

## A novel, unified *even*-like semantics for Mandarin *gèng*

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**Synopsis** Mandarin *gèng*, often translated as “*even more*” (e.g. Liu2010; Lin2014), has been mostly examined with gradable predicates (1a) and argued by some to be a comparative morpheme (e.g. Liu 2010; Lin2014; Yang2017). Focusing on some less studied observations that *gèng* can also combine with non-gradable predicates, we suggest a unified semantics for *gèng* where it is constantly an even-like particle able to associate with covert material.

- 1a) Bill (*bi* Lisi) *gèng* gao .                      1b) \* Bill *bi* Lisi *gèng* gao yi gongfen.  
Bill than Lisi *gèng* tall                              Bill than Lisi *gèng* tall one centimeter  
Bill is even taller (than Lisi).                      Intended: Bill is even 1cm taller than Lisi.

**The challenge with *gèng*** Many have observed that *gèng*, combining with a gradable predicate (1a), triggers an evaluative inference, i.e. in (1a) both Bill and Lisi are implied to be tall. This led some, notably Liu (2010), to take *gèng* to be a comparative morpheme with an evaluative presupposition as formalized in (2). But Liu (2010) notes in a footnote that *gèng* can also appear with non-gradable predicates as in (3) and (4) (sentences and glosses his but translations mine); this remains unstudied. We will suggest a unified semantics, but first, more observations.

2)  $\|gèng_{\text{phrasal}}\| = \lambda x_{\langle e \rangle} \lambda P_{\langle d, \langle e, t \rangle \rangle} \lambda y_{\langle e \rangle} [\iota_{\max} P(d)(y) > \iota_{\max} P(d)(x)] \wedge$  the properties predicated of *x* and *y* are true in the absolute sense (the underlined is presupposed) (Liu 2010, Entry 57)

- 3) “*tamen liang, yi-ge da le ren, ling yi-ge gèng sha-le ren.*”  
they both one-CL hit-ASP people other one-CL *gèng* kill-ASP people  
“Of them two, one hit the person and the other one even killed the person.”  
4) “*zhe-suo xuexiao, laoshi shou ren liwu, xiaozhang gèng na ren hongbao.*”  
this-CL school teacher receive people gift president *gèng* take people cash-gift  
“Of this school, teachers take grafts, and the president even takes cash-gift.”

**Further observations A)** We note that in (3) and (4) *gèng* is *even*-like in three regards. i) *Gèng* is translated as English *even* and paraphrasable with *shènzhì*, the unmarked *even* in Mandarin. ii) Reversing the predicate in the *gèng*-hosting proposition and the predicate in the preceding proposition causes infelicity (5), indicating that *gèng*, like *shènzhì*, is scalar. iii) It is known that “*only*” often triggers a “below the standard / expectation” effect (e.g. Beaver&Clark2008, Coppock&Beaver2013), in opposition to *even*. We note that inserting *zhǐ-bú-guò*, the scalar only in Mandarin, into the proposition before the *gèng*-hosting proposition also causes infelicity (6), illustrating that *gèng* requires both its hosting proposition and the prior one to indicate a degree above some standard, like *shènzhì* and English *even* (Greenberg2018). We note that this parallels (1a) where *gèng*, combining with a gradable predicate, triggers an evaluative inference. We further observe that “*only*” is bad also in cases involving gradable predicates (7). **B)** It is well-observed that *gèng* is incompatible with precise measure phrases in *bi/than* constructions (1b). **C)** we note that *gèng*, combining with gradable predicates like (1a), is stressed by default.

