

PITCH LEVEL, RANGE, AND DYNAMISM IN TRINIDADIAN ENGLISH: A COMPARATIVE STUDY WITH OTHER VARIETIES OF ENGLISH

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ABSTRACT

Trinidadian English (TrinE) prosody is often popularly described as ‘sing-song’. Previous studies indicate that distinctive intonational patterns might be partly responsible for its distinctive prosody. However, evidence on pitch range and dynamism is currently limited. We analyse pitch level, overall pitch range, and pitch dynamism in TrinE based on read and spontaneous speech from 24 speakers in order to determine whether TrinE differs from other varieties (Indian and British English) in this respect.

Results indicate that TrinE, while having an overall lower pitch level, has a larger range and more dynamism than Indian and, though to a smaller degree, British English in read speech. For spontaneous speech, more complex differences were observed, with TrinE showing a generally larger range and more dynamism. Our results suggest that pitch range and dynamism can overall be considered characteristic endonormative features of TrinE that may, in part, account for its perception as ‘sing-song’.

Keywords: Trinidadian English, pitch range, pitch dynamism, prosody, New Englishes.

1. INTRODUCTION

The question of whether and to what extent individual postcolonial varieties of English develop their own, distinctive linguistic norms (so-called endonormativity) is a central question in research on Postcolonial Englishes, both in Schneider’s classic Dynamic Model [28] as well as in more recent models [3, 4]. Such endonormative developments can also be observed in the Caribbean, where there is considerable variation between individual islands in the types of English used. What all English-speaking Caribbean islands have in common, however, is that there is a dialectal continuum from a local English-based Creole to a local variety Standard English [7].

Most research on language use and variation in the Caribbean island of Trinidad has focused on Trinidadian English Creole and observed endonormative trends in its development [9, 25, 29-30]. However, there is also a growing body of research on the emerging standard variety in the island: previous research on (Standard) Trinidadian English (TrinE) has focused on language attitudes [5-6, 22], morphosyntax

[7], and phonetics and phonology at the segmental level [e.g. 18]. While these studies have revealed some endonormative tendencies in line with the Dynamic Model [28], normativity is overall more complex, context-specific, and, in certain domains, both geared toward local and external (British, American, and other Caribbean) norms [20].

Variation in prosody may be a particularly important dimension at which endonormative tendencies come to the fore, but there is at present very limited empirical research on TrinE at the suprasegmental level. Popularly, TrinE is often described as ‘sing-song’ by laypeople from Trinidad and abroad [9, 21]. This ‘sing-song’ prosody is commonly thought to be a characteristic feature that distinguishes it from other (Caribbean) Englishes. [9, 21].

It is currently unclear exactly what feature might be responsible for the distinctive prosody of TrinE. While previous research indicates that intonation phrase (IP-)final rises and a frequent alternation between H tones and L* pitch accents in prosodic units below the IP might partly account for the distinctive prosody of TrinE (and Trinidadian Creole) [9-10], Drayton [9] suggests that overall use and variation in pitch might also play a role in this context, and that more evidence is needed to answer this question. Further, a study of Afro- and Indo-Trinidadian speakers focusing on mean pitch level and maximum pitch range found limited ethnic differences within TrinE, but did not compare TrinE to other varieties [17].

Consequently, there is currently no evidence on

- (1) whether a relatively large degree of variation in pitch is characteristic of TrinE overall, as the popular stereotype may suggest,
- (2) whether TrinE differs from other (postcolonial) Englishes in this regard, and, hence,
- (3) whether overall variation in pitch may be considered an endonormative feature of TrinE.

Specifically, while [17] report inter-ethnic differences in mean level and maximum range, there is currently no evidence on how variable or dynamic intonation is throughout the articulation of utterances, which, in turn, might particularly contribute to the popular impression of TrinE as ‘sing-song’.

To this end, this paper analyses pitch level, overall pitch range, and pitch dynamism in TrinE in comparison to two other varieties of English, Standard Southern British English (BrE) and (Educated) Indian

Table 1: Number of analysed speakers by gender and variety of English.

