

Prosody Meets Pragmatics: Exploring the Prosodic Correlates of Cantonese Sentence-final Particles *ge2* and *sin1*

Ann Wai Huen To & Chaak Ming Lau
The Education University of Hong Kong

Sentence-final particles (SFPs) are morphemes at the end of a sentence that carry specific pragmatic functions, such as speech-act types, evidentiality, grounding, and “call-on-addressee” [1,2]. Cantonese has a rich inventory of SFPs, with around 40 distinct syllables (onset-rime-tone combinations) [3]. Previous studies have attributed multiple pragmatic functions to a single particle, without accounting for the effect of sentence-level intonation on their surface realization. This study investigates the acoustic realization of two such SFPs with known different realizations: *ge2* (嘅) and *sin1* (先) to disentangle the contribution of the discourse-driven intonation from its core meaning. *Ge2* is described as having a “reservation” variant (*v1*, shorter duration, faster rise in pitch) and an “reluctance” variant (*v2*, longer duration, concave-falling pitch contour) [4]. *Sin1* functions as a marker of chronological order (*v1*, “first”), or as an emphatic marker in questions (*v2*, “wh-on-earth”), with the latter described as having a “stronger” intonation and longer duration [5]. The reported prosodic descriptions lack acoustic evidence. We addressed this gap by confirming whether the variations in production are categorical, and whether the pragmatic function described in the literature matches the variants.

Data were collected from 12 native Hong Kong Cantonese speakers (4 males, 8 females; age range 20–34). The experimental materials included three pre-written sentences for each SFP, presented in two contexts: (i) an explicit description of the pragmatic function, and (ii) an implicit context presented as a 2-turn dialogue requiring a response to an interlocutor’s preceding speech. The same target sentences were used across the two variants of each SFP. In each trial, participants were given 5 seconds (context 1) and 15 seconds (context 2) to read the sentences before either reading them aloud (context 1) or listening to the interlocutor’s speech and responding to it (context 2). All participants completed the tasks in context 1 first.

A phonetically trained native Hong Kong Cantonese speaker judged the production accuracy of all sentences and rejected sentences that were clearly not read out with the intended SFPs. The judgement results (**Fig. 1**) showed that participants produced more pragmatically-prosodically matched tokens for “reservation” *ge2* and both variants (“first” and “wh-on-earth”) of *sin1*, whereas “reluctance” *ge2* could not be reliably reproduced. The pragmatically-prosodically matched tokens are then extracted for acoustic analysis. Z-scored duration (**Fig. 2,3**) and z-scored F0 (**Fig. 4,5**) data were analyzed, revealing robust categorical differences in duration and pitch between matched instances across the two variants of both SFPs produced by the participants. “Reluctance” *ge2* and “wh-on-earth” *sin1* showed significantly longer durations than their counterparts. “Reservation” *ge2* exhibited a clear low-to-high rise, consistent with the high-rising (Tone 2) contour. However, the “reluctance” *ge2* displayed a compressed rise-fall pattern with a low F0 target, which requires further investigation. “First” *sin1* appeared as a high-level tone, whereas the “wh-on-earth” variant displayed a gradual fall without a plateau, distinct from the high-falling (HL%) contour typically associated with correction [6]. In general, the acoustic results of this study mostly align with the descriptions in previous literature [4,5]. No consistent patterns of context effects were found.

The results of this study provided solid evidence on the mapping of pragmatic functions of SFP variants to prosodic correlates, which could be replicated across other SFPs. The findings of this study confirm that, despite the constraints of a tone language, intonational differences on SFPs are categorical. The lack of a clear context effect may be attributable to the experimental design, as all participants completed the explicit block prior to the implicit block. Future studies employing a counterbalanced design will provide a more comprehensive evaluation of such effects.

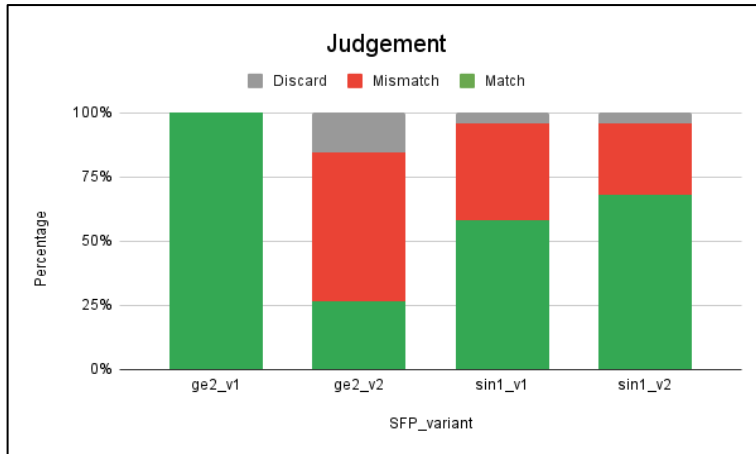


Fig 1. Judgement of pragmatically-prosodically match and mismatch SFP variants produced by speakers

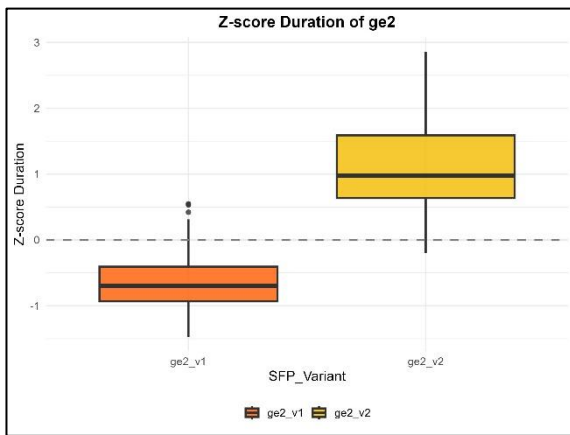


Fig 2. Z-score duration of the two variants of *ge2*

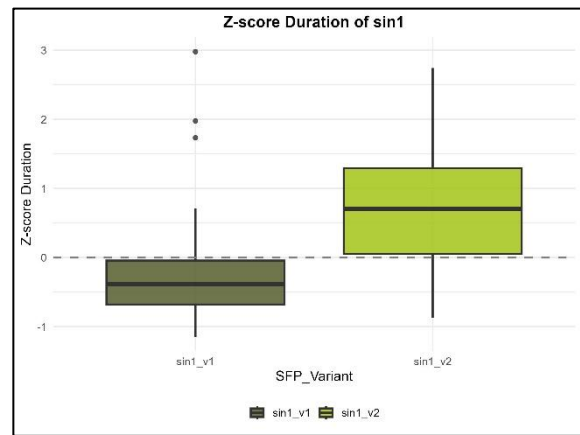


Fig 3. Z-score duration of the two variants of *sin1*

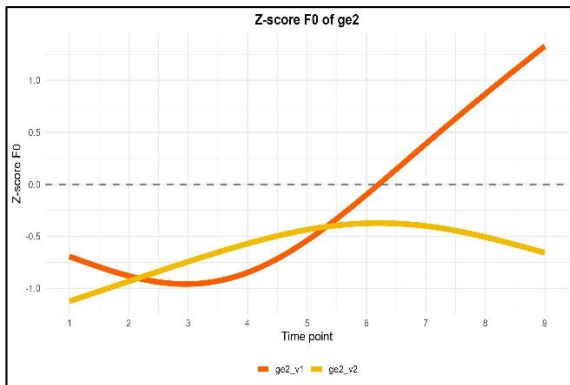


Fig 4. Z-score F0 of the two variants of *ge2*



Fig 5. Z-score F0 of the two variants of *sin1*

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