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The Role of Speech Chunking and Vowel Duration in Enhancing Fluency: Insights from Gujarati-Speaking Learners of English

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Abstract

This study investigates the influence of speech chunking (the grouping of words during speech) and vowel duration on the fluency and intelligibility of English spoken by Gujarati learners. In the context of increasing reliance on English proficiency assessments such as IELTS and PTE for academic and professional mobility, it is essential to understand how first-language characteristics affect second-language performance. Gujarati, a syllable-timed language, contrasts markedly with English's stress-timed rhythm, often leading to prosodic mismatches and unnatural speech patterns.

By analysing recordings of Gujarati learners speaking English, the study identifies common issues such as inappropriate pauses and vowel mispronunciations. Based on these findings, targeted speaking exercises including chunking practice, rhythm imitation, and vowel length training were developed and implemented. Results demonstrate measurable improvements in both fluency and listener comprehension post-intervention.

These findings offer practical implications for language educators, suggesting that explicit instruction in prosodic features can significantly enhance the spoken English proficiency of Gujarati learners.

Keywords: Chunking, Vowel Duration, English, Speech, Gujarati language

INTRODUCTION

English language fluency involves more than just knowing vocabulary and grammar; it also requires proper pronunciation, natural rhythm, and smooth delivery. For native Gujarati speakers, these aspects often pose challenges due to the influence of their mother tongue. Gujarati is a syllable-timed language, where each syllable is given equal time, while English is stress-timed, meaning some syllables are longer and more emphasized than others. This difference can result in flat or robotic speech when Gujarati learners speak English.

This paper focuses on two important features of spoken English: vowel duration and speech chunking. Vowel duration refers to how long or short a vowel is held, and incorrect usage can confuse meaning or make speech sound unnatural. Speech chunking involves grouping words into meaningful units or phrases. Without proper chunking, listeners may struggle to follow or understand the speaker's message.

Through analysis of speech samples and learner feedback, the study identifies common errors and patterns among Gujarati speakers. It then offers practical strategies such as rhythm training, chunking exercises, and vowel-length awareness to improve both fluency and clarity. These methods are especially useful for learners preparing for English proficiency exams like IELTS and PTE, as well as for everyday spoken

communication.

Background and Literature Review

Speech Chunking

Speech chunking refers to the grouping of words into meaningful thought units, such as "I want to / go to the store." Native English speakers naturally use chunking to organize their speech, helping listeners understand information more easily. According to Gilbert (2008), effective chunking not only aids in listener comprehension but also boosts the speaker's confidence and rhythm. In contrast, a word-by-word delivery that lacks proper grouping results in flat, mechanical, and difficult to follow speech. Chunking is closely linked to how our brain processes language in real time. When speech is well-chunked, listeners can process complex sentences more smoothly, as the message is delivered in manageable, meaningful pieces.

Vowel Duration

Vowel duration refers to the length of time a vowel is held during pronunciation. English makes a clear distinction between short and long vowels, which can affect the meaning of words. For example, "ship" (short vowel) versus "sheep" (long vowel), or "bit" versus "beat." Gujarati, however, does not maintain such strict vowel length distinctions, leading to common mispronunciations among learners (Patel, 2015). These small differences can cause major confusion in English, as vowel length often changes the word entirely. This remains a major challenge for Gujarati speakers and often leads to reduced clarity in communication.

Gujarati and English Rhythm Differences

One of the major challenges faced by Gujarati speakers when learning English is mastering its rhythm and stress patterns. Gujarati is a syllable-timed language, meaning each syllable is pronounced with nearly equal length and emphasis. English, on the other hand, is stress-timed, where stressed syllables occur at regular intervals and unstressed syllables are shortened or reduced. This difference leads to a distorted rhythm when Gujarati speakers speak English, making their speech sound unnatural or difficult to follow. As Roach (2009) observes, learners from syllable-timed language backgrounds often struggle with the prosody of stress-timed languages like English. This mismatch in rhythmic patterns directly impacts both intelligibility and fluency in spoken English.

Methodology

This study employed a quantitative and qualitative descriptive research design to analyze students' understanding of syntactic boundaries and natural phrasing through a pause placement activity. The goal was to assess learners' ability to interpret and segment a written passage based on meaning units and syntactic structure using prosodic markers.

The sample consisted of 30 students enrolled in an English language course at the upper-intermediate level. Participants were selected through convenience sampling and had similar academic backgrounds. All students had prior exposure to reading comprehension and sentence structure activities but had not received formal training in prosodic segmentation using pause markers.

Materials

The stimulus material for the task was a short narrative titled "Maya made the decision". The passage was chosen for its syntactic complexity, containing features such as embedded clauses, compound predicates, direct speech, and prepositional phrases and structures that naturally challenge grouping and pause judgment. The reference version of the passage included 27 carefully placed pause markers (|), determined by syntactic rules and natural reading prosody, verified by a language expert (C2 Level).