Variety	Gender	
	male (N)	female (N)
BrE	10	0
IndE	11	9
TrinE	5	19

English (IndE). While (an earlier form of) BrE is the colonial ancestor, or superstrate, of TrinE, IndE is important as a point of comparison because Indians have been, historically, one of the main immigrant groups moving to Trinidad. Thus, Indian languages as well as IndE formed part of the linguistic input from which TrinE developed.

Based on the popular impression and previous research described above, we formulate the following hypotheses:

- H1) Pitch level in TrinE is *not* higher than in other Englishes, since pitch level in TrinE was previously observed not to differ from commonly known reference values [17].
- H2) Pitch range in TrinE is wider than in other varieties of English, as suggested by the popular stereotype (and [17]).
- H3) Pitch in TrinE is overall more dynamic than in other varieties, as indicated by observations of the relatively frequent alternation between H tones and L* pitch accents in prosodic units below the IP [9-10].

2. DATA AND METHODS

2.1. Data

Read and spontaneous data from 54 female and male speakers of TrinE, BrE, and IndE was analysed (see Table 1 for an overview); possible physiologically conditioned gender effects on variation in pitch were controlled for despite the unequal distribution of speakers (see below). All speakers were recorded reading out a text passage, and spontaneous speech was collected in semi-structured interviews. The BrE data, originally taken from [26], and the IndE data were both investigated for overall pitch differences in [11] and are here used as a point of comparison. We reanalysed the data for the purpose of this study to ensure comparability with TrinE. The TrinE dataset contains recordings of secondary school teachers from different schools throughout the entire island of all age groups, most of them being between 26 and 46 years of age. Eleven speakers were Afro-Trinidadians, three Indo-Trinidadians, and the remaining ten

speakers indicated to be of mixed descent. As is common in Trinidad and other Caribbean islands, nine of the speakers had spent several years abroad, most of them in North America, England, and other anglophone Caribbean islands; the sample reflects the increased global mobility common among educated Trinidadians. Linear regression analyses revealed that there were no significant differences in pitch patterns between speakers who had spent several years abroad and the remainder of the Trinidadian sample.

2.2. Extraction of f0 & analysis

Previous research has taken a variety of approaches to the measurement of pitch level and range. While some studies, for instance, have analysed pitch range as linked to specific tones [23, 27], other studies have focused on the long-term distribution of f0 [e.g. 17].

We adopted the latter approach and followed [11] and [19] in order to ensure comparability with previous findings for BrE and IndE. Given that there is limited evidence on pitch range and dynamism in other (New) Englishes as a possible point of comparison apart from these two studies, focusing on the long-term distribution of f0 was considered most beneficial to examine whether TrinE differs from other varieties of English.

F0 values were extracted in 10 ms intervals over voiced segments in inter-pausal intervals with Praat [1], using minimum and maximum parameters appropriate for male and females speakers.¹ For each speaker, pitch level (i.e. overall pitch height) was then measured as the median of the f0 distribution in Hz (rather than the mean) in order to arrive at a measure of central tendency that is robust to outliers in the distribution [2, 24]. Pitch range (i.e. general difference between maximum and minimum f0) was measured as the difference between the 90th and 10th percentile in semitones (80% range), again, to limit the effect of outliers and to account for the non-linear human perception of f0 [27]. Pitch dynamism (i.e. overall variability of pitch) was quantified with the pitch dynamism quotient (pdq) [16], defined as the standard deviation of the f0 distribution of each speaker divided by its mean in Hz.

Previous research showed that there are differences in pitch level between male and female speakers [8, 15]. Taking into account that, in our sample, the distribution of male and female speakers across the varieties under investigation is not balanced, we test for inter-varietal effects by using linear regression models that include gender as a fixed effect, thus controlling for the possibly confounding effect of gender. Rather than reporting and comparing raw means for pitch level, range, and dynamism, we use and report the means estimated by the linear models (while

Figure 1: Pitch level (median f_0 in Hz), with means and confidence intervals.

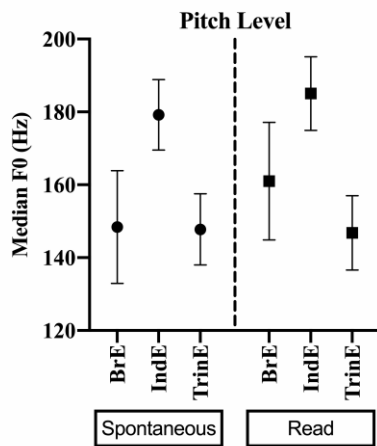


Figure 2: Pitch range (80% range in semitones), with means and confidence intervals.

