

# PROSODIC INTERFERENCE IN THE TRILINGUAL SYSTEM OF UZBEK, ENGLISH, AND CHINESE: A CONTRASTIVE- PSYCHOLINGUISTIC ANALYSIS

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## **Abstract**

This paper examines prosodic interference in a trilingual context (Uzbek, English, Chinese) from a contrastive and psycholinguistic perspective. It compares three prosodic systems: Uzbek with relatively fixed stress patterns, English with dynamic stress and intonation variation, and Chinese with a lexical tone system.

Based on experimental phonetic insights, the study analyzes how L1 and L2 prosodic systems influence pitch production and perception, particularly in tonal mapping within the trilingual mind. It highlights cognitive processes involved in managing conflicting stress tone systems.

The paper concludes with theoretical and practical implications aimed at reducing prosodic interference and improving cross-linguistic pitch control.

**Keywords:** prosody, speech interference, trilingualism, tonal system, stress, intonation, psycholinguistics, cognitive mapping, contrastive linguistics.

## **Аннотация**

Данная работа исследует явление просодической интерференции в трёхязычном контексте (узбекский, английский и китайский языки) с контрастивной и психолингвистической точки зрения. В ней сравниваются три просодические системы: относительно фиксированная система ударения в узбекском языке, динамическое ударение и интонационная вариативность в английском языке, а также тональная лексическая система китайского языка.

На основе экспериментальных фонетических данных анализируется влияние систем первого и второго языков на производство и восприятие

высоты тона, особенно в процессе тонального картирования в трёхязычном сознании. Особое внимание уделяется когнитивным процессам, связанным с управлением конфликтующими системами ударения и тонов.

В заключении формулируются теоретические и практические выводы, направленные на снижение просодической интерференции и улучшение управления интонацией в межъязыковом контексте.

**Ключевые слова:** просодия, речевая интерференция, трёхязычие, тональная система, ударение, интонация, психолингвистика, когнитивное картирование, контрастивная лингвистика.

## INTRODUCTION

The modern multilingual education landscape increasingly requires a shift from bilingual to trilingual models. In this context, acquiring Uzbek (L1), English (L2), and Chinese (L3) creates a highly complex phonological environment. While lexical and syntactic transfer has been widely studied, prosodic interference at the level of stress, rhythm, pitch, and intonation—remains underexplored [1]. Prosody is central to spoken communication, and its distortion reduces intelligibility.

For an Uzbek-dominant learner, adding English and Chinese introduces three distinct prosodic systems: a fixed agglutinative stress pattern (Uzbek), a variable stress-timed system (English), and a tonal pitch-based system (Chinese) [2]. This often leads to prosodic transfer errors, as L1 and L2 patterns influence L3 production at word and phrase levels.

This study provides a contrastive-psycholinguistic analysis of trilingual prosodic interference, identifies common errors, and proposes a cognitive framework for improving prosodic control in multilingual speakers.

### Methodology and Literature Review

This study uses a multi-layered framework combining contrastive linguistics, typological comparison, and psycholinguistic modeling. It focuses on system-level analysis of prosody, examining how Uzbek accentual patterns interact with English phonology and affect Chinese suprasegmental processing [1]. The approach is

guided by cognitive distance as a predictor of phonetic distortion [7], without relying on acoustic experiments.

Speech interference is based on Uriel Weinreich's concept of systematic deviation in bilingual contact, extended in L3 research through cumulative transfer models where L2 continuously influences L3 processing [3].

Prosody is treated as a suprasegmental system following Ilse Lehiste's view that pitch, duration, and intensity function across larger linguistic units [5]. Chinese tonal structure follows Yuen Ren Chao's model of lexical pitch contours [4]. James Flege's Speech Learning Model (SLM) explains L3 sound categorization through perceived similarity with L1 and L2 systems [7].

Overall, the study integrates these theories into a unified model of trilingual prosodic interaction, explaining cross-linguistic influence in prosody without direct acoustic experimentation.

## **RESULTS AND DISCUSSION**

### **Structural Contrast of the Three Prosodic Systems**

To understand prosodic interference, it is necessary to compare the prosodic systems of the target languages. Uzbek prosody features a relatively stable word-stress pattern, often on the final syllable of the root and linked to morphological structure [8]. Intonation is mainly realized through final pitch drops in statements and pitch rises in questions.

English prosody is more dynamic, with variable lexical stress influenced by grammar and etymology. It is a stress-timed language where rhythm depends on stressed syllables, causing reduction of unstressed vowels, and it uses extended pitch movements across phrases to express meaning and attitude.

Chinese prosody differs fundamentally as a tonal system, where pitch at the syllable level determines lexical meaning [6]. Mandarin has four tones (high level, rising, dipping, falling), making syllable-level pitch control essential for meaning, rather than word stress or sentence-level intonation.

## **Empirical Manifestation of Prosodic Interference in Trilingual Speech**

Acoustic observations show systematic prosodic interference in trilingual learners when producing Chinese tones, influenced by Uzbek and English prosodic habits.

- **Tone-specific effects:**
  - **Tone 1 (High Level):** Final pitch drops → Uzbek final-stress habit treats last syllable as boundary marker.
  - **Tone 2 (Rising):** Excessive intensity and lengthening → English stress system interprets rise as emphasis.
  - **Tone 3 (Falling–Rising):** Flattened into monotone → simplified due to Uzbek/English rhythmic constraints.
  - **Tone 4 (High Falling):** Incomplete fall → misinterpreted as sentence-final intonation in English.
- **Phrase-level interference:**
  - Chinese syllable-timed rhythm is replaced by:
    - English stress-timed rhythm, or
    - Uzbek suffix-based grouping
  - This results in unnatural pauses and distorted intonation patterns.
- **Overall finding:**
  - Errors are not random; they reflect transfer of L1/L2 prosodic systems into L3 Chinese tone production.

### **Cognitive Transformation and Tonal Mapping**

From a psycholinguistic perspective, these errors reflect how the learner's internal acoustic model is reshaped by prior language experience. When an Uzbek speaker processes Chinese tones, pitch is not perceived directly as lexical contrast, but filtered through existing Uzbek stress patterns and English intonational contours. Since neither L1 nor L2 requires syllable-level lexical tone monitoring, learners lack a stable tonal category. As a result, Chinese pitch movements are often

misinterpreted as stress or emphasis rather than meaning-changing tonal units, leading to systematic prosodic interference.

## CONCLUSION

This contrastive-psycholinguistic analysis indicates that prosodic interference in an Uzbek–English–Chinese trilingual context is a layered cognitive process. Uzbek fixed stress and English dynamic stress jointly influence how Chinese tonal patterns are produced and perceived. These deviations are not random errors but systematic adaptations of the brain applying non-tonal prosodic strategies to a tonal system.

To reduce this interference, language teaching should move beyond grammar and vocabulary toward targeted prosodic training, including visualization-based methods that help learners develop an internal pitch representation. Future research is encouraged to use neurocognitive and tracking methods to study how these pitch representations form and evolve, enabling more effective multilingual instruction.

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