

# *Gèng*: A Coercive Comparative Marker in Mandarin Chinese

Zhuang Chen\*

## 1 Introduction

(1a) is a typical way of expressing comparison in Mandarin.<sup>1</sup> There is no evaluative inference that both the comparison target, Zhangsan, and the comparison standard, Lisi, are positively tall: Explicitly negating such an evaluative inference leads to no infelicity (1b). However, as widely observed (e.g. Lu 1985, Krasikova 2008, Liu 2010, Zhang 2019, Zhang 2021), with *gèng*, often translated as “even more” (e.g. Liu 2010, Lin 2014), inserted before the adjective (2a), this evaluative inference arises: Explicitly negating it causes infelicity (2b). Moreover, *gèng* leads to a comparative reading with an evaluative inference in the absence of a comparison standard introduced through *bǐ* (than) as well (2c).

- (1) a. Zhāngsān **bǐ** Lǐsì gāo.  
Zhangsan than Lisi tall  
Zhangsan is taller than Lisi. ↔ no evaluative inference
- b. Zhāngsān **bǐ** Lǐsì gāo, dànshì liǎng-gè dōu bù gāo.  
Zhangsan than Lisi tall but two-CLF all NEG tall  
Zhangsan is taller than Lisi, but neither is tall.
- (2) a. Zhāngsān **bǐ** Lǐsì **gèng** gāo.  
Zhangsan than Lisi *gèng* tall  
Zhangsan is even taller than Lisi. ↔ evaluative inference
- b. # Zhāngsān **bǐ** Lǐsì **gèng** gāo, dànshì liǎng-gè dōu bù gāo.  
Zhangsan than Lisi tall but two-CLF all NEG tall  
Zhangsan is even taller than Lisi, but neither is tall.
- c. Zhāngsān **gèng** kāixīn.  
Zhangsan *gèng* happy  
Zhangsan is even happier than somebody is, and both Zhangsan and that person are happy. (Liu, 2010, p.1580)

*Gèng* is far less studied than the *bǐ*-containing comparative (*bǐ*-comparative for short) in the formal semantics literature. Among the studies available, scholars diverge on the semantics of *gèng*. For instance, Krasikova (2008) claims that *gèng* is a degree intensifier analogous to Japanese *motto* as studied in Beck et al. 2004;<sup>2</sup> she refrains from taking *gèng* to be a comparative marker partly due to a wide observation that *gèng* is incompatible with a measure phrase differential. Zhang (2019) suggests that *gèng* is “a modifier for gradable adjectives” that “marks the existence of a presupposed comparison” (Zhang 2019: 648). Liu (2010) proposes that *gèng* is a comparative marker that triggers an evaluative presupposition. Despite their differences, these accounts converge on one point: They are all dedicated to accounting for cases where *gèng* combines with gradable predicates (e.g. *gāo*

\*I would like to thank, in particular, my supervisor Yael Greenberg whose seminars on scalarity and additivity serve as a fountain of inspiration for this paper. I am also deeply grateful to Shumian Ye for his constructive comments and suggestions, as well as the anonymous reviewers of PLC 46 and the audience there for their valuable feedback. Special thanks to the organizers of PLC 46 and the PWPL editorial team for making this happen during such times of uncertainty. All remaining errors are mine, of course.

<sup>1</sup>As can be seen in (1a), there is no explicit English *-er* like comparative marker in (1a). There are ongoing debates about how the comparative reading is brought about in comparatives containing *bǐ* (than) (e.g. Xiang 2005, Erlewine 2007, Krasikova 2008, Lin 2009, Liu 2011, Grano and Kennedy 2012, Erlewine (2018), Zhang 2019); a review of such studies is beyond the scope of this paper for space reasons. What is of particular relevance to us is that (a) the *bǐ*-comparative is, perhaps, the most common comparative construction in daily use in Mandarin and is the most studied one (see e.g. the works cited in this footnote), thus serving as a baseline, and (b) no evaluative inference exists, contrasting with *gèng*.

<sup>2</sup>*Motto* is claimed to be a comparative marker in a more recent study by Sawada (2014). See below.

(tall) in (2a) and *kāixīn* (happy) in (2c)). Take for example Liu’s (2010) entry for *gèng* in (3).<sup>3</sup> As (3) shows, *gèng* needs to combine with a gradable predicate that is present in the syntax. But intriguingly, *gèng*, as observed in a footnote in Liu 2010, can also combine with non-gradable predicates. This observation poses a challenge to all accounts that assume, overtly or covertly, the presence of a gradable predicate for *gèng* to combine with in the syntax. This observation remains understudied so far; we concentrate on it in this paper.

- (3)  $\|gèng\| = \lambda x_{<e>} \lambda P_{<d, <e, t>>} \lambda y_{<e>}. [{}_{t_{max}}d[P(d)(y)] > {}_{t_{max}}d[P(d)x]] \wedge$   
the properties predicated of  $x$  and  $y$  are true in the absolute sense. (Liu 2010: 1600)  
 (Note that the underlined part is presupposed in Liu’s proposal.)

In this paper, we argue that *gèng* is **uniformly** a comparative marker and offer a unified semantic core that can be adapted for different cases. Specifically, on the one hand, we inherit the insights of Liu (2010) in claiming that *gèng* has a comparative component and an evaluative component at its semantic core, but crucially, on the other hand, we claim that *gèng* is a **coercive** and thus super **flexible** comparative marker which seeks to impose an ordering relation. To meet its drive as a coercive comparative marker, *gèng* manipulates different elements at its disposal. *Gèng*, however, is subject to a semantic principle, so over-generation is forestalled.