Maya made the decision | to go see her grandmother | on a calm Sunday morning. | She noticed a man in a red sweater | jogging with a dog | while she was strolling through the park. | She grinned | as she considered how adorable the dog looked | wearing the sweater. | However, | when she later related it to her friend, | she stated, | "I saw a man | jogging with a dog wearing a red sweater, | " drawing a gasp from the buddy. | Maya answered, | laughing, | "No! | It was on the dog! | She then understood | how crucial it is to pause and properly group words. | She inquired, | "Can I have two chocolate chip cookies and cream?" | when she went into a bakery | later that day.

Total pauses suggested: 27

Data Collection Procedure

Participants were given an unpunctuated version of the passage and were instructed to insert pauses using the vertical bar symbol (|) wherever they felt a natural break in speech or thought would occur. The task was completed individually in a supervised setting with no access to external resources.

Each submission was collected and compared against the reference version to evaluate pause placement accuracy. The comparison yielded five metrics for each student:

- **Total Vertical Bar**: The number of pauses inserted.
- **Correct Vertical Bar**: Pauses correctly matching the reference version.
- **Missing Vertical Bar**: Pauses that were present in the reference but not inserted by the student.
- **Wrong Vertical Bar**: Pauses placed in syntactically inappropriate or misleading positions.
- **Extra Vertical Bar**: Superfluous pauses not found in the reference version.

Data Analysis

A mixed-methods approach was used. Quantitative data were compiled in a structured spreadsheet and analysed to determine accuracy levels. Students were grouped based on performance bands:

- High (20–27 correct),
- Moderate (15–19 correct)
- Low (below 15 correct).

Qualitative analysis focused on common error types such as:

- Misinterpretation of embedded or modifying clauses.
- Disruption of noun phrases or collocations (e.g., "chocolate chip cookies").
- Overuse of pauses based on perceived rhythmic breaks rather than syntactic units.

Table 1: Pause Placement Accuracy Metrics for 30 Students

Student	Total Vertical Bar	Correct Vertical Bar	Missing Vertical Bar	Wrong Vertical Bar	Extra Vertical Bar
Student 1	21	17	6	4	0
Student 2	24	18	5	3	0
Student 3	18	13	9	5	0
Student 4	27	25	2	1	1
Student 5	28	24	3	4	0
Student 6	23	14	13	3	6
Student 7	24	14	13	2	8
Student 8	19	13	14	3	3
Student 9	22	17	10	4	1
Student 10	21	12	15	1	8
Student 11	28	20	7	4	4
Student 12	22	20	7	1	1
Student 13	19	12	15	2	5
Student 14	19	13	14	5	1
Student 15	25	22	5	0	3
Student 16	27	16	11	4	7
Student 17	19	14	13	5	0
Student 18	26	13	14	2	11
Student 19	20	19	8	1	0
Student 20	21	18	9	0	3
Student 21	18	18	9	0	0
Student 22	21	20	7	0	1
Student 23	27	21	6	3	3
Student 24	24	16	11	2	6

Student 25	26	17	10	2	7
Student 26	26	21	6	5	0
Student 27	27	15	12	6	6
Student 28	24	14	13	3	7
Student 29	22	16	11	6	0
Student 30	17	16	11	1	0

Results and Discussion

The purpose of this study was to evaluate students' syntactic awareness and prosodic intuition through a pause placement exercise using the narrative passage "Maya made the decision." Each of the 30 students was instructed to mark pauses where they naturally occurred in speech using the vertical bar symbol (|). Their responses were compared to a reference version with 27 correct pause placements.

Quantitative Results

A detailed analysis of the student data revealed the following:

High performers (7 students) placed 20 or more pauses correctly. For instance, Student 4 achieved the highest accuracy with 25 correct pauses and minimal errors (2 missing, 1 wrong, 1 extra).

Moderate performers (7 students) placed 15–19 pauses correctly. These students demonstrated a basic but inconsistent grasp of sentence segmentation.

Low performers (16 students) scored fewer than 15 correct placements**.** Students in this category frequently missed key pauses and often inserted unnecessary or misplaced pauses.

