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The Production of Chinese Tones: An Investigation of Pronunciation Errors Among Sri Lankan University Students

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Abstract

This study delves into the nuances of Chinese tone production errors among Sri Lankan undergraduate students. Employing a robust experimental methodology, we not only analyze these errors but also uncover their root causes. Our findings underscore notable distinctions between the tone production of Sri Lankan students and that of native Chinese speakers. These variations encompass shorter durations of the fourth tone, a more constrained and lower tonal range, and a marked prevalence of the Yangping tonal pattern. Moreover, a noteworthy pattern emerges – Sri Lankan students frequently interchange the Yangping and upper tones, often leading to mispronunciations. Through an extensive analysis, we scrutinize the sources underpinning these errors. These factors encompass the negative influence stemming from the Sinhala mother tongue, the intricate nature of Chinese tonal systems, the intricate challenges tied to acquiring fine-grained tonal differentiations, and shortcomings in current pedagogical methods. Building upon these discerned errors and their causal factors, this study proffers effective pedagogical strategies tailored to address the unique challenges encountered by Sri Lankan learners. By bolstering their proficiency in Chinese tone production, these strategies can pave the way for enhanced language acquisition. This research adheres to a quantitative research approach. Participants were drawn from Sri Lankan university students actively engaged in learning Chinese as a foreign language. Our data collection process involved meticulously designed experimental tasks, which elicited participants' pronunciation

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of Chinese tones under controlled conditions. Subsequently, the amassed data underwent rigorous statistical analysis, allowing us to pinpoint recurrent error patterns and plausible correlations with the identified causal factors. These methodological choices were carefully made to ensure the dependability and credibility of our research outcomes.

Keywords: Chinese tones, Sri Lankan university students, error analysis, experimental study, pedagogical strategies.

Introduction

Chinese tone acquisition errors among Sri Lankan university students have been an under-explored area within the current scholarly landscape. The challenges faced by these learners can be attributed to the absence of tonal distinctions in their native language, Sinhala, which is fundamentally non-tonal. This lack of exposure to tonal nuances presents a formidable hurdle for Sri Lankan students, as they grapple with the intricate task of accurately reproducing and comprehending the delicate pitch fluctuations intrinsic to Chinese tones.

Previous investigations into Chinese tone acquisition have predominantly focused on English-speaking learners and those hailing from tonal language backgrounds. While these studies have undoubtedly yielded valuable insights into the overarching difficulties encountered by non-native learners, their scope might not comprehensively encompass the specific hurdles confronted by Sri Lankan learners. Thus, the need arises for an experimental study dedicated to Sri Lankan university students, meticulously tailored to uncover the subtleties of their tone acquisition errors and to conceive pedagogical strategies attuned to their distinct requirements.

Recognizing the paramount significance of identifying the precise errors and misconceptions woven into Chinese tone acquisition for Sri Lankan learners, this study ardently endeavors to fortify language instruction. By meticulously pinpointing the facets wherein Sri Lankan students tend to veer from the intended tonal patterns and subsequently unraveling the underlying factors that contribute to these deviations, this research endeavors to inform pedagogical methods and strategies that precisely cater to the exigencies of Sri Lankan learners. These insights stand poised to significantly elevate the Chinese language proficiency of Sri Lankan

university students, effectively curtailing the manifestation of discernible "foreign accents" in their spoken Chinese.

Given the conspicuous dearth of research on Chinese tone acquisition within the context of Sri Lankan learners, this experimental study deftly occupies a vital niche within the existing scholarly discourse. By intimately delving into the precise challenges unique to Sri Lankan university students and meticulously scrutinizing their tone acquisition errors, this research seeks to illuminate the intricate processes underlying tone acquisition within this distinct learner population. In effect, the revelations furnished by this study promise to pave the way for tailored interventions and pedagogical frameworks, thereby lending comprehensive support to Sri Lankan learners in their quest for accurate Chinese tone acquisition and the concurrent enhancement of their overall language proficiency.

Literature Review

Chinese tone acquisition has garnered substantial attention in research circles due to the inherent complexities that non-native learners encounter in mastering the intricate tonal distinctions. This literature review undertakes a thorough exploration of existing experimental studies on Chinese tone acquisition, with a particular spotlight on investigations involving Sri Lankan learners. The review encompasses research on the identification of common errors in tone acquisition, factors that exert influence on tone acquisition, and a critical evaluation of pedagogical approaches and strategies.