The remainder of the paper is organized as follows. Section 2 presents Liu’s (2010) empirical observation and our follow-up observations, centering around *gèng*’ compatibility with non-gradable predicates. Section 3 presents a unified analysis of *gèng* as a coercive comparative marker and shows how the proposal accounts for the data. Section 4 concludes and shows directions for future research.

## 2 Empirical Focus

### 2.1 Liu’s (2010) Original Observation

By offering (4a) and (4b), Liu (2010) notes in a footnote that *gèng* is compatible with what he labels as “dynamic event predicate” that is considered “non-gradable” (Liu 2010: 1590).<sup>4</sup> The predicates *gèng* combines with are “*shā-le rén*” (killed the person) and “*ná rén hóngbāo*” (take cash-gift) in (4a) and (4b) respectively, and both predicates are non-gradable. All accounts of *gèng* that assume the presence of a gradable predicate for *gèng* to combine with in the syntax, e.g. entry (3), would predict *gèng* to be banned in such cases because the predicates it combines with are non-gradable, contra fact. Consequently, cases like (4a) and (4b) pose a challenge to those accounts.

- (4) a. *tāmēn liǎng, yí-gè dǎ-le rén, lìng yí-gè gèng shā-le rén.*  
 they both one-CLF hit-ASP people other one-CLF *gèng* kill-ASP people.  
Original Translation ‘As for those two bad guys, one affected the victim more seriously than the other did because the former killed the victim while the other hit the victim.’  
My Translation ‘Of these two guys, one hit the person, and the other even killed the person.’ (Liu 2010: 1590)
- b. *zhè-suǒ xuéxiào, lǎoshī shōu rén lǐwù, xiàozhǎng gèng ná rén hóngbāo.*  
 this-CLF school teacher receive people gift, president *gèng* take people cash-gift.

<sup>3</sup>Two clarifications are in order. Firstly, as seen in Liu’s entry (3), both the comparison standard ( $x$  in (3)) and comparison target ( $y$  in (3)) are presupposed to be positively  $P$ , i.e. above the norm on the scale associated with the gradable predicate  $P$ . But according to the observations of e.g. Zhang (2021), only the comparison standard is presupposed to be above the norm. See more on this in section 3.1.1. Secondly, Liu (2010) makes a distinction between phrasal-*gèng* which appears in the the *bǐ*-comparative (e.g. (2a)) and clausal-*gèng* which connects two clauses (this is illustrated by explicitly spelling out the prior comparison in (2c) like “Lisi is tall; Zhangsan is *gèng*/even taller”). Entry (3) is, precisely speaking, Liu’s proposed semantics for his phrasal *gèng*. The nuanced differences between phrasal-*gèng* and clausal-*gèng* are orthogonal to our discussion. What is of relevance is that both *gèng*s need to combine with gradable predicates available in the syntax in his proposal.

<sup>4</sup>Both (4a) and (4b) are offered by Liu (2010). Some native speakers may prefer *gèng-shì* (*gèng*-COPULA) to *gèng* alone in such cases where *gèng* combines with non-gradable predicates. I leave the distinction between *gèng* and *gèng-shì* in these cases for another occasion for space reasons.

Original Translation ‘As for this school, the president is more corrupt than the teacher because the teacher takes graft, but the president takes cash-gift.’  
My Translation ‘Of this school, teachers take graft, (and) the president even takes cash-gift.’  
(Liu 2010: 1590)

## 2.2 Our Follow-up Observations

### 2.2.1 *Gèng*’s Compatibility with Non-scalar Predicates

This observation is, more accurately, a re-characterization of Liu’s (2010) observation viewed through the lens of Lassiter’s (2017) differentiation between gradability and scalarity. Adopting Lassiter’s (2017) fine-grained differentiation affords a better appreciation of Liu’s (2010) original observation, and its relevance should become evident later (especially in section 4). By “non-gradable”, Liu (2010) intends that the predicate is not modifiable by typical degree modifiers like *hěn* (very) in Mandarin (Liu 2010: 1590). The predicates *gèng* combines with in (4a) and (4b) are non-gradable in this sense.

Lassiter (2017) distinguishes gradability from scalarity. According to Lassiter 2017: 7-8, an expression is gradable on condition that (a) it is associated with a scale consisting of degree points, (b) it is associated with a threshold value and (c) it can grammatically interact with operators that can manipulate its threshold value.<sup>5 6</sup> Such value-manipulating operators include e.g. measure phrase, comparatives and degree modifiers. On the other hand, a scalar but non-gradable expression shares with a gradable expression the first two conditions but differs regarding the last condition in that it does not interact with value-manipulating operators. English epistemic modals “*might*” and “*must*” are scalar but non-gradable according to Lassiter 2017: 166, for instance (see more on this in section 4). With this fine-grained classification, the predicates in (4a) and (4b) (and (6a) below) are not only non-gradable, but also **non-scalar**. For instance, in terms of “killing the person” in (4a), what is measured in this context is not the cardinality of individuals that were killed or the manner in which the person was killed. “Killing the person” is plainly killing the person. It is not associated with a scale comprising degree points; instead, it is a categorical property. Therefore, Liu’s (2010) observation can be re-characterized in an even more calibrated way as follows: *Gèng* can combine with **non-gradable and non-scalar** predicates. Given that non-scalar predicates are necessarily non-gradable in light of condition (a) for gradable predicates as defined above, Liu’s observation can be further characterized as *gèng*’s compatibility with **non-scalar** predicates. The relevance of this re-characterization should become evident later.

