Comparative morphemes are additive particles: English *-er*/*more* vs. Chinese *gèng* and Korean *te*

Linmin Zhang (NYU Shanghai), Florence Yukun Zhang (Yale)
zhanglinmin@gmail.com, florence.zhang@yale.edu

SICOGG26/WAFL18
August 23rd, 2024

Slides are available on lingbuzz:
https://ling.auf.net/lingbuzz/008365
For the manuscript of this project, please see
https://ling.auf.net/lingbuzz/008122
Compiled at 22:15, Thursday 22nd August, 2024

What are morphemes like English *-er*/*more* doing?

- Many languages (e.g., English, French) require the use of a comparative morpheme in the comparative use of gradable adjectives:

(1) a. Lucy is tall. **Positive**: tall
b. Lucy is taller than Mary is. **Comparative**: taller

(2) a. Lucy has many books. **Positive**: many
b. Lucy has more books than Mary does. **Comp.**: more

(3) **French data**

a. Jean est grand.
John be.3SG tall
'John is tall.' **Positive**: grand 'tall'

b. Jean est plus grand que Pierre.
John be.3SG more tall what Peter.
'John is taller than Peter.' **Comp.**: plus+grand 'taller'

What are morphemes like English *-er*/*more* doing?

- However, many other languages (e.g., Chinese, Korean) don't make a distinction between the comparative vs. non-comparative use.
  I.e., a morpheme like English *-er* is not required for the comparative use.

(4) **Chinese data**

a. Lèlè gāo ma?
   Lèlè tall Q
   'Is Lèlè tall?' **Positive**: gāo 'tall'

b. Lèlè bǐ Mǐmǐ gāo ma?
   Lèlè STDD Mǐmǐ taller Q
   'Is Lèlè taller than Mǐmǐ?' **Comp.**: gāo 'taller'

(5) **Korean data**

a. Chelswu-nun (ki-ka) khu-ta.
   Chelswu-TOP height-NOM big-DECL
   'Chelswu is tall.' **Positive**: khu- 'tall'

b. Chelswu-wa Mina-pota (ki-ka) khu-ta.
   Chelswu-TOP Mina-STDD height-NOM big-DECL
   'Chelswu is taller than Mina.' **Comp.**: khu- 'taller'

Research questions

- Does the meaning of comparison hinge on morphemes like *-er*/*more*?
- If not,
  - What lexical items are responsible for comparison?
  - Then what does *-er*/*more* do?
- How about languages like Chinese and Korean?

Take-home messages

- Does the meaning of comparison hinge on morphemes like *-er*/*more*?
  - No.
- What lexical items are responsible for comparison?
  - Gradable adjectives, which encode (strict or non-strict) inequalities
- What does *-er*/*more* do?
  - They are additive particles like *another*, denoting an increase anaphoric to a contextually salient base item.
- How about languages like Chinese and Korean?
  - In these languages, gradable adjectives encode inequalities in a strict way, making the use of an *-er*-like morpheme unnecessary.
  - These languages have optional morphemes:
    - ★ Chinese *gèng* works like additive particle *moreover*, updating a threshold for the positive use of gradable adjectives (and leading to an interpretation similar to **implicit comparison**).
    - ★ Korean *te* is yet different ...

Outline

Canonical analysis: *-er*/*more* performs comparison

- A **gradable adjective** relates a degree and an entity.

(6) $[\![\text{tall}]\!]_{\langle d,et\rangle} \stackrel{\text{def}}{=} \lambda d.\lambda x.\textsc{height}(x) \geq d$ a relation between d and x
$\rightsquigarrow$ the height of x reaches the degree d, i.e., x is tall to degree d

- Major non-comparative uses of gradable adjectives:

(7) $[\![\text{Lucy is POS tall}]\!] \Leftrightarrow \textsc{height}(\text{Lucy}) \geq d^{c}{}_{\text{POS}}$ **Positive use**
(i.e., the height of Lucy reaches the contextual threshold of being tall.)

(8) $[\![\text{Lucy is 5 feet 8 inches tall}]\!] \Leftrightarrow \textsc{height}(\text{Lucy}) \geq 5'8''$ **Measure**

(9) $[\![\text{how tall is Lucy}]\!] \Leftrightarrow \lambda d.\textsc{height}(\text{Lucy}) \geq d$ **Degree question**

(e.g., Cresswell 1976, Hellan 1981, von Stechow 1984, Heim 1985, Kennedy 1999, Beck 2011)

Canonical analysis: *-er*/*more* performs comparison

- **Comparative morpheme** *-er*/*more* performs comparison by expressing the relation '>' between two degrees.