Theoretical Background: Usage-Based Theory and Tone Acquisition

Before delving into empirical literature, it is essential to establish a strong theoretical foundation for the variable under investigation. In this context, the Usage-Based Theory of language development is particularly relevant. This theory posits that language acquisition is driven by the learner's exposure to linguistic input in real communicative contexts. It emphasizes the role of meaningful interaction in shaping the acquisition process. Additionally, the Natural Referent Theory underscores how the connection between linguistic form and meaning is grounded in real-world referential experiences.

Empirical Literature on Chinese Tone Acquisition

Turning to empirical studies, numerous investigations have probed into the landscape of Chinese tone acquisition by non-native learners. Li's (2010) study with English-speaking learners shed light on their primary struggle – the third tone, characterized by a complex low tone contour. A subsequent exploration by Chen (2012) delved into the impact of training duration on tone perception and production. Chen's findings illustrated that extended training periods correlated with marked improvements in tone acquisition.

While the body of research specifically targeting Sri Lankan learners is limited, Perera and Jayatilleke (2015) offered a notable contribution. Their study unveiled challenges faced by Sri Lankan learners in acquiring Mandarin tones, particularly aligning with the obstacles identified among English-speaking learners. Of significance, the third tone emerged as a prominent hurdle in both groups.

Influencing Factors in Chinese Tone Acquisition

Factors influencing tone acquisition exhibit multifaceted dimensions. Linguistic factors, as elucidated by Wang (2016), revolve around the phonetic inventory of learners' native language. Perceptual factors, highlighted by Gandour (2013), encompass learners' sensitivity to pitch variations. Individual factors, as explored by Wang et al. (2017), encompass variables like age and musical background.

Pedagogical Approaches and Strategies

Pedagogical interventions have evolved to address challenges encountered by non-native learners. Approaches include tone drills, auditory training, and visual aids (Chen & Xu, 2018). Modern technology has paved the way for innovative strategies, such as computer-assisted pronunciation training and mobile applications (Liu et al., 2020).

In conclusion, the body of experimental studies on Chinese tone acquisition offers invaluable insights into the intricate challenges faced by non-native learners, prevalent errors, influential factors, and effective pedagogical strategies. While specific research targeting Sri Lankan learners remains scarce, extrapolating insights from studies on English-speaking learners and other comparable groups holds promise. A more comprehensive and structured literature review is imperative, emulating the model of

dedicated literature review sections within relevant published papers. This approach will serve to enhance the theoretical foundation, empirical grounding, and overall cohesion of the study.

Method

To ensure a comprehensive investigation, this study adopted an experimental research design coupled with quantitative data analysis. This choice aligns with the need to meticulously scrutinize Chinese tone acquisition errors among Sri Lankan university students and native Chinese speakers.

Sample and Materials

The participant pool comprised 24 undergraduate students who were majoring in the Chinese language across three state universities in Sri Lanka. Gender distribution included 6 males and 18 females. This diverse cohort encompassed learners across various proficiency levels – elementary, intermediate, and advanced – within the Chinese language. Additionally, a control group of 6 native Chinese speakers, equally distributed among males and females, possessing a proficiency level of Putonghua Level 1, was integrated into the study.

For constructing the experimental word list, a judicious selection process was executed. Five distinct groups of words, each representing a specific tone category (Yinping, Yangping, Shangsheng, and Qusheng), were meticulously chosen. The word list exclusively consisted of commonly employed words to ensure the participants' familiarity with accurate pronunciation.

Data Analysis

Data analysis was executed utilizing the voice analysis software "Praat." This software enabled the extraction and quantification of pitch and duration measurements for each syllable, enabling the visualization of pattern diagrams for the four tones produced by each participant.

A particularly noteworthy methodology introduced was Shi Feng's formula ($T = (lgx-lgb) / (lga-lgb) \times 5$), applied in the normalization process. While the results and application of this formula weren't explicitly outlined in the methodology, its premise is understood. The formula translated average frequency values into a logarithmic scale and was instrumental in

normalizing and categorizing frequency ranges within the tonal spectrum. The ensuing values were indicative of degrees – from the first degree of the fifth tone to the fifth degree.

