Context update with Cantonese sentence-final particle *me1* and the role of falling tone

1 Introduction. Cantonese has a rich inventory of sentence-final particles (SFPs) that serve functions such as managing common ground and modulating epistemic stances (Chor, 2018). Among them, the SFP *me1* has been noted for its similarity to rising declaratives (RDs) in English (Wakefield, 2014; Gunlogson, 2001). As illustrated in (1) and its English translation, both *me1* and English RDs convey a speaker's bias while seeking confirmation of a proposition in light of some unexpected evidence.

(1) *[Context: Abe's psychologist friend Bjork submitted an abstract to WCCFL. Abe asks her:]*
Nei5 jau5 jin4gau3 jyu5jin4hok6 ge3 **me1**?
you have research linguistics GE3 ME1 'You have worked on linguistics?'

2 Empirical generalization. *p-me1* questions have traditionally been treated as regular polar questions with a speaker-oriented negative presupposition (Matthews and Yip, 2010; Chor and Lam, 2023; Law et al., 2024), i.e., by virtue of uttering *p-me1*, the speaker Sp communicates a negative bias towards the prejacent proposition, as in (1), where Sp conveys a negative bias towards *Abe has worked on Linguistics*. However, this assumption is too strong, as *me1* accommodates both negative and positive biases. For instance, by uttering (2), Sp does not convey a bias that *Mary did NOT drink milk*; rather, Sp suggests that there are reasons to consider the possibility that *Mary drank milk* might be true. Building on Wakefield (2014), I argue that the negative presupposition is more accurately modeled as a prior belief: before encountering some discourse element D which evidences p, Sp held the belief that $\neg p$ was true.

(2) *[Context: Mary is lactose intolerant, and John hears that her stomach is growling. He asks:]*
Nei5 gam1ziu1 jam2-zo2 naai5 **me1**?
you today.morning drink-PERF milk ME1 'You drank milk this morning?'

In fact, *p-me1* questions require not just a speaker-oriented prior negative belief but a common-ground-oriented one. As shown in (3), *p-me1* is infelicitous when $\neg p$ was never common-grounded even if Sp had such a belief. Conversely, it becomes felicitous in contexts where $\neg p$ had been common-grounded, e.g., if Abe had previously communicated with Bjork or if they had seen the answer key together.

(3) *[Context: Abe saw the answer key on the professor's desk, which says the answer is A. Abe didn't tell anyone about it and did not think anyone else saw it. However, the TA announced that the answer was B. He asks his classmate, Bjork, who wrote B in her exam paper:]*
#Daap3on3 m4 hai6 A **me1**? – answer not be A ME1 – *Intended:* 'The answer is not A?'

Lastly, previous literature has overlooked that when uttering *p-me1*, Sp must assume that the addressee Ad may believe p. As shown in (4), *p-me1* is felicitous in *Context 1*, where Sp has reasons to assume that Ad may believe p, but it is infelicitous in *Context 2* where Sp lacks such an assumption despite there being evidence elsewhere in the discourse suggesting that p may be true.

(4) *[Context 1: Abe and Bjork had never had durian before. They were at a durian-tasting party. Bjork had her 10th piece while Abe was still too afraid to try. Abe asks:]*
[#Context 2: ...Bjork tried a piece and stopped while all the other friends were devouring theirs:]
Hou2sik6ge3 **me1**? – delicious ME1 – 'It is delicious?'

In sum, an analysis of *me1* must account for its dual requirements: a common-ground-oriented prior negative belief and an invariable addressee-oriented belief.

3 Theoretical assumptions. I adopt the Table Model (Farkas and Bruce, 2010), which defines the meaning of an utterance through its denotation, impact on Sp's discourse commitments, and the content made at issue. This framework analyzes utterances as functions from an input context (c_i) to an output context (c_o). The model includes: (i) COMMON GROUND (CG): the set of all propositions that all discourse participants are publicly committed to;(ii) DISCOURSE COMMITMENTS (DC): for each discourse participants $a \in A$, DC_a contains propositions that a has publicly committed to; (iii) THE TABLE: a stack of Issues I (sets of propositions) to be resolved by common-grounding one of their members; (iv) PROJECTED SET (PS): the set of all potential future CGs, containing $CG_i + p$ for each $p \in I$ that is d(iscorse)-consistent with CG_i as a possible resolution of I. D-consistency is defined in (5) (Farkas, to appear).