### 2.2.2 Context-dependency of the Dimension of Comparison

We observe that the dimension of comparison in cases where *gèng* combines with non-scalar predicates is context-dependent. Despite the lack of any gradable predicate that serves to supply the dimension of comparison, a comparative flavor is intuitively prominent in such cases as (4a) and (4b) (as well as (6a) below). For instance, in (4a) the speaker seems to be comparing the guy who killed the person and the guy who hit the person w.r.t. e.g. how guilty they were. This intuition is already partly reflected in the original translation in (4a) offered by Liu (2010): The specified dimension of comparison, i.e. how seriously the victim was affected, is syntactically absent in the original utterance but added in Liu’s (2010) “enriched” translation. This is also the case with (4b): The dimension of comparison, namely corruptness, is syntactically absent in the original sentence but added in the translation. It is noteworthy that without further contextualization, the dimension of comparison given by Liu (2010) in e.g. (4a) is justified via our world knowledge. However, the dimension of comparison in (4a) can be changed, and the two guys, who were neutrally presented

<sup>5</sup>Note that threshold value is not equivalent to *POS* in the sense of von Stechow (1984); it could be a random value provided by a comparison standard introduced via “*than*” in English.

<sup>6</sup>In the original criteria given in Lassiter 2017: 7-8 regarding gradability, conditions (b) and (c) are collapsed into one. We tease them apart for a straightforward contrast with the criteria regarding scalarity.

with no pre-nominal modifier in the original sentence but were portrayed negatively with the modifier “*bad*” in Liu (2010)’s (2010) original translation, can be portrayed positively against a different context. Imagine a scene where the speaker was talking about two veteran mercenary soldiers hired to fight off a regular attacker against the speaker’s place. And someone else asked the speaker about the performance of the two mercenary soldiers; the speaker then gave (4a) as a reply. Against this context, the dimension of the comparison could be interpreted as how successful the mercenary soldiers were. This indicates that the dimension of comparison in cases where *gèng* combines with non-scalar predicates depends on the context.

### 2.2.3 Norm-Sensitivity

Recall that *gèng*, when combining with a gradable predicate, triggers an evaluative inference that both the comparison standard and the comparison target are above the norm on the scale associated with the gradable predicate ((2a) vs. (2b)). This is captured in Liu’s (2010) entry (3) as an evaluative presupposition. We observe that *gèng* triggers a similar evaluative inference when combining with non-scalar predicates. Like English scalar particle *only* which is shown to give rise to a “below the standard” inference (e.g. Zeevat 2009, Beaver and Clark 2008, Greenberg 2019), *zhǐ* and its variant *zhǐbúguò*, *only*’s counterparts in Mandarin, trigger an analogous effect.<sup>7</sup> Given that the inference triggered by *zhǐ* or *zhǐbúguò* is the opposite of that triggered by *gèng*, *zhǐ* and *zhǐbúguò* offer a useful diagnostic test: In cases where *gèng* combines with non-scalar predicates, if the comparison standard is implied to be below the norm due to the presence of *zhǐ* or *zhǐbúguò*, *gèng* is expected to be infelicitous if it requires both the comparison standard and the comparison target to be above the norm like cases where it combines with gradable predicates. This is borne out as follows.

Be reminded that in (4a), we observe that the dimension of comparison is context-dependent and, without further contextual information, we can plausibly assume it to be guiltiness. We observe that if the first proposition in (4a) contains *zhǐ* or *zhǐbúguò*, as in (5), and thus indicates a degree that is below the norm on the guiltiness scale with an interpretation like “one guy, by hitting the person, was not guilty or below the norm of guiltiness”, the whole sentence (5) is infelicitous with *gèng*. This suggests that *gèng*, when combining with a non-scalar predicate, requires both its host proposition and the preceding proposition to indicate a degree above the norm on the relevant scale.

- (5) tāmen liǎng, yí-gè **zhǐ/zhǐbúguò** dǎ-le rén, lìng yí-gè (**#gèng**) shā-le rén.  
 they both one-CLF only/only hit-ASP people other one-CLF *gèng* kill-ASP people  
 Intended “Of these two guys, one only hit the person, and the other (even) killed the person.”

### 2.2.4 *Gèng*’s Combination with Static Predicates

Recall that Liu (2010) observes that *gèng* can combine with “dynamic event predicate” that is “non-gradable”. We observe that apart from being able to combine with “dynamic event predicate”, *gèng* can also combine with static predicates that are non-scalar. Imagine the following scenario: Asked whether Daniel can solve a syntax puzzle, John gave (6a) as a reply. As seen in (6a), the predicate “*shì-jùfǎxuéjiā*” (be a syntactician) *gèng* combines with is static and non-scalar. It is equally noteworthy that the dimension of comparison in (6a), namely how capable of solving the syntax puzzle Daniel was, depends on the context; more concretely, it is determined by the explicit QUD here. Moreover, an evaluative inference is triggered that Daniel was capable of solving the puzzle both as a linguist and as a syntactician: Inserting *zhǐ* or *zhǐbúguò* in the first proposition in (6a) results in infelicity, as illustrated in (6b).

- (6) a. tā shì yǔyánxuéjiā, **gèng** shì jùfǎxuéjiā, dāngrán néng.  
 he COP linguist *gèng* COP syntactician certainly can  
 “He is a linguist, (and) he is even a syntactician. Of course, he can (solve it).”