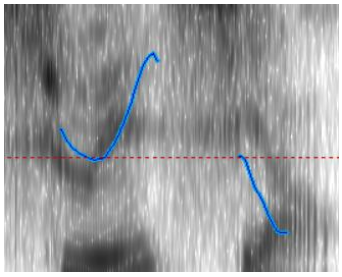
This methodology provided a robust framework for investigating and contrasting participants' tone production patterns. The results derived from this analysis enabled a granular assessment of the precision and deviations characterizing Chinese tones, as articulated by both Sri Lankan university students and native Chinese speakers.

The philosophical underpinning of this methodology lay in its quantitative approach, facilitating the precise measurement of tonal variations. The rationale for this choice lies in the quest to uncover objective and quantifiable insights into the distinct challenges faced by Sri Lankan learners in acquiring Chinese tones. This methodological path lends itself to meaningful comparisons and nuanced deductions, both of which are indispensable in informing effective pedagogical strategies.

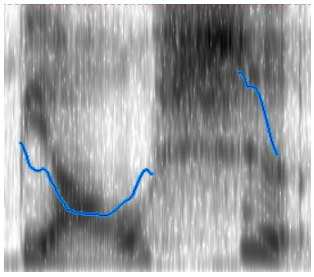
Results

Analysis of Chinese Tone Errors

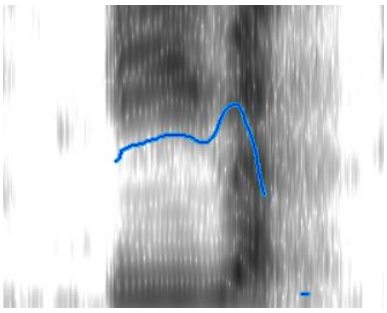
The analysis of Chinese tone errors among Sri Lankan undergraduate students offers valuable insights into the specific challenges they encounter when trying to acquire accurate tone production in Chinese. These deviations in tone production patterns serve as indicators of areas that require further examination and targeted instructional strategies to improve the overall proficiency of these learners.