(10) $[\![\text{Lucy is tall}\mathbf{\text{er}}\ \underbrace{\text{than Mary is } \sout{\text{tall}}}_{\text{comparison standard}}\ ]\!] \Leftrightarrow \textsc{height}(\text{L}) > \textsc{height}(\text{M})$

LF: [-er [λd.Mary is d-tall]] [$\lambda d'$.Lucy is d'-tall]
(i.e., lambda abstraction happens at both the matrix and the *than*-clause, leading to two sets of degrees)

(11) a. $[\![\text{-er}]\!]_{\langle\langle dt\rangle,\langle dt,t\rangle\rangle} \stackrel{\text{def}}{=} \lambda D_1.\lambda D_2.\textsc{max}(D_2) > \textsc{max}(D_1)$
($\textsc{max} \stackrel{\text{def}}{=} \lambda D.\iota d[d \in D \wedge \forall d'[d' \in D \rightarrow d' \leq d]]$)
(see e.g., Beck 2011)

b. $[\![\text{-er}]\!]_{\langle\langle dt\rangle,\langle dt,t\rangle\rangle} \stackrel{\text{def}}{=} \lambda D_1.\lambda D_2.\exists d[d \in D_2 \wedge d \notin D_1]$
(see e.g., Schwarzschild 2008)

- However, there are empirical challenges ...

Challenge 1: *-er/more* is not always required for comparison

- Comparison is essentially establishing an ordering.
- All uses of gradable adjectives involve comparison, but the use of *-er/more* is not always required.
  I.e., *-er/more* is not a necessary component of comparison.

(12)

a. $[\![\text{Lucy is POS tall}]\!] \Leftrightarrow \textsc{height}(\text{Lucy}) \geq d^{c}_{\text{POS}}$ **Positive use**

b. $[\![\text{Lucy is } 5'8'' \text{ inches tall}]\!] \Leftrightarrow \textsc{height}(\text{Lucy}) \geq 5'8''$ **Measure**

c. $[\![\text{how tall is Lucy}]\!] \Leftrightarrow \lambda d.\textsc{height}(\text{Lucy}) \geq d$ **Degree Q.**

d. $[\![\text{Lucy is as tall as Bill (is)}]\!] \Leftrightarrow \textsc{height}(\text{Lucy}) \geq \textsc{height}(\text{Bill})$ **Equative**

e. $[\![\text{Lucy is taller than Mary (is)}]\!] \Leftrightarrow \textsc{height}(\text{L}) > \textsc{height}(\text{M})$ **Comparative**

Challenge 2: evidence from minimal pairs

- Minimal pairs indicate that the use of *-er*/*more* does not bring comparison, but rather affects (i) what constitutes the comparison standard and/or (ii) the size of the differential.

(13) a. Mary is not tall. Lucy is tall. $\rightsquigarrow \textsc{height}(\text{Lucy}) \geq d^{c}{}_{\textsc{pos}}$

b. Mary is not tall. Lucy is taller. $\rightsquigarrow \textsc{height}(\text{L}) \geq \textsc{height}(\text{M})$

(14) a. Compared to Mary, Lucy is tall. **Implicit comparison**

$\rightsquigarrow \textsc{height}(\text{Lucy}) \geq d^{c}{}_{\textsc{pos}}$

(i) Compared to 2-year-old toddlers, Lucy is tall.

(ii) (Even) compared to professional basketball players, Lucy is tall.

b. Compared to Mary, Lucy is taller. **Explicit comparison**

$\rightsquigarrow \textsc{height}(\text{L}) \geq \textsc{height}(\text{M})$

(See Kennedy 2007 on crisp judgment)

Challenge 3: evidence from antonyms

- The lexical meaning of gradable adjectives includes already inequalities, and antonyms encode inequalities of different directions.

(15) a. $[\![\text{tall}]\!]_{\langle d,et\rangle} \stackrel{\text{def}}{=} \lambda d.\lambda x.\textsc{height}(x) \geq d$

b. $[\![\text{short}]\!]_{\langle d,et\rangle} \stackrel{\text{def}}{=} \lambda d.\lambda x.\textsc{height}(x) \leq d$

Interim summary

- The essence of comparison is to establish inequalities.
- The lexical semantics of gradable adjectives already contains inequalities.
- Naturally, expressing the meaning of comparison should essentially be based on the meaning of gradable adjectives, not necessarily involving *-er*/*more*.

Outline

English comparatives vs. Chinese comparatives

(16) a. Lucy is taller than Mary is. $\textsc{height}(\text{L}) > \textsc{height}(\text{M})$

b. Lèlè bǐ Mǐmǐ gāo.
Lèlè STDD Mǐmǐ taller
'Lèlè is taller than Mǐmǐ.' $\textsc{height}(\text{L}) > \textsc{height}(\text{M})$

(12) a. $[\![\text{Lucy is POS tall}]\!] \Leftrightarrow \textsc{height}(\text{Lucy}) \geq d^{c}{}_{\text{POS}}$ **Positive use**

b. $[\![\text{Lucy is } 5'8'' \text{ inches tall}]\!] \Leftrightarrow \textsc{height}(\text{Lucy}) \geq 5'8''$ **Measure**