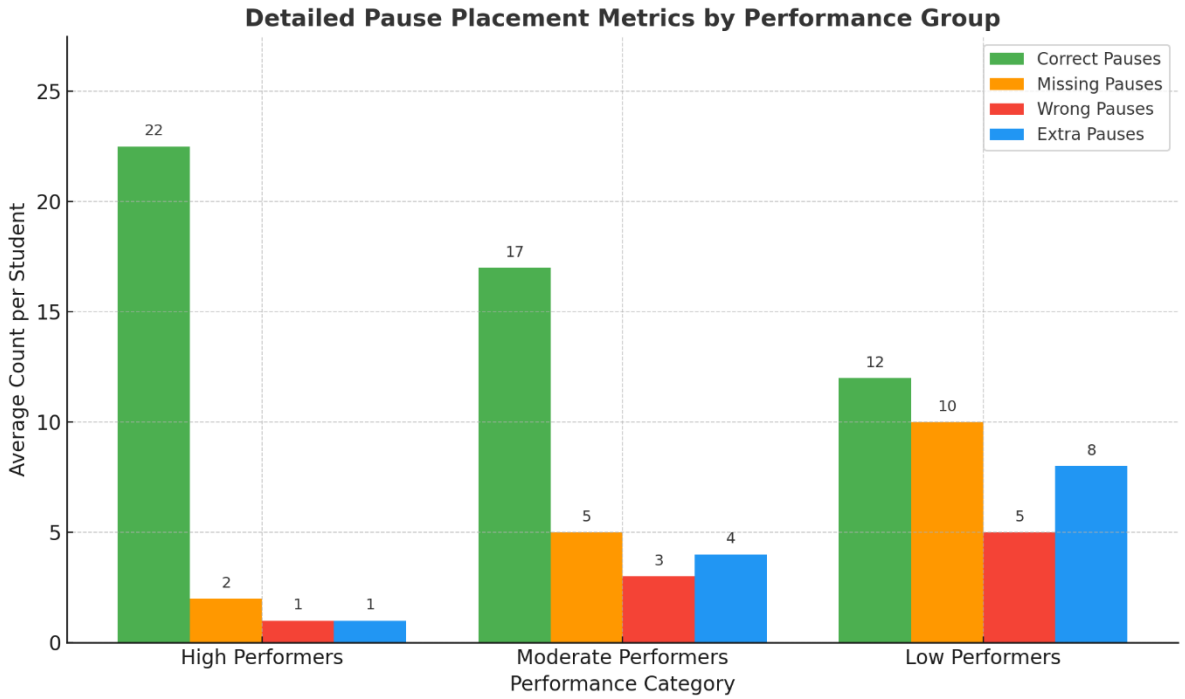
The average number of correct pauses across all students was 17, with most students making errors in:

Missing necessary pauses (average: 9 per student)

Wrong placements (ranging from 1 to 6)

Inserting extra pauses (particularly high among weaker students, some with 7–11 extras)

These quantitative findings suggest a wide variation in students' syntactic and prosodic abilities, highlighting the need for targeted intervention.



- High performers (7 students)
- Moderate performers (7 students)
- Low performers (16 students)

Qualitative Observations

Several syntactic patterns consistently challenged students. A prominent example is the phrase: "jogging with a dog wearing a red sweater"

Many students placed pauses that suggested the man was wearing the sweater, rather than the dog, illustrating confusion in grouping modifiers and embedded clauses. Similarly, in the phrase:

"Can I have two chocolate chip cookies and cream?"

Students incorrectly segmented "chocolate" from "chip cookies," interpreting it as three separate items, which disrupted the intended meaning.

Dialogue handling was another common difficulty. Phrases like "she stated," and "Maya answered," were often left unsegmented, while the dialogue itself was sometimes paused mid-sentence without regard for syntactic integrity.

Interpretation and Pedagogical Implications

The disparity in performance reveals differing levels of syntactic sensitivity among learners. High-performing students clearly recognized grammatical boundaries and approached the task with structural awareness. Their performance indicates a mature understanding of clause segmentation, modifier grouping, and syntactic phrasing.

On the other hand, students with lower scores tended to rely on intonation, visual rhythm, or reading pace rather than grammatical cues. This often led to overuse or misplacement of pauses, particularly in noun phrases and coordinated structures. Their segmentation was less reflective of syntactic understanding and more driven by superficial rhythm.

These outcomes underline the pedagogical value of incorporating pause placement tasks in reading and grammar instruction. By visualizing where natural breaks should occur, students can develop a better understanding of how meaning is constructed in real time. Such activities can bridge the gap between grammatical theory and practical fluency in both reading and speaking.

Summary of Key Findings

1. Only 23% of students placed 20 or more correct pauses, indicating high syntactic awareness.
2. Over 50% of students inserted 10 or more errors (missing, wrong, or extra pauses), revealing a need for structured support in syntactic grouping.
3. Errors were concentrated in modifier-heavy phrases, embedded clauses, and segments containing direct speech.
4. There is strong justification for using pause placement as both a diagnostic and formative instructional tool.

Conclusion

This study explored the relationship between syntactic awareness and prosodic segmentation through a pause placement task conducted with 30 students. Participants were asked to insert pauses into a narrative passage where natural breaks in meaning and structure occurred. The results showed a clear range of ability levels: only a small group of students consistently demonstrated accurate syntactic segmentation and fluency, while many others relied on surface-level cues such as rhythm or sentence length. The lower-performing students frequently omitted or misplaced pauses, highlighting the need for explicit instruction in skills like syntactic parsing, clause recognition, and lexical chunking.

From a pedagogical perspective, pause placement tasks offer an effective way to diagnose and improve students' reading fluency. By making students' internal reading processes visible, these activities help develop both silent and oral reading fluency, as well as overall comprehension and spoken clarity. Incorporating pause placement exercises into language instruction can strengthen syntactic awareness and improve learners' ability to process text meaningfully. Future research could expand this work by examining performance across different text genres (such as expository versus narrative texts) and investigating the long-term effects of pause placement training. Additionally, using think-aloud protocols or interviews could provide deeper insight into students' cognitive strategies during these tasks.

By strengthening learners' ability to chunk speech into meaningful units, we pave the way for more natural, fluent, and comprehensible English communication.

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