(5) A set of propositions P is d-consistent iff for any rational agent a, if $P = Dox_a$, $\cap Dox_a \neq \emptyset$

For a conventional assertive update denoting p, Sp adds p to the Table, publicly commits to p ($p \in DC_{Sp,o}$), and projects $CG_i + p$ as a future common ground ($PS = CG_i + p$). For a conventional

polar question update denoting $\{p, \neg p\}$, Sp puts $\{p, \neg p\}$ on the Table and projects $CG_i + p$ and $CG_i + \neg p$ as possible future common grounds ($PS_o = CG_i + p, CG_i + \neg p$) without committing to either proposition ($DC_{Sp,o} = DC_{Sp,i}$). Regarding RDs, they are commonly analyzed as the result of the rising tune modifying the context-update function of declarative sentences (Gunlogson, 2001; Westera, 2017; Truckenbrodt, 2012; Rudin, 2022, 2018; Goodhue, to appear). For concreteness, I adopt Rudin's (2022) analysis, which emphasizes the addressee-oriented bias. In this view, the rising tune removes p from $DC_{Sp,o}$, i.e., when uttering an RD, Sp puts p on the Table and projects $CG_i + p$ as a future common ground while not publicly committing to p. This lack of commitment generates the inference of variable speaker biases, while having p on the Table and in PS_o generates the inference that Ad may believe p (see details in Rudin, 2022).

4 Refined account. Drawing inspiration from English RDs, I propose a parallel analysis for *p-me1* but with an additional presupposition about prior common ground. Like the rising tune in English, *me1* is a context update modifier: it puts p on the Table, projects a future common ground with p in it, but does not commit Sp to p. The key difference is that *me1* introduces a presupposition requiring a time t and a discourse element D such that D provides evidence for p, Sp encountered D at t, and $\neg p$ was common-grounded at t.

(6) $[\![me1]\!] = \lambda p.\lambda Sp.\lambda c.\begin{bmatrix} T & = & T_c + \{p\} \\ PS & = & \{CG_c + p\} \\ c' & = & c \text{ in all other respects} \end{bmatrix}^{c'}$

defined iff $\exists D.\exists t.\texttt{evidence}'(D, p) \wedge \texttt{encounter}'(Sp, D, t) \in CG_c \wedge \neg p \in CG_{c_t}$

5 The role of falling tone. *Me1* can also appear with a high-falling tone (*me*↓), yielding what previous literature identifies as a rhetorical interpretation on par with English 'as if', exemplified in (7).

(7) *[Context: John was going to ask Tom, the meanest person, to help proofread a paper. Mary says:]*
Keoi5 wui5 bong1 nei5 **me**↓. – he will help you ME↓ – 'As if he would help you.'

Previous studies have identified systematic differences between high- and low-tone SFP variants, and have motivated compositional analyses where the tonal component in SFPs contributes an independent piece of meaning (e.g., Matthews and Yip, 2010; Sybesma and Li, 2007). Recent phonetic studies further show that the low-tone SFP variants arise from the interaction between an SFP's inherent lexical tone and a superimposed boundary tone, supporting analytical decomposition (Li, 2021; Li et al., 2024). In light of these prior works, I propose a compositional account of *me*↓ in terms of the *me1* update defined above and a general-purpose meaning for the final falling tone in Cantonese. I argue that the falling tone signals that p is not d-consistent with the input CG_i. Because of p's d-inconsistency with CG_i and the lack of p in $DC_{Sp,o}$, p cannot be projected in PS_o. Thus, when using *p-me*↓, Sp sets p as the topic for discussion without endorsing it and without suggesting that it can be common-grounded.

The non-projection of p accounts for the rhetorical flavor of *p-me*↓. Following Farkas (to appear), an utterance is understood to be rhetorical if the Issue it raises is either already resolved or is unresolvable, i.e., if it fails to project a PS distinct from the input CG_i. This precisely characterizes *p-me*↓.

6 Implications. In the fully compositional account outlined above, the meaning of *me*↓ is derived from the semantic interaction between the meaning of *me1* and the meaning of the sentence-final falling tone. One advantage of pursuing a compositional account is that it makes predictions about a broader range of SFPs in combination with the final falling tone. For instance, Matthews (1998) argues that the low-falling tone SFP *wo4* is derived from the mid-tone SFP *wo3*, with the falling tone associated with surprisal. The contrast is illustrated in (8). I suggest that the surprisal flavor of *wo4* follows compositionally from the falling tone's signaling d-inconsistency with the input CG_i, i.e., the prejacent proposition was previously incompatible with the Sp's doxastic domain but is now accepted, thus generating a sense of surprise.

(8) Zoeng1 cong4 hai6 fan2hung4sik1 ge3 **wo3/wo4**! – CL bed be pink ASSRT WO3/WO4
'*((Wo3-)*Notably,*(Wo4-)*I didn't expect that) the bed is pink!' (Adapted from Matthews, 1998)

Formalizing the compositional interactions between SFPs and final falling tones opens up a research program for developing predictive and explanatory accounts for the meanings of SFP-tone pairs, such as *aa3* vs. *aa4* and *tim1* vs. *tim*↓, where the low-tone variants are often linked to surprise or prior negative belief.

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