<sup>7</sup>We leave aside whether this evaluative inference with English *only* is presupposed (Zeevat 2009) or implicated (Greenberg 2019).

- b. # tā **zhǐ/zhǐbúguò** shì yǔyánxuéjiā, **gèng** shì jùfǎxuéjiā, dāngrán néng.  
 he only/only COP linguist gèng COP syntactician certainly can  
Intended “He is only a linguist, (and) he is even a syntactician. Of course, he can  
 (solve it).”

### 2.3 Interim Summary

We observe that (a) *gèng* can combine with non-scalar predicates, regardless of dynamic or static; (b) in such cases the dimension of comparison is context-dependent; (c) analogous to cases where *gèng* combines with gradable predicates, *gèng* triggers an evaluative inference when combining with non-scalar predicates, too.

## 3 Proposal

We would like to have a semantics of *gèng* which, on the one hand, can capture our observations, and on the other hand, maintain the insights regarding *gèng*'s combination with gradable predicates as briefly introduced in section 1. In this section, we propose such an account.

### 3.1 *Gèng* as a Uniform Comparative Marker Carrying an Evaluative Inference

We suggest that *gèng* is uniformly a **coercive** comparative marker that (i) seeks to establish an ordering relation forcibly and (ii) carries an evaluative presupposition, as formalized in (7). Akin to Liu's (2010) entry (3), our proposal has a presupposed evaluative component (the underlined conjunct) and a comparative component. But unlike Liu's entry, our proposal is not restricted to cases where *gèng* combines with gradable predicates. Under our proposal, in order to impose the ordering relation between compared items, *gèng* as a coercive comparative marker is flexible enough to manipulate different elements in its semantic core (7): (a) the items under comparison  $\phi$  and  $\psi$ , (b)  $G$  that provides the dimension of comparison and (c) the status of the comparative component. Concretely, the compared items  $\phi$  and  $\psi$  are cross-categorical. As for  $G$ , it can vary in terms of the way it is made available: It can be overt, namely present in the syntax, or covert, namely derived contextually. As for the status of the comparative component, it can be either presupposed or asserted, depending on the type of the predicates *gèng* combines with. At this stage, *gèng* may look so flexible that it may run into over-generation under our proposal. As to be seen later, *gèng* is subject to a semantic principle that forestalls over-generation. Let's first see how this proposal functions.

- (7)  $\|gèng\| = \lambda\phi\lambda\psi.[\underline{\phi >_G \theta}] \wedge [\phi >_G \psi]$   
 where  $\phi$  and  $\psi$  are compared items of the same semantic type,  $G$  a gradable predicate present in the syntax or derived contextually, and  $\theta$  the norm on the  $G$  scale.

#### 3.1.1 Cases Where *Gèng* Combines with a Gradable Predicate

For cases where *gèng* combines with a gradable predicate present in syntax (*gèng*<sub>gradable</sub> for short in (9)), we basically adopt Liu's (2010) entry (3) as a specified version of (7), except that only the comparison standard is presupposed to be above the norm on the scale associated with the gradable predicate. This is because unlike what is encoded in Liu's entry, the evaluative effect regarding the comparison target can be canceled, as demonstrated in (8) (see also footnote (3)). In (8), the inference that Zhangsan is tall is cancelled in the antecedent of a conditional, whereas the inference that Lisi is tall survives. Consequently, we reformulate (3) as in (9) which is a specific realization of (7):  $\phi$  and  $\psi$  in (7) are specified as two individuals of type  $e$ ;  $G$  in (9) is present in the syntax and thus *gèng* combines with it in the syntax straightforwardly; the comparative component, which remains open in (7), is asserted.

- (8) rǔguǒ Zhāngsān bǐ Lìsì **gèng** gāo, nànmē ...  
 if Zhangsan than Lisi *gèng* tall, then ...

“If Zhangsan is even taller than Lisi, then ...”

- (9) Sub-entry I: Cases where *gèng* combines with gradable predicates

$$\|gèng_{gradable}\| = \lambda x_{\langle e \rangle} \lambda G_{\langle d, \langle e, t \rangle \rangle} \lambda y_{\langle e \rangle} \cdot : \max(\lambda d. G(d)(x)) > \theta_G. \max(\lambda d. G(d)(y)) > \max(\lambda d. P(d)(x))$$

### 3.1.2 Cases Where *Gèng* Combines with a Non-scalar Predicate

For cases where *gèng* combines with non-scalar predicates, we suggest that (a) comparison items  $\phi$  and  $\psi$  in (7) are realized as propositions and (b)  $G$  is contextually derived and hence *gèng* does not combine with it directly in the syntax. To implement this idea, we build into (7) insights from Greenberg’s (2018) entry for English *even*. Take a look back at (4a), (4b) and (6a); all of them are translatable with English *even*, as reflected in our translations added below Liu’s (2010) original translations. According to Greenberg’s (2018) observations, the scalar particle *even* operates on a scale that is associated with a contextually determined property; moreover, it triggers a presupposition that (i) the alternatives to its prejacent indicate a degree above the standard on the relevant scale and (ii) the degree indicated by the prejacent is higher than the degree indicated by its alternatives. For instance, if we assume that the gradable property is how guilty the two guys were in (4a), then the utterance offered as the English translation for (4a) (repeated as (10)) roughly carries the following presupposition as per Greenberg 2018: The other guy was guilty in the worlds where he killed the person than in the worlds where he hit but didn’t kill the person and that he was *POS* guilty in the worlds where he hit but didn’t kill the person.