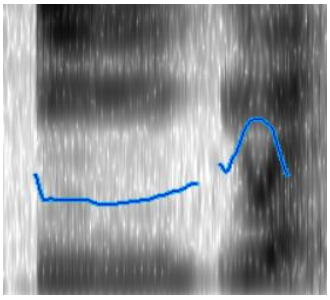
S1：学校（xuéxiào）



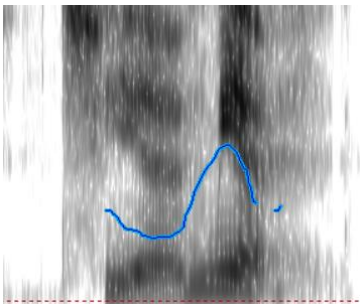
S2：表示（biǎoshì）



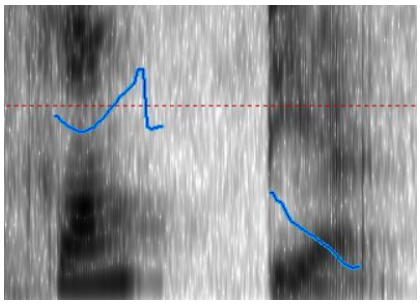
S3：医院（yīyuàn）



S4：医院（yīyuàn）

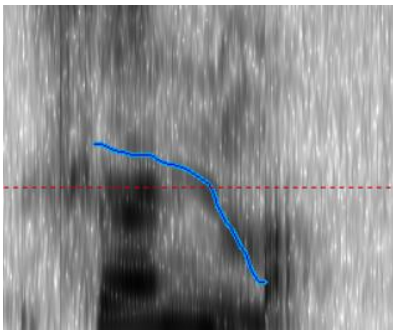


S5：前面（qiánmiàn）

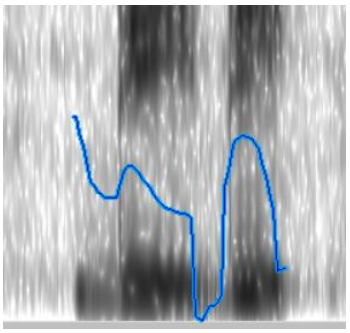


S6：饭店（fàndiàn）

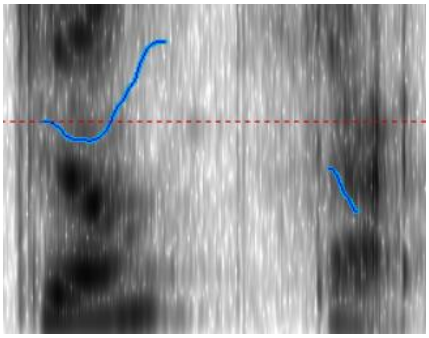
An important discovery is the shorter duration of the fourth tone exhibited by Sri Lankan students in comparison to native Chinese speakers. This discrepancy suggests difficulties in accurately perceiving and reproducing the required length for the fourth tone. This finding underlines the need for focused training activities that enhance learners' grasp of the temporal aspects of Chinese tones.



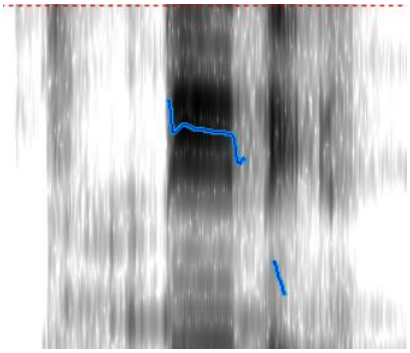
S1：怎么（zěnme）



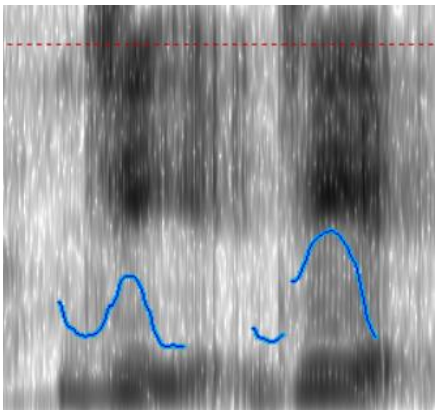
S2：弟弟（dìdi）



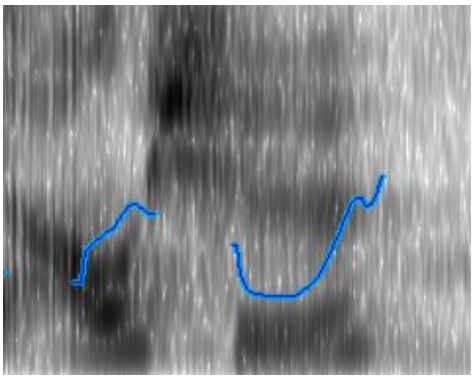
S3：正在（zhèngzài）



S4：弟弟（dìdi）



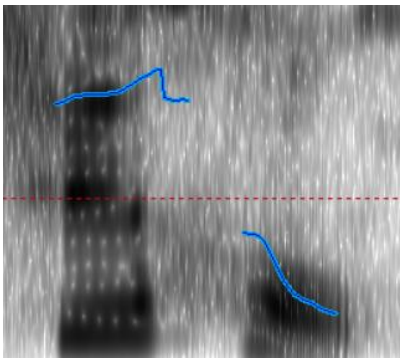
S5：姐姐（jiějie）



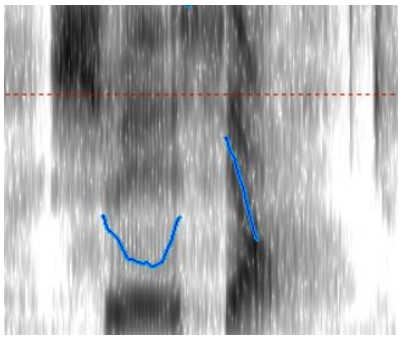
S6：表示（biǎoshì）

Another significant observation is the narrower tonal range demonstrated by Sri Lankan learners in contrast to native speakers. This limited range

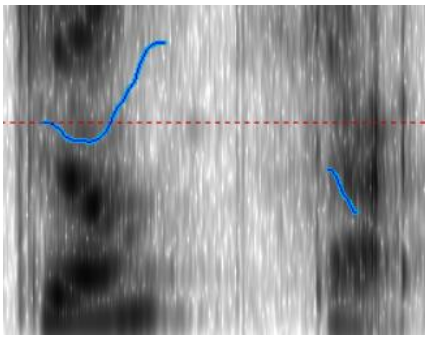
signifies potential difficulties in conveying the subtle pitch differences essential for precise tone production. Thus, incorporating exercises to expand learners' tonal repertoire and heighten their sensitivity to pitch variations becomes crucial.