- 5) # “*tamen liang, yi-ge sha le ren, ling yi-ge gèng / shènzhì da-le ren.*”  
they both one-CL kill ASP people other one-CL *gèng* / *shènzhì* hit-ASP people  
Intended: # “Of them two, one killed the person, and the other even hit the person”  
6) # “*tamen liang, yi-ge zhǐ-bú-guò da le ren, ling yi-ge gèng / shènzhì sha-le ren.*”  
they both one-CL *only*<sub>scalar</sub> hit ASP people other one-CL *gèng* / *shènzhì* kill-ASP people  
Intended: # “Of them two, one *only* hit the person, and the other even killed the person.”  
7) “Bill *zhǐ* yǒu yi-mi-liu, Lisi *bi* ta (#*gèng*) gao.” (with *gèng* stressed)  
Bill *only* have 1.6m Lisi than he *gèng* tall (Intended: #Bill is *only* 1.6m tall, Lisi is *even* taller than him.)

**Proposal** Given the similarities between *gèng* and *even* / *shènzhì* in *Observation A*, we propose that *gèng* is constantly an *even*-like operator with both gradable and non-gradable predicates, and adopt for it the gradability-based account of English *even* (Greenberg2018) with three components: a) some contextually supplied gradable property *G*; b) a comparative

presupposition that some non-focused item  $x$  in the prejacent ( $p$ ) holds a higher degree of  $G$  in the  $p$  worlds than in the worlds where  $p$ 's salient alternatives ( $q$ ) hold but  $p$  does not hold (i.e.  $q \wedge \neg p$  worlds); c) an evaluative presupposition that the degree  $x$  holds in  $q \wedge \neg p$  worlds is above the standard on the  $G$  scale. This is an alternative to the more traditional likelihood-based story of English *even* which has been shown to face various issues (e.g. Kay1990, Rullmann1997, Herburger2000, Greenberg2016,2018). Applying this account to, say, (3) where *gèng* combines with a non-gradable predicate, and  $G$  reasonably taken to be guiltiness, it is presupposed that a) the other guy is more guilty in the worlds where he killed the person than in those where he hit but didn't kill him and b) he is *POS* guilty in the latter worlds. With gradable predicate like in (1a), the salient  $G$  is determined by the lexical adjective (*tall* here). Formally, we suggest entry (8), borrowed from Greenberg(2018), for *gèng*:

8) For the *gèng*-hosting proposition  $p$  and all discourse-salient alternatives  $q$  ( $q \neq p$ ) in  $C$ , *gèng* ( $C$ )( $p$ )( $w$ ) carries this presupposition:  $\forall w_1 \forall w_2 [w_1 R w_0 \wedge w_2 R w_0 \wedge w_1 \in p \wedge w_2 \in [q \wedge \neg p] \rightarrow \max(\lambda d_1. G(d_1)(x)(w_1)) > \max(\lambda d_2. G(d_2)(x)(w_2)) \wedge \max(\lambda d_2. G(d_2)(x)(w_2)) > \text{Stand}_G]$

**Accounting for data** a) Entry 8 directly covers **Observation A** (with the related examples 3,4,5,6). b) We claim that our entry naturally accounts for the various observations regarding *gèng* combining with gradable predicates in this way: In these cases, a covert comparative morpheme *COMP* exists immediately preceding the adjective, triggering the comparative flavor, and *gèng*, associating with *COMP*, yields the evaluative flavor. Importantly, both the existence of *COMP* and association with covert material have been independently argued in the literature. Firstly, it is long observed that bare adjectives in Mandarin (e.g. *gao* (tal)l as in *Bill gao*), uttered out of the blue, most saliently trigger a comparative reading (e.g. Sybesma 1999, Grano2012, Zhang2019); the addition of the unstressed *hěn* (literally *very*), claimed by some to be an overt realization of *POS* in Mandarin (e.g. Liu2010), unambiguously yields a positive reading. Such observations have led some to assume Mandarin has a covert *COMP* (e.g. Xiang2005, Grano 2012, Lin 2014). Secondly, it has been argued that some focus sensitive scalar operators (e.g. Hebrew *even*-like *bixlal* (Greenberg2020) and *only*-like *besax-ha-kol* (Orenstein& Greenberg 2021)) can associate with covert items. Adopting these two assumptions, the interaction between entry 8 and our suggestion that *gèng* (unlike *shènzhì*) can associate with covert material naturally explains all our observations. In (1a) *gèng* associates with *COMP*; the evaluative inference is due to *gèng*'s evaluative presupposition. Since the associate *COMP* is covert, it cannot be accented; the accent is thus shifted onto *gèng* (cf. Umbach2009, Wagner2012, Greenberg2020), explaining **Observation C**. In (1b) where *gèng* is shown to be incompatible with precise measure phrases, *gèng*, associating with *COMP*, triggers this set  $\{\textit{Bill is 1cm taller than Lisi}, \# \textit{Bill is 1cm as tall as Lisi}, \textit{Bill is 1cm less tall than Lisi}\}$ . The middle alternative is pragmatically implausible and thus ruled out; we are left with the third one. Applying (8) to (1b) leads to a situation where the comparative presupposition is trivially met but having it will violate the scalar presupposition, explaining **Observation B**.