- (10) Of those two guys, one hit the person, and the other even killed the person.

To capture these observations, Greenberg (2018) suggests a gradability-based semantics for English *even*. Due to the similarities shared by English *even* and Mandarin *gèng*, namely context-dependency of the scale and norm-sensitivity, we borrow the elements in Greenberg’s (2018) semantics for English *even* and recast them into our the semantic core of *gèng* (7).<sup>8</sup>

- (11) Sub-entry II: Cases where *gèng* combines with non-scalar predicates

$$\|gèng_{non-scalar}\| = \lambda p_{\langle s, t \rangle} \lambda q_{\langle s, t \rangle} \cdot : \forall w_1 \forall w_2. w_1 R w_0 \wedge w_2 R w_0 \wedge w_1 \in p \wedge w_2 \in [q \wedge \neg \|COMMENT_p\|(\|CT_q\|)] \rightarrow [[\max(\lambda d_2. G(d_2)(\|CT_q\|)(w_2)) > \theta_G] \wedge [\max(\lambda d_1. G(d_1)(\|CT_p\|)(w_1)) > \max(\lambda d_2. G(d_2)(\|CT_q\|)(w_2))]]. p(w_0) \wedge q(w_0)$$

- $p$  is *gèng*-hosting proposition and  $q$  the discourse salient, preceding proposition;
- $\|COMMENT_p\|$  is the predicate in  $p$  and  $\|CT_p\|$  the contrast topic (the subject) in  $p$ ;
- $\|COMMENT_q\|$  is the predicate in  $q$  and  $\|CT_q\|$  the contrast topic (the subject) in  $q$ ;
- $p = \|COMMENT_p\|(\|CT_p\|)$  and  $q = \|COMMENT_q\|(\|CT_q\|)$ ;
- $G_{\langle d, \langle e, \langle s, t \rangle \rangle \rangle}$  is a contextually supplied gradable predicate and  $\theta_G$  the norm on  $G$  scale.

Entry (11) is a specified version of (7) for cases where *gèng* combines with non-scalar predicates. As previously mentioned, the two arguments  $\phi$  and  $\psi$  in (7) are realized as propositions in (11) and  $G$  is realized as a gradable property derived contextually. And the evaluative and comparative components are realized as follows. As can be seen in (11), *gèng* ( $p$ )( $q$ ) presupposes that (a) the degree the subject in  $q$  holds on the scale associated with a contextually supplied gradable property  $G$  is above the norm on the  $G$  scale in  $w_2$  worlds where  $q$  holds but  $\|COMMENT_p\|(\|CT_q\|)$  does not hold. This is the evaluative component in *gèng*’s semantic core (7). On the other hand, *gèng* ( $p$ )( $q$ ) presupposes

<sup>8</sup>We are not claiming that *gèng* is equivalent to English *even*. Firstly, There are ongoing debates about the semantics of English *even*, and, in fact, unlike the suggestion that *even* operates on a context-dependent scale in Greenberg 2018, *even* is taken by many to operate on a scale of unlikelihood (Karttunen and Peters 1979, Chierchia 2013 a.o.). We do not take any stance on the semantics of English *even*; we are simply borrowing the way the observations regarding norm-sensitivity and context-dependency of the scale are captured in Greenberg’s entry for English *even*. Theoretically, we can also implement our observations for *gèng* in another way. Secondly, treating *gèng* as an *even*-like operator leads us to predict some undesirable interpretations. For instance, with *gèng* combining with a bare adjective (2c), a reading like “Zhangsan is even happy” is predicted instead of a comparative reading as given in (2c), *contra fact*. We leave a closer examination for another occasion.

that the degree the subject in  $p$  holds on the  $G$  scale in  $w_1$  worlds where  $p$  holds is higher than the degree the subject in  $q$  holds in  $w_2$  worlds. This is tantamount to the comparative component in (7). Applying entry (11) to e.g. (4a) returns the interpretation in (12) if we assume, plausibly,  $G$  to be guiltiness. Likewise, applying entry (11) to (4b) and (6a) return the desired interpretations if we assume  $G$  to be corruptness for (4b) and capability to solve the syntax puzzle for (6a) respectively.

- (12) Interpretation returned by applying (11) to (4a)  
 $p = \text{||killed the person||}(\text{||the other (guy)||})$  and  $q = \text{||hit the person||}(\text{||one (guy)||})$   
 $\text{||}(4a)\text{||} =: \forall w_1 \forall w_2. w_1 R w_0 \wedge w_2 R w_0 \wedge w_1 \in p \wedge w_2 \in [q \wedge \neg \text{||killed the person||}(\text{||one (guy)||})]$   
 $\rightarrow \max(\lambda d_2. \text{GUILTY}(d_2)(\text{||one (guy)||})(w_2)) > \theta_{\text{GUILTINESS}} \wedge \max(\lambda d_1. \text{GUILTY}(d_1)(\text{||the other (one)||}(w_1)) > \max(\lambda d_2. \text{GUILTY}(d_2)(\text{||one (guy)||}(w_2))]. p(w_0) \wedge q(w_0)$

Recall that in entry (9) for cases where *gèng* combines with a gradable predicate in the syntax, the evaluative component is presupposed whereas the comparative component is asserted. But in (11), both components are presupposed. This is motivated by our observation that in cases like (4a), (4b) and (6a), the degree the subject in  $p$  holds in  $w_1$  worlds is higher than the degree the subject in  $q$  holds in  $w_2$  worlds even in the antecedent of a conditional (13).