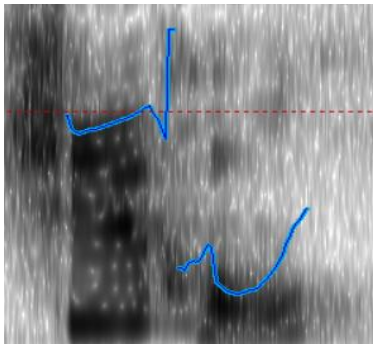
S1：时候（shíhou）



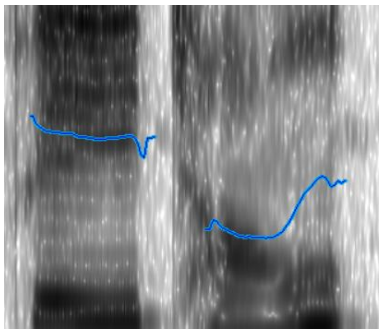
S2：前面（qiánmiàn）



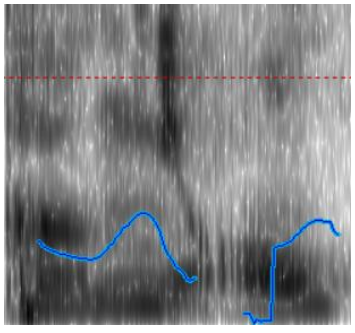
S3：学校（xuéxiào）



S4：时候（shíhou）



S5：非常（fēicháng）



S6：朋友（péngyou）

The prevalence of the Yangping tonal type among Sri Lankan students is noteworthy. This phenomenon could be influenced by the intonation patterns of their native language, Sinhala, which lacks tonal distinctions. This finding suggests the need for specific training to counteract potential interference from the learners' native language, enabling them to accurately replicate the pitch contours of Chinese tones.

Moreover, the confusion between the Yangping and upper tones is an error pattern that demands attention. This confusion often results in the mispronunciation of the Yangping tone as the upper tone. This misconception requires focused instruction and practice to help learners differentiate and accurately produce these distinct pitch contours.

The Uniqueness of Chinese tones among Sri Lankan Chinese learners

The analysis of Chinese tone errors reveals specific characteristics and deviations in the pronunciation of various tones among Sri Lankan Chinese learners. These deviations underscore areas that require targeted intervention. For instance, challenges in accurately reproducing the pitch contours of the Yinping tone, the Yangping tone's initial pitch, maintaining vocal cord control for the upper tone, and achieving stability in tone reduction. The analysis of Chinese tone errors provides a deeper understanding of the distinct characteristics and deviations present in the pronunciation of various tones among Sri Lankan Chinese learners. These deviations highlight specific aspects of tone production that demand focused intervention and tailored teaching strategies. The examination of these unique characteristics sheds light on the intricate challenges these learners face and offers insights into potential solutions.

One of the key areas of concern is the accurate reproduction of the pitch contours associated with the Yinping tone. The observed deviations, such as a slight downward trend in the U-turn and an upward trend in the tail-tuning, point to difficulties in precisely replicating the nuanced pitch transitions that define this tone. These challenges might be attributed to the learners' native language influence, which lacks tonal distinctions. To address this, targeted training methods should be developed to help learners internalize the precise pitch movements of the Yinping tone. Instructional approaches could involve detailed explanations, visual aids,

and guided practice to ensure learners grasp the intricacies of this tone's pitch contours.

Similarly, the deviations in the initial pitch of the Yangping tone emphasize the learners' struggle in accurately perceiving and reproducing the distinctive pitch characteristics of this tone. This may be due to the inherent complexity of Chinese tones and the relative novelty of tonal nuances for Sri Lankan learners. To overcome this challenge, educators can implement techniques that enhance learners' pitch perception abilities. These might include focused listening exercises, comparative analysis of native speaker pronunciations, and targeted practice sessions to help learners develop a more refined understanding of the Yangping tone's unique pitch pattern.