**Prediction** English *even* is argued to impose a universal quantificational force over alternatives (e.g. Greenberg2019; cf. Xiang2020), i.e. the prejacent indicates a degree higher than all its salient alternatives. If *gèng* is *even*-like, we would predict it to trigger a universal force regardless of combining with non-gradable (10) or gradable (11, with *gèng* stressed) predicates, which is borne out. This is unexplained by a comparative morpheme approach.

10) A: "How many papers did your faculty members write?"

B: "They all did great. Jim wrote 3, Bill 6, Ray 4, John # *gèng* (shi) /# *shènzhì* xie le 5 pian"  
 ..... *gèng* COP even write ASP 5 piece  
 "They all did great. Jim wrote 3, Bill 6, Ray 4, (and) it is even the case that John wrote 5."

11) “*tamen san-ge dou hen gao.qizhong Bill zui gao, John hen gao, Gray bi John (#gèng) gao.*”  
*they three-Cl all very tall among Bill most tall John very tall Gray than John gèng tall*  
“*They three are all tall. Among them Bill is the tallest, John is very tall, and Bill is even taller than Gray.*”

**Comparison with shènzhì** We suggest that gèng differs from shènzhì in that gèng can associate with covert material but shènzhì cannot. This explains the phenomenon that combining with bare adjectives, shènzhì (as in *Bill shènzhì gao* (Bill is even tall)) triggers a positive reading but gèng triggers a comparative reading (*Bill gèng gao* (Bill is even taller)).

**Selected references** Grano, T. (2012). Mandarin *hen* and universal markedness in gradable adjectives. *NLLT*. // Greenberg, Y. (2018). A revised, gradability semantics for even. *NALS* // Greenberg, Y. (2020). *An overt even operator overt covert-based focus alternatives: The case of Hebrew bixlal*. *JOS*. // Kay, P. (1990). Even. *L&P*. // Lin, J-W. (2014). The adjective of quantity *duo* ‘many/much’ and differential comparatives in Mandarin Chinese. *IJCL*. // Liu, C.S.L. (2010a). The Chinese gèng clausal comparative. *Lingua*. // Liu, C.S.L. (2010b). The positive morpheme in Chinese and the adjective structure. *Lingua*. // Rooth, M. (1992). A theory of focus interpretation. *NLS*. // Sybesma, R. (1999). *The Mandarin VP*. Kluwer. // Umbach, C. (2008). Comparative combined with additive particles: The case of German *noch*. SuB 13 Proceedings. // Wagner, M. (2012). Focus and givenness: A unified approach. *Contrasts and Positions in Information Structure*. // Xiang, M. (2005). *Some topics in comparative constructions*. PhD thesis, MSU. // Xiang, Y.(2020). Function alternations of the Mandarin particle *dou*: Distributor, free choice and ‘even’. *JOS*. // Zhang, L.M. (2019). The semantics of comparisons in Mandarin Chinese. GLOW in Asia 13 & SICOOG 21 Proceedings.