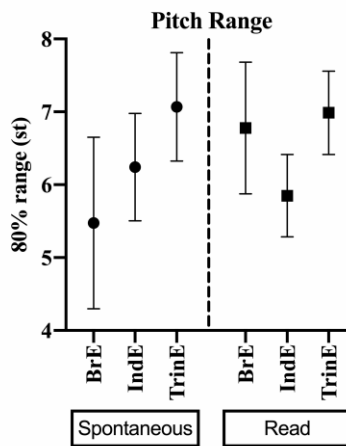
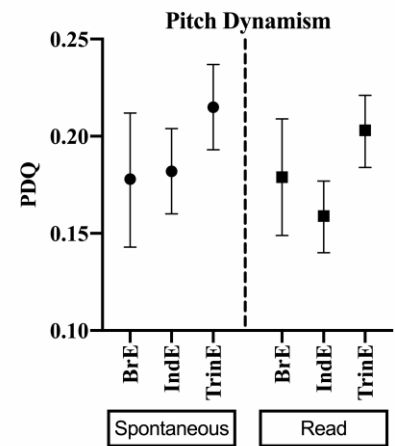


Figure 3: Pitch dynamism (pitch dynamism quotient), with means and confidence intervals.



controlling for gender) in order to arrive at reliable and robust values for a comparison of effects. Separate models were run for read and spontaneous speech for each dependent variable, followed by post-hoc Bonferroni-adjusted pairwise comparisons of the variety-specific estimated means.

3. RESULTS

3.1. Pitch level

For pitch level, we find significant differences between the three varieties in spontaneous speech ($F(2, 54) = 13.16, p < .001$) and in read speech ($F(2, 54) = 15.06, p < .001$). TrinE has a significantly lower level in spontaneous and in read speech than IndE (each $p < .001$, read: 179 Hz vs. 148 Hz, spont.: 185 Hz vs. 147 Hz), but does not differ significantly from BrE (read: 148 Hz, spont.: 161 Hz; see Figure 1). For all three varieties, pitch level varies little across speaking styles. The largest difference was found for BrE, which has a slightly higher level (around 10 Hz) in read speech.

3.2. Pitch range

In spontaneous speech, a straightforward pattern can be observed in terms of differences in pitch range (difference between the 90th and 10th percentile) (see Figure 2 for an overview): TrinE (7.07 st) has the overall largest 80% range, followed by IndE (6.24 st; approx. 13% lower) in an intermediate position and BrE (5.48 st; approx. 29% lower) with the smallest range. However, these differences failed to reach statistical significance ($F(2, 54) = 2.46, p = .095$).

In read speech, however, the analysis revealed that there are overall differences in pitch range between the three varieties ($F(2, 54) = 4.60, p < .05$). While

there is no significant difference between TrinE (6.99 st) and BrE (6.78 st), TrinE has an approximately 20% larger pitch range than IndE (5.85 st), which was significant at $p < .05$. As regards variation in speaking style, only small differences can be observed: TrinE and IndE have a slightly smaller range in read than in spontaneous speech. BrE, however, has a much larger pitch range in read than in spontaneous speech.

3.3. Pitch dynamism

Inter-varietal differences in pitch dynamism (pdq) generally resemble those of pitch range (see Figure 3). In spontaneous speech, pitch in TrinE (pdq = 0.215) is more dynamic than both in IndE (pdq = 0.182; approx. 18% lower) and BrE (pdq = 0.178; approx. 20% lower). Again, however, these differences did not reach statistical significance ($F(2, 54) = 2.59, p = .084$).

In read speech, differences in pitch dynamism also closely resemble inter-varietal differences of overall pitch range, which are statistically significant ($F(2, 54) = 5.60, p < .01$). While TrinE (pdq = 0.203) does not have significantly more dynamic pitch than BrE (pdq = 0.179; approx. 13% lower), the difference between TrinE and IndE is larger and significant at $p < .01$ (pdq = 0.159; approx. 28% lower).