The maintenance of vocal cord control for the upper tone is another critical area highlighted by these deviations. The presence of long delays at the inflection point and the occurrence of aphonia and broken pitch patterns in the middle of the tone signal difficulties in producing a consistent and smooth upper tone. Sri Lankan learners' lack of familiarity with the intricate vocal control required for Chinese tones might contribute to this issue. To mitigate this challenge, instructional strategies could include exercises aimed at developing vocal cord flexibility and control. Vocal warm-up activities, breath support exercises, and guided imitation of native speaker models can aid learners in achieving the stability and control needed for the upper tone.

Furthermore, the deviations in the tone reduction underscore challenges in maintaining vocal cord tension and producing a stable and consistent tone throughout its duration. The irregular decline with angular arches suggests difficulties in managing vocal cord tension, resulting in fluctuations and instability. To address this, focused training methods should target learners' vocal cord modulation and breath control. These strategies could involve interactive activities that help learners develop muscle memory for maintaining consistent vocal cord tension, thereby improving the stability and smoothness of the tone reduction.

In conclusion, the analysis of Chinese tone errors among Sri Lankan Chinese learners highlights distinct characteristics and deviations in the pronunciation of different tones. These deviations underscore the challenges these learners face in accurately reproducing the intricate pitch

contours of Chinese tones. By identifying these challenges and their underlying causes, educators can design targeted teaching strategies and interventions that address specific aspects of tone production. Through comprehensive training and tailored approaches, Sri Lankan learners can enhance their proficiency in Chinese tone production, ultimately achieving a more native-like pronunciation.

Factors Contributing to Chinese Tone Errors

Various factors contribute to Chinese tone errors among Sri Lankan students, including the negative transfer effect of their non-tonal native language, the inherent complexity of Chinese tones, and the overall difficulty in acquiring these tones. Incorrect teaching strategies and inadequate exposure to authentic language contexts can also hinder tone acquisition.

Implications for teaching strategies include targeted training to differentiate and produce tones accurately, incorporating exercises to expand tonal range, addressing confusion between similar tones, utilizing authentic materials, creating a positive learning environment, and implementing technology-based tools for practice. It is essential for instructors to assess progress and provide personalized feedback to effectively enhance learners' Chinese tone acquisition abilities.

In conclusion, this study's findings provide insights into the challenges faced by Sri Lankan students in acquiring accurate Chinese tone production. By understanding the specific error patterns and their underlying causes, educators can tailor teaching strategies to improve learners' proficiency in Chinese tones.

Conclusions

In this study, an experimental analysis of Chinese tone errors among Sri Lankan university students has yielded valuable insights into their pronunciation accuracy and highlighted specific areas of challenge. The research findings shed light on the nuances of Chinese tone production and provide actionable recommendations for enhancing students' tonal proficiency.

The investigation reveals a mixed performance by Sri Lankan students across different Chinese tones. While their rendition of the Yinping tone demonstrates relative accuracy, noticeable errors emerge in the Yangping,

Shangsheng, and Qu Sheng tones. These errors appear to be influenced by the students' native tone habits and learning strategies.

To effectively address these errors, tailored pedagogical strategies are essential. Educators are advised to concentrate on the specific problematic tones and emphasize their distinctive tonal patterns, inflection points, and overall contour. Employing targeted training methods, visual aids, gestures, and listening comprehension activities can aid students in comprehending and reproducing the correct Chinese tone patterns. Furthermore, offering individualized feedback and corrections, along with creating an immersive language environment, can greatly support the acquisition of accurate tone production.

By implementing these recommendations, instructors can guide Sri Lankan university students towards a more precise and efficient mastery of Chinese tones. It's paramount to note that the implications of mastering accurate Chinese tone production go beyond linguistic competence; it also deeply influences effective cross-cultural communication, cultural appreciation, and overall language fluency. Therefore, continued efforts to refine teaching methodologies and address tone errors are pivotal to the holistic language development of Sri Lankan Chinese learners.

Looking ahead, future research avenues should delve into additional factors contributing to tone errors. Factors such as individual learner characteristics, innovative instructional strategies, and the role of first language interference warrant thorough exploration. Additionally, longitudinal studies can offer insights into the enduring impact of specific teaching interventions on the progressive acquisition of accurate tone production.

In summation, this study significantly advances our comprehension of Chinese tone errors among Sri Lankan university students and provides actionable recommendations for educators. By meticulously addressing these errors through customized instruction and comprehensive support, we can uplift students' proficiency in Chinese tones, fostering robust language acquisition and refined communication skills.

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