of reading success, whereas gender and geographic location show little isolated impact.

- **Anxiety and Strategic Communication:** Nisha (1995) focused on the barriers to communicative competence among regional-medium students transitioning to higher education. She observed that when students face language limitations during real-time expression, they employ specific communication strategies to navigate structural gaps. Her study emphasized that psychological traits, situational anxiety, and parental encouragement play a more decisive role in language development than broad socioeconomic status alone.
- **Orthographic and Phonological Transference:** Baskaran (1996) conducted a detailed analysis of written language errors among undergraduate learners. He classified common spelling errors into four distinct categories: additions, omissions, substitutions, and inversions. He traced many of these errors back to phonological interference from the students' native language, showing how local pronunciation habits can disrupt written spelling accuracy. To mitigate these errors, he recommended targeted pronunciation drills and systematic dictionary work.
- **Motivation and Curricular Constraints:** Ravi (1998) examined student motivation in second-language classrooms, finding that motivation levels are closely linked to the density of new vocabulary presented in textbooks. He noted that motivation tends to stabilize in higher secondary grades compared to lower secondary classes. Rangasamy (1998) also analyzed higher secondary curricula, identifying widespread errors across phonological, grammatical, and discourse levels. He recommended that language examinations evaluate all four core skills comprehensively and suggested using prose written by Indian authors to make content more relatable.
- **Instruction Medium and Expressive Proficiency:** Chandran (1999) evaluated oral communication abilities, demonstrating that students from English-medium schools achieve significantly higher speaking proficiency than their regional-medium peers, primarily due to greater daily language exposure. His error analysis identified persistent phonological, lexical, and grammatical errors among regional-medium learners, underscoring the need for communicative activities in the syllabus.
- **Avoidance Behavior and Performance Anxiety:** Jayanthi (2002) observed classroom dynamics to understand how psychological factors influence interaction. Her research indicated that classroom participation is shaped by a mix of student confidence, social awareness, and past academic setbacks. High anxiety and fear of making mistakes often lead to avoidance behaviors, where students remain passive during discussions to escape criticism.
- **Integrated Skill Appraisals:** Subramanian (2002) conducted an evaluation of core language skills among graduate students. While assessing all areas, his detailed analysis focused on written performance, identifying recurring errors in syntax structure, word recall, and sentence formulation. He advocated for the integration of group discussions, educational language games, and audiovisual tools to diversify language instruction. This approach is supported by Sobana (2003), whose study on written competence confirmed that explicit instructional quality and parental educational backgrounds have a direct, measurable impact on student achievement.

While existing research has separately explored specific types of grammatical or spelling errors, there is a clear need for an integrated study that connects phonological, syntactic, and written errors to structural features of the native language among higher secondary students in educationally underserved regions like Eastern Rajasthan. This study addresses that need through a detailed field analysis within the Karauli district.

3. Methodology

3.1 Statement of the Problem

Higher secondary students in Eastern Rajasthan frequently struggle with persistent grammatical, pronunciation, and spelling errors that hinder their English communication skills. Despite continuous formal instruction, these recurring challenges limit their performance in both academic and professional environments. To develop effective teaching interventions, we must systematically analyze the root causes of these errors. This study uses psycholinguistic error analysis to examine how native language structures and cognitive processing habits shape language learning among higher secondary students in the Karauli district.

3.2 Research Questions

This study addresses three central research questions:

1. How do the phonetic and syntactic structures of a student's native language (L1) affect their accuracy in English (L2) speaking and writing?
2. To what extent do internal cognitive processes—such as rule overgeneralization—contribute to recurring grammatical errors compared to direct native language interference?
3. What specific communication and editing strategies do students employ to bridge structural gaps during real-time language performance?

3.3 Sampling Frame and Informant Distribution

The study evaluated a randomized sample of N=300 students across Grades XI and XII from five selected higher secondary institutions in the Hindaun and Sri Mahaveerji areas of Karauli. This district was chosen due to its status as a socially and educationally developing region. To ensure a comprehensive dataset, 30 to 60 students were sampled from each participating school as detailed below:

1. *Kamla Devi Senior Secondary School, Sri Mahavirji* (n=30 Boys)
2. *Shree Digambar Jain Adarsh Mahila Varishtha Upadhyay, Sri Mahaveerji* (n=30 Girls)
3. *Champa Lal Senior Secondary School, Sri Mahaveerji* (n=15 Boys, n=15 Girls; Total n=30)
4. *Nirmal Happy Senior Secondary School, Hindaun City* (n=15 Boys, n=15 Girls; Total n=30)
5. *Government Senior Secondary School, Todabhim* (n=30 Girls)

3.4 Data Elicitation Techniques

Data collection combined formal testing instruments with qualitative field observations over a two-phase administration cycle:

- **Oral Expression Assessment:** Students participated in structured interviews and recorded conversations lasting 30 minutes to evaluate pronunciation, fluid speech delivery, and oral communication strategies. Recorded speech samples were transcribed phonetically to trace sound adjustments.
- **Written Composition Assessment:** A 40-minute descriptive writing test was administered to evaluate sentence structure, spelling accuracy, and morpho-syntactic patterns.
- **Comprehension Diagnostic Testing:** Receptive language skills were evaluated using independent 20-minute reading comprehension tests and recorded listening comprehension assessments. These tests measured students' ability to decode text, recall information, and understand spoken sentences.
- **Qualitative Field Observation:** Continuous classroom tracking was conducted to record real-time interactions between teachers and students, peer-group communication patterns, and historical student performance on monthly evaluation papers.