- (13) rǔguǒ tāmen liǎng, yí-gè dǎ-le rén, lìng yí-gè **gèng** shā-le rén, nàme ...  
 if they both one-CLF hit-ASP people other one-CLF *gèng* kill-ASP people then ...  
 “If of these two guys, one hit the person, and the other even killed the person, then ...”

Does this shifted status of the comparative component undermine our proposal of *gèng* as uniformly a comparative marker? We think the answer is negative given that this is attested cross-linguistically. For instance, Japanese *motto*, a particle claimed to be akin to Mandarin *gèng* in e.g. Krasikova 2008, is reported to behave in an analogous pattern (Sawada 2014). *Motto* is observed to have two different uses, a “degree” use and a so-called “negative” use (see Sawada 2014 and works cited therein). Sawada (2014) suggests that *motto* is a uniform comparative marker with an evaluative inference: On the “degree” use, *motto* is analyzed as comparing two individuals or two implicit time points while on the “negative” use it is analyzed as comparing a current situation and an expected situation. What is of relevance to us is that according to Sawada 2014, both types of comparison involve a comparative component and an evaluative component, but, crucially, the status of the two components are reversed on different uses. Specifically, on the so-called “degree” use, the evaluative component is not-at-issue while the comparative component is at-issue, but on the “negative” use, the evaluative component is at-issue while the comparative component is not-at-issue.<sup>9</sup> In light of this, our claim that *gèng* is uniformly a comparative marker featuring a comparative component that has a shifted status is nothing new. Instead, we claim that this kind of shift is a specific manifestation of the flexibility of *gèng* as a **coercive** comparative marker: It manipulates all elements possible at its disposal to impose the ordering relation and what is manipulated here is the status of the comparative component.

### 3.2 A Semantic Restraint on *Gèng*

As can be seen, our entry for *gèng* is quite flexible, especially when it comes to  $G$ : It could be provided by a syntactically present gradable predicate (e.g. (2a)) or a contextually supplied gradable property (e.g. (4a)). A concern is whether this would lead to over-generation. Specifically, if both of such properties are present simultaneously as potential candidates for  $G$  in an utterance, will distinct interpretations be equally available? The answer is negative. We suggest that this is forestalled due

<sup>9</sup>In Sawada’s (2014) own terms, on the “degree” use the evaluative component is a “presupposition” and the comparative component an “at-issue” meaning (Sawada 2014: 215) whereas on the “negative” use the evaluative component is an “at issue” meaning and the comparative component a “conventional implicature” (Sawada 2014: 225) in the sense of Potts (2004). For space reasons, I will not deal with the distinctions between presupposition and conventional implicature but simply take them to be not-at-issue altogether. See e.g. Tonhauser et al. 2013 for discussion on this. What is of relevance here is that the status of the comparative component and the evaluative component differ on distinct uses of *motto*.

to what we christen as Semantic Accessibility, a semantic restraint we propose for *gèng* that is heavily inspired by Kennedy's (2007) Interpretive Economy. According to Kennedy's Interpretive Economy, the contribution of the conventional meanings of elements in the sentence to the calculation of its truth value is maximized. It is applied to accounting for the role the scale structures of gradable adjectives play in calculating the standard of comparison. We believe a similar economy-driven principle also exists in *gèng*'s determination of *G* and formulate it as in (14).

(14) **Semantic Accessibility**

*Gèng* prioritizes the scale provided by the lexical item it combines with in the syntax over those provided otherwise.

Therefore, although both kinds of properties can serve as *G*, as seen in our corresponding examples, they are expected to stand in a hierarchy of accessibility depending on how they are calculated. Concretely, if the predicate that *gèng* combines with in the syntax is gradable and scalar and thus provides a property ready to serve as *G*, *gèng* simply adopts it without bothering to look elsewhere. If the predicate it combines with in the syntax is non-scalar, then under the pressure to establish the ordering forcibly, it looks beyond the lexical item and resorts to the context. This is verified in (15). In (15), a gradable predicate available in the syntax, i.e. *gāo* (tall), and a contextually supplied gradable property, e.g. how qualified the candidate is for the youth basketball team, are both contextually appropriate candidates to serve as *G*. Our principle of Semantic Accessibility predicts *gèng* to prioritize the former over the latter. This is indeed the case. Intuitively, the height-based interpretation (*John is tall and Bill is even taller than John*) is the straightforward one while the qualification-based interpretation (*John is qualified and Bill is even more qualified than John*) is secondary.

- (15) Only those above 1.9m are qualified to join the local youth basketball team. A coach asked her assistant whether John and Bill are qualified candidates, and her assistant replied:

Yuēhàn yī-mǐ-jǔ-wǔ,      Bǐ'ěr bǐ      Yūehàn **gèng** gāo.  
John one-meter-nine-five Bill than John **gèng** tall

“John is 1.95m tall, (and) Bill is even taller than John.”

### 3.3 One Prediction

Our proposal makes one prediction. In cases where the predicate that *gèng* combines with is non-scalar and, in the meantime, there is no salient contextually supplied gradable property that can serve as *G*, *gèng* should be infelicitous, which is borne out in (16). In (16), the predicate “be an even number” is non-scalar, and the context does not offer a salient gradable property that can serve as *G*, either. *Gèng*, for lack of *G*, is infelicitous, as predicted.