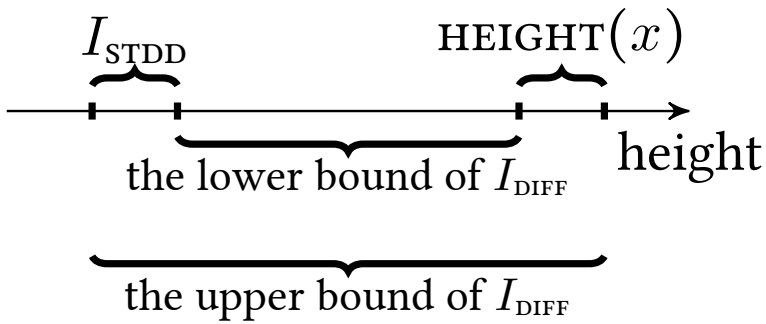
c. $[\![\text{how tall is Lucy}]\!] \Leftrightarrow \lambda d.\textsc{height}(\text{Lucy}) \geq d$ **Degree Q.**

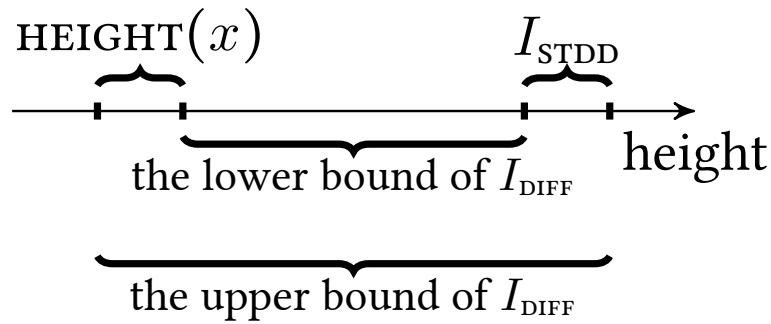
d. $[\![\text{Lucy is as tall as Bill (is)}]\!] \Leftrightarrow \textsc{height}(\text{Lucy}) \geq \textsc{height}(\text{Bill})$ **Equative**

e. $[\![\text{Lucy is taller than Mary (is)}]\!] \Leftrightarrow \textsc{height}(\text{L}) > \textsc{height}(\text{M})$ **Comparative**

- Our proposal on the meaning of gradable adjectives:
  - English gradable adjectives encode a non-strict inequality, and with the use of *-er*/*more*, comparatives express a strict inequality.
  - Chinese gradable adjectives directly encode a strict inequality.

Lexical semantics of gradable adjective *tall*/*gāo*





The meaning of *tall*/*gāo* The meaning of *short*/*ǎi*

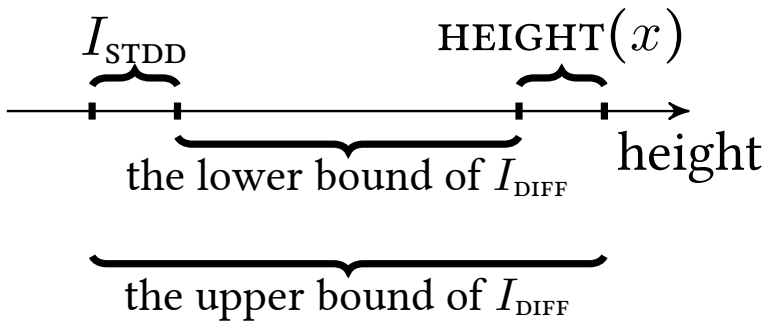
(17) $[\![\text{tall}]\!] \stackrel{\text{def}}{=} \lambda I_{\text{DIFF}}.\lambda I_{\text{STDD}}.\lambda x.\underbrace{I_{\text{DIFF}} \subseteq [0, +\infty)}_{\text{non-negative presup.}}.\ \text{HEIGHT}(x) \subseteq \iota I[I - I_{\text{STDD}} = I_{\text{DIFF}}]$ English

(i.e., the height of x reaches the comparison standard, I_{STDD}.
$\rightsquigarrow$ the difference between them, I_{DIFF}, is non-negative)

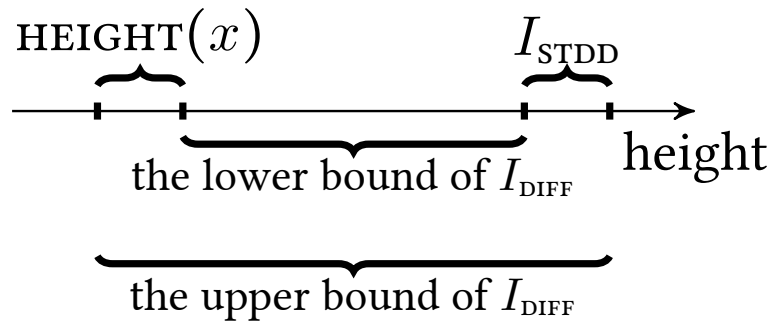
(18) $[\![\text{gāo}]\!] \stackrel{\text{def}}{=} \lambda I_{\text{DIFF}}.\lambda I_{\text{STDD}}.\lambda x.\underbrace{I_{\text{DIFF}} \subseