How Mandarin incremental *hai* saves hyperbolic comparatives

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1. Overview Consider (1). Suppose the speaker is talking about a malnourished girl. Given our world knowledge that 'her arm' being realistically thinner than a matchstick is hardly possible, the speaker of (1) is most likely taken as using (1) to overstate. Below we call comparatives used to overstate *hyperbolic comparatives*. (see e.g. [1,8] for hyperbole)

(1) *Look at her. Her arm is thinner than a matchstick.*

Interestingly, it's observed by e.g. [6,12] that Mandarin regular *bi* / *than*-based hyperbolic comparatives are infelicitous in that such comparatives somehow feel as if the speaker is comparing realistically. Consider (2).

(2) ???/ # *ni kan ta, tade gebo bi huochaigun xi.* (from [12])
you look she her arm than matchstick thin
Intended: Look at her. Her arm is thinner than a matchstick.

But [12] (and many others) observed that (2) gets felicitous in the presence of the particle *hai* (literally, *still*, and claimed by many to be a *noch*-like particle) as in (3). In (3), listeners easily recognize that the speaker is overstating and using it to convey, in [10]'s own intuitive description, '*personal emotion*'.

(3) *ni kan ta, tade gebo bi huochaigun **hai** xi.* (from [12])
you look she her arm than matchstick still thin
Look at her. Her arm is so thin as if it were even thinner than a matchstick.

We postpone for future research why Mandarin bare *bi* (*than*)-based hyperbolic comparatives (e.g. (2)), albeit intended to overstate, are infelicitous since they feel as if the speaker is comparing realistically. We focus on ***why they get felicitous with the presence of hai,*** claimed by e.g. [13] to be essentially incremental. To foresee, we'll explain this by integrating new insights from two independent fields of research: (a) research of hyperbole in formal semantics, and (b) research of the semantics of incremental particles in general.

Preliminaries: New insights from two independent fields of research

2.1 A two-dimension-based framework of hyperbole. Some recent studies of hyperbole in formal linguistics argue that hyperbole involves two dimensions, a factual dimension and an affective dimension (e.g.[5,8]). In particular, [8] suggests that hyperbolic utterances involve two aligned scales: (i) a scale associated with a *factual, order-inducing* QUD (question under discussion) that is about the actual world, and (ii) another scale associated with an *affective, order-inducing* QUD which addresses the speaker's subjective evaluation of the world via this hyperbolic utterance. [8] argues that of the two scales / QUDs, the affective one is more fundamental for hyperbole. Consider (4). Suppose 58 out of the 60 invited guests attended a party; a guest told the host about how successful she thought the party was by uttering (4):

(4) *There were a hundred people in your living room.* (from [8])

According to [8], the *factual, order-inducing* QUD for (4) could be '*How many people attended the party?*'; the *affective, order-inducing* QUD could be e.g. '*How successful was the party?*'. By uttering (4), the speaker is not realistically talking about the number of attending guests –100 is clearly false – but the party's degree of success. Note the affective scale / QUD is aligned with the factual scale / QUD: The more overstated the number of attending guests is, the more successful the speaker considers the party to be.

2.2. Incremental particles: Mapping to a scale.

By incremental particles, we mean particles like English incremental *more* (e.g. [2,9], *another* with measure phrases / numeral phrases [10], Hebrew *od* [3], and German *noch*

([4,11]). One hallmark feature incremental particles share is incrementality. For illustration, take a look at English incremental *more* (5) (=[2]'s ex. 22b).
(5) *Yesterday John interviewed 3 students. Today he interviewed more$_{incre}$ students*.
On the intended incremental reading, the number of students John interviewed today needn't exceed 3; instead, it could be any number. But crucially, there should be no overlap between the students he interviewed today and those he interviewed yesterday. This results in the increase in the total number of students he interviewed. Of more interest to us, incremental particles are argued to **map to a scale** [2,3,4]. Consider (6). Out of the blue, (6) is infelicitous on the intended incremental reading.
(6) *I baked 3 cakes for my son's birthday party. A woman I know in New York baked #more$_{incre}$ (cakes) for her son's birthday party.* ([2]'s ex. 22b)
But with a context like (7), (6) becomes felicitous on the intended reading.
(7) ***(Context:** Some rich man suggests donating a certain sum of money for poor children for every birthday cake baked in the world) (6) becomes felicitous.* ([2]'s ex.24b)
[2] argues that the distinction between the felicitous vs. infelicitous sentences with incremental *more* is correlated with the possibility of interpreting the sentence with 'comparative correlative' (see Beck 1998). For instance, (7) could be paraphrased as *the more cakes baked for birthday parties, the more money donated*. In contrast, (6), out of the blue, can't be paraphrased this way. Consequently, incremental *more* in (7) actually involves two scales, (a) the scale of the number of baked cakes and (b) the scale of the donated amount of money, and the increase on the former scale (of baked cases) is correlated with / mapped to the increase on the latter scale (of the donated money). [4], adopting this suggestion, formalizes the latter scale as an independent measure provided by a contextually salient degree QUD. **We adopt this idea of mapping to a contextually salient scale with incremental particles for Mandarin *hai*.** This move is justified both empirically and theoretically. Empirically, sentences (5) (6) (7) can be translated using *hai* straightforwardly with the same effect. Theoretically, see [11] for a detailed proposal for incremental *hai* and see [7]'s proposal for how an incremental account captures bare *bi / than*-based comparative *hai* (akin to Umbach's 2009 story for comparative *noch*)).

3. Proposal: *Scale-mapping encoded by hai* meets the requirements of hyperbolic comparatives We adopt [8]'s idea that hyperbole is mainly about the *affective* scale / addressing an *affective order-inducing* QUD. This also aligns with and captures [12]'s original intuitive description that hyperbolic comparatives are used by the speaker to convey her 'personal emotion' aforementioned. Take (3) for instance. Most likely, the speaker is not realistically addressing a factual QUD, e.g. '*How thin is her arm?*' but mainly addressing an affective QUD, e.g. '*How malnourished is she?'*. With this assumption, hyperbolic comparatives need to map to a scale which is not based on the lexical material. From this perspective, the oddness of bare *bi* (than)-based hyperbolic comparatives in Mandarin, as in (2), boils down to a difficulty to accommodate a scale which is not lexicalized by the material in the sentence, for reasons which we hope to understand in future research. Based on the two assumptions, we propose that the presence of *hai* improves the status of hyperbolic comparatives because this particle, as shown above, encodes a mapped scale offered by a salient degree question, so the difficulty of accommodating a non-lexical scale — the scale associated with an affective, order-inducing QUD needed for the interpretation of Mandarin hyperbolic comparatives — is overcome, as in (3). If our explanation is on the right track, (3) is supposed to easily paraphrasable with 'correlative comparatives'. This is indeed the case: Assuming the contextually salient degree QUD as *how malnourished she was*, (3) can be naturally paraphrased with 'correlative comparative' as follows: the more extreme item (here a matchstick) her arm is thinner than, the more malnourished she is.

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