- (16) 4 shì yí gè ǒu-shù,      6 (#**gèng**) shì yí gè ǒu-shù.  
4 COP one CLF even-number 6 **gèng** COP one CLF even-number

Intended “4 is an even number; it is even more so that 6 is an even number.”

## 4 Concluding Remarks

Focusing on Liu's (2010) puzzle, i.e. *gèng*'s compatibility with non-gradable predicates, we offered some follow-up empirical observations and claimed that *gèng* is uniformly a coercive comparative marker that has a comparative component and an evaluative component at its semantic core. To impose its ordering relation, *gèng* is super flexible to manipulate different elements at its disposal but is subject to an economy-driven semantic restraint which we term as Semantic Accessibility.

This study contributes to our understanding of comparatives in Mandarin and has some implications regarding degree abstraction in comparatives in general. Different items have been claimed to be comparative markers in Mandarin, such as *bǐ* (e.g. Lin 2009, Erlewine 2018), a covert comparative morpheme like *COMP* (e.g. Grano and Kennedy 2012, Grano 2012), and *bǐjiào* (e.g. Liu 2018); and some theories claim that Mandarin adjectives are inherently comparative (e.g. Krasikova



2008, Zhang 2019). Perhaps there is a **family** of comparative markers in Mandarin and they differ parametrically. Specifically, *gèng* distinguishes itself from others in (a) its coercive-ness and thus its flexibility and (b) its evaluative presupposition (cf. Japanese *motto* in e.g. Sawada 2014). An implication of taking *gèng* to be a comparative marker and rethinking such claimed comparative markers parametrically is that we have a new avenue to examining old issues. For instance, there is a long debate regarding whether there is degree abstraction in Mandarin comparatives, and many conclude that the answer is negative (Xiang 2005, Krasikova 2008, Lin 2009, Erlewine 2018 a.o.). The opposite view exists (e.g. Liu 2010; Gong and Coppock 2021). But it is noteworthy that the conclusions drawn in those studies that argue for the absence of degree abstraction are mostly based on investigations into the *bǐ*-comparatives while those in support of the presence of degree abstraction, Liu 2010 in particular, are drawn by relying on data containing *gèng*. A new perspective is to delve into degree abstraction in Mandarin comparatives on a construction-specific basis.

In the future, we hope to extend our proposal to our another novel observation that *gèng* can combine with deontic modal *bìxū* (must). We think that this observation lends further support to our claim that *gèng* is a coercive and thus super flexible comparative marker. Briefly, as illustrated in (17), unlike epistemic modal *kěnéng* (may) and deontic modal *yīnggāi* (should) in Mandarin which are gradable in that they are modifiable by typical degree modifiers such as *hěn* (very) and *fēicháng* (much), deontic modal *bìxū* (must) is not modifiable by such degree modifiers, evincing that it is not gradable. But *gèng* can combine with it (18). More intriguingly, in stark contrast with cases where *gèng* combines with non-scalar predicates as seen above, the dimension of comparison in cases where *gèng* combines with *bìxū* is not contextually determined but by *bìxū per se*: Intuitively, what is compared in (18) is the degree to which it is incumbent upon influential figures to take sides and the degree to which it is incumbent upon everyone to take sides. We believe that our proposal can naturally account for this if we take *bìxū* to be non-gradable but scalar in that it is associated with a scale but lacks a degree argument, which is the way Lassiter (2017) classifies English epistemic modals *might* and *must*. Assuming that the scale *gèng* is associated with is obligation, then we can model the semantics of *bìxū* on Lassiter's (2017) entries for epistemic *might* and *must*, and formalize it as in (19) where the norm  $\theta$  on the obligation scale is a free variable. If so, the element that *gèng* might be manipulating in cases where it combines with *bìxū* is the norm  $\theta$  in our proposed semantic core for *gèng* (7): It presupposes that the norm of obligation in the worlds where everyone takes sides is higher than the norm of obligation in general and it is asserted that the norm of obligation in the worlds where influential figures take sides is higher than the norm of obligation in which everyone takes sides. The reason why the dimension of comparison is obligation associated with *bìxū* rather than a context-dependent one in this case can also be naturally explained following our constraint of Semantic Accessibility: Although *bìxū* is non-gradable, it is **scalar**, so *gèng* does not need to look elsewhere for *G* that can serve as the dimension of comparison. If this sketched hunch is on the right track, we would tweak our entry (7) by further relaxing the requirement on *G*, i.e. it just needs to be scalar, not necessarily gradable, a desideratum for our proposal of *gèng* as a coercive and thus flexible comparative marker. We hope to pursue this line of reasoning and work out a full composition analysis in the future.

- (17) Zhāngsān hěnl fēicháng kěnéng/ yīnggāi/ \*bìxū dédào chéngfá.  
 Zhangsan very much may should must get punishment  
 With **kěnéng** Zhangsan is very likely to get a punishment.  
 With **yīnggāi** Zhangsan should get a punishment very much.  
 With **bìxū** \* Zhangsan must get a punishment very much.

- (18) jíhuà de shídài, shì suǒyǒu rén bìxū xuǎnbīan-zhànduì de shídài. xiàng Hú-Shì  
 polarized DE times COP all people must take-sides DE times like Hu-Shih  
 zhèyàng yǒu zhe jùdà yìngxiǎnglì de rénwù, gèng bìxū xuǎnbīan-zhànduì."  
 such have ZHE enormous influence DE figure gèng must take-sides  
 "A polarized epoch is an epoch during which everyone must take sides. It is even more so  
 that figures of enormous influence like Hu-Shih must take sides."

- (19)  $\|must\| = \lambda p. OBLIGATION(p) \geq \theta_{bìxū}$

## References

- Beaver, David I., and Brady Z. Clark. 2008. *Sense and Sensitivity: How Focus Determines Meaning*. Explorations in Semantics. Oxford, UK: Wiley-Blackwell.
- Beck, Sigrid, Toshiko Oda, and Koji Sugisaki. 2004. Parametric variation in the semantics of comparison: Japanese vs. English. *Journal of East Asian Linguistics* 13:289–344.
- Chierchia, Gennaro. 2013. *Logic in Grammar: Polarity, Free Choice, and Intervention*. Oxford, UK: Oxford University Press.
- Erlewine, Michael Y. 2007. A New Syntax-semantics for the Mandarin *bi* Comparative. Master's thesis, University of Chicago.
- Erlewine, Michael Y. 2018. Clausal comparison without degree abstraction in Mandarin Chinese. *Natural Language & Linguistic Theory* 36:445–482.
- Gong, Ying, and Elizabeth Coppock. 2021. Mandarin has degree abstraction after all. Ms., Boston University. URL [https://eecoppock.info/Mandarin\\_Degree\\_Abstraction-submitted2021.pdf](https://eecoppock.info/Mandarin_Degree_Abstraction-submitted2021.pdf).
- Grano, Thomas. 2012. Mandarin *hen* and universal markedness in gradable adjectives. *Natural Language & Linguistic Theory* 30:513–565.
- Grano, Thomas, and Christopher Kennedy. 2012. Mandarin transitive comparatives and the grammar of measurement. *Journal of East Asian Linguistics* 21:219–266.
- Greenberg, Yael. 2018. A revised, gradability-based semantics for *even*. *Natural Language Semantics* 26:51–83.
- Greenberg, Yael. 2019. *Even and Only: Arguing for parallels in scalarity and in constructing focus alternatives*. In *NELS 49: Proceedings of the Forty-Ninth Annual Meeting of the North East Linguistic Society*, ed. J. Pesetsky and M. Baird, volume 2, 45–60.
- Karttunen, Lauri, and Stanley Peters. 1979. Conventional implicature. In *Syntax and Semantics 11: Pre-supposition*, ed. D.A. Dineen and C.-K Oh, 1–56. New York: Academic Press.
- Kennedy, Christopher. 2007. Vagueness and grammar: The semantics of relative and absolute gradable adjectives. *Linguistics and Philosophy* 30:1–45.
- Krasikova, Sveta. 2008. Comparison in Chinese. In *Empirical Issues in Syntax and Semantics*, ed. O. Bonami and P. Cabredo Hofherr, volume 7, 263–281.
- Lassiter, Daniel. 2017. *Graded Modality: Qualitative and Quantitative Perspectives*. Oxford Studies in Semantics and Pragmatics 10. Oxford, UK: Oxford University Press.
- Lin, Jo-wang. 2009. Chinese comparatives and their implicational parameters. *Natural Language Semantics* 17:1–27.
- Lin, Jo-wang. 2014. The adjective of quantity *duo* ‘many/much’ and differential comparatives in Mandarin Chinese. *International Journal of Chinese Linguistics* 1:163–191.
- Liu, Chen-sheng Luther. 2010. The Chinese *geng* clausal comparative. *Lingua* 120:1579–1606.
- Liu, Chen-sheng Luther. 2011. The Chinese *bi* comparative. *Lingua* 121:1767–1795.
- Liu, Chen-sheng Luther. 2018. Projecting adjectives in Chinese. *Journal of East Asian Linguistics* 27:67–109.
- Lu, Jianming. 1985. *Hai he geng* [Hai and geng]. In *Xiandai hanyu xuci sanlun [The Discussion of Function Words in Modern Mandarin]*, ed. J. Lu and Z. Ma. Beijing, China: Beijing University Press.
- Potts, Christopher. 2004. *The Logic of Conventional Implicatures*, volume 7. Oxford, UK: Oxford University Press.
- Sawada, Osamu. 2014. An utterance situation-based comparison. *Linguistics and Philosophy* 37:205–248.
- von Stechow, Arnim. 1984. Comparing semantic theories of comparison. *Journal of Semantics* 3:1–77.
- Tonhauser, Judith, David Beaver, Craige Roberts, and Mandy Simons. 2013. Toward a taxonomy of projective content. *Language* 66–109.
- Xiang, Ming. 2005. Some Topics in Comparative Constructions. Doctoral dissertation, Michigan State University.
- Zeevat, Henk. 2009. “Only” as a mirative particle. In *Focus at the Syntax-Semantics Interface*, ed. A. Riester and E. Onea, volume 3 of *Working Papers of the SFB 73*. University of Stuttgart.
- Zhang, Linmin. 2019. The semantics of comparisons in Mandarin Chinese. In *Proceedings of GLOW in Asia XII & SICOGG XXI: Universal Grammar and Its Cross-linguistic Instantiations*, ed. Sae-Youn Cho, 643–652.
- Zhang, Linmin. 2021. Degree expression in Chinese. Ms., New York University Shanghai. URL <https://lingbuzz.net/lingbuzz/006145>.

Department of English Literature and Linguistics  
 Bar-Ilan University  
 Ramat-Gan, Israel, 5290002  
 chenzhuangcq@gmail.com