4. DISCUSSION

This study set out to compare pitch level, range, and dynamism in TrinE, BrE, and IndE, the latter two being the major historical input varieties from which TrinE developed.

Table 2: Summary of key results, comparing TrinE to other varieties in pitch level, range and dynamism. Upwards arrows indicate that TrinE has higher values in this dimension than the other variety, downwards arrows indicate lower values. For comparisons with IndE and BrE, asterisks indicate statistical significance (in brackets if for one speech style only).

	TrinE compared to			
	IndE	BrE	AmE	NigE
Level	↓*	=	↓	
Range	↑(*)	↑		↑
Dyn.	↑(*)	↑		↑

4.1. Pitch level

Our findings for pitch level (median f_0) suggest that H1 can be confirmed. TrinE does not have a higher median f_0 than the other varieties, but, in fact, a significantly lower pitch level than IndE. More broadly, a comparison of our results with previous research (albeit limited to female speakers [2]) suggests that TrinE has a slightly lower pitch level than AmE.

4.2. Pitch range

The analysis of pitch range (80% range) indicates that our second hypothesis (H2) can be partially confirmed. TrinE has a wider pitch range than BrE and IndE in both read and spontaneous speech, but not all inter-varietal differences reached the level of statistical significance. In read speech, TrinE has a significantly larger range than IndE, but differences with BrE are marginal in size and not significant. For spontaneous speech, inter-varietal differences are larger in size, but did not reach the level of statistical significance: TrinE has the widest range, followed by IndE in an intermediate position, and BrE with the smallest range.

A comparison of our results with previous research suggests that TrinE is exceptional in its wide pitch range. While we found that TrinE has a wider pitch range than BrE, [14] showed that BrE has a wider pitch range than Nigerian English (NigE). This, in turn, suggests that TrinE may have, in turn, a wider pitch range than NigE.

4.3. Pitch dynamism

Our findings for pitch dynamism (pitch dynamism quotient) are comparable to those for pitch range and partially confirm the hypothesis (H3). Pitch in TrinE is more dynamic than in the other two varieties, but reach statistical significance only between TrinE and IndE in read speech. The results also show that TrinE is more dynamic in spontaneous than in read speech.

A comparison of our results with previous research [14] suggests that TrinE may have more dynamic intonation than NigE (notwithstanding small methodological differences between the two studies).

5. CONCLUSION

This study analysed pitch level, pitch range, and pitch dynamism in Trinidadian English in comparison with British and Indian English, and, based on previous research, other (New) Englishes. Our results (see summary in Table 2) reveal that a wide pitch range and a high degree of pitch dynamism, together with a generally low pitch level, are characteristic of TrinE. These characteristics appear to be endonormative features of this variety and may distinguish it from other varieties of English.

While previous research indicates that IP-final rises and IP-internal alternation between H tones and L* pitch accents partly account for the distinctive prosody of TrinE, the findings at hand suggest that overall pitch variation may also play a role in the popular perception of TrinE being ‘sing-song’. An overall low pitch level paired with an overall wide pitch range and a high degree of pitch dynamism within this range may additionally account for the fact that Trinidadians speakers are popularly perceived to lilt.

In addition to further analyses of larger samples of BrE, IndE, and TrinE, future research should also investigate sociolinguistic variation in pitch level, range, and dynamism [as in 17]. Specifically, in future work we will analyse variation in long-term f_0 distribution between Afro- and Indo-Trinidadians and between teachers and school students.

Moreover, other measures of the long-term distribution of f_0 and different linguistic measures of pitch range [14, 23, 27] may be examined to compare results with the limited amount of previous research on pitch range variation across varieties of English [e.g. 2, 14]. Finally, in order to investigate more closely to what extent pitch level, range, and dynamism serve as a marker of Trinidadianess, an analysis of the perception of intonation patterns may complement the existing evidence on speech production [as in 12-13, 17].

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¹ We used the command TO MANIPULATION...0.01 PITCH-MIN PITCHMAX, with a minimum pitch of 75Hz for males and 100Hz for female speakers, and a maximum pitch of 300Hz and 500Hz, respectively.