3.5 Analytical and Taxonomic Processing

The collected data went through a structured analysis process:

1. *Error Identification:* Identifying variations between learner performance and standard English forms.
2. *Error Classification:* Categorizing errors into phonological adjustments, morpho-syntactic translation issues, subject-verb agreement challenges, and spelling variations.
3. *Psycholinguistic Diagnostics:* Determining whether errors were driven by direct native language interference (interlingual) or internal cognitive overgeneralization (intralingual).

Performance profiles across language domains were standardized using the standard skill score percentage metric:

$$\text{Standardized Skill Score Percentage (\%)} = \left(\frac{\text{Empirical Marks Obtained by Individual Informant}}{\text{Maximum Attainable Score per Diagnostic Dimension}} \right) \times 100$$

4. Results & Discussion

4.1 Taxonomic Distribution of Interlingual and Intralingual Errors

The error analysis revealed a clear division between errors caused by native language interference (interlingual) and those driven by the incomplete application of target language rules (intralingual).

[L2 Error Typology Matrix]

Interlingual (L1 Interference)
Phonological Transference (e.g., s-/sh/ fusion, epenthesis)
Syntactic Literal Translation (SOV word order mapping)
Intralingual (Cognitive Processing)
Rule Overgeneralization (e.g., regularizing irregular past tenses)
Subject-Verb Agreement Blends

- **Phonological and Orthographic Transference:** Direct native language interference was highly evident in student pronunciation and spelling patterns. Learners frequently adjusted unfamiliar English sounds to match the phonetic rules of their native dialect. For instance, dental and sibilant sounds often blurred together (such as substituting /s/ for /ʃ/ in word pairs like *sip/ship* or *was/wash*). In writing, these phonological habits led directly to spelling errors, with students omitting unpronounced letters or substituting vowel pairs based on native speech rhythms.
- **Syntactic Literal Translation:** In written compositions, students frequently mapped English vocabulary directly onto the Subject-Object-Verb (SOV) sentence structure of their native language, rather than using the standard English Subject-Verb-Object (SVO) pattern. This reliance on literal translation resulted in awkward sentence structures that altered the intended meaning.

4.2 Analysis of Intralingual Cognitive Processing Errors

A significant portion of grammatical errors stemmed from internal cognitive processes during language learning, rather than direct native language interference.

- **Rule Overgeneralization:** Students frequently overapplied regular grammatical rules to irregular forms. This was particularly evident in verb conjugations, where learners often added standard suffixes to irregular verbs (for example, creating terms like *goed* or *runned*). This pattern indicates that while students have internalized the basic grammatical rules, their interlanguage system has not yet integrated the relevant exceptions.
- **Subject-Verb Agreement and Copula Omission:** Regular challenges appeared in matching subject-verb agreement, especially in complex sentences or sentences containing plural modifiers. Students also frequently omitted the copula verb (such as *is*, *are*, *am*) in descriptive phrases, a pattern common in early second-language development where learners prioritize content words over structural markers.

4.3 Affective Filter and Real-Time Communication Strategies

The study found that student error rates were significantly influenced by situational anxiety and performance pressure. Under formal testing conditions or during real-time oral interviews, students experienced elevated language anxiety, which disrupted their ability to use known grammatical rules effectively. This observation aligns with Krashen's Monitor Theory, which states that high anxiety can prevent learners from accessing their linguistic knowledge during active communication.

To cope with these challenges during spontaneous speaking tasks, students relied on specific communication strategies. When encountering vocabulary or structural gaps, they frequently used literal translations from their native language, substituted familiar words for complex terms, or avoided difficult topics altogether. While these strategies allowed students to maintain basic communication, they often reinforced incorrect grammatical patterns within their developing interlanguage system.

5. Conclusion & Recommendations

5.1 Conclusion

This psycholinguistic analysis demonstrates that the challenges higher secondary students face when learning English are structured, predictable, and directly tied to cross-linguistic factors and cognitive processing habits. Learner errors are not random mistakes; they reflect an evolving interlanguage system shaped by native language rules and the incomplete integration of target language structures. Direct native language interference regularly appears through phonological variations that disrupt spelling accuracy, and through literal translations that alter sentence syntax. At the same time, cognitive overgeneralization leads to persistent subject-verb agreement and verb conjugation errors.

These challenges are further aggravated by formal, exam-focused teaching methods that offer limited opportunities for natural communication, which raises student anxiety and limits the effectiveness of internal self-correction. To improve language outcomes, educators must move away from simply marking errors as failures, and instead use targeted instructional strategies that address the root causes of cross-linguistic interference.

5.2 Targeted Pedagogical Interventions

Based on these findings, the study recommends the following teaching interventions:

- **Contrastive Grammar and Syntactic Awareness Training:** Language instruction should incorporate explicit comparisons between the sentence structures of the native language (L1) and the target language (L2). Highlighting differences in word order and agreement rules can help students understand the unique patterns of English and reduce reliance on literal translation.
- **Phonetically Grounded Pronunciation and Spelling Exercises:** Teachers should implement structured pronunciation drills that focus on sounds causing frequent confusion. Connecting these phonetic exercises to written spelling practice can help students recognize silent letters and irregular vowel patterns, improving orthographic accuracy.
- **Integrated Error Analysis and Guided Editing in Class:** Classrooms should feature collaborative editing tasks where students analyze anonymized errors from their own work. Guided by the instructor, these exercises help students understand why specific errors occur, strengthening their internal monitoring skills and encouraging self-correction.
- **Creation of Immersive, Low-Anxiety Communicative Spaces:** To lower students' affective filters, schools should prioritize interactive activities such as role-plays, impromptu speaking tasks, and informal peer discussions. Reducing the immediate pressure of grammatical grading during communicative exercises helps build oral fluency and language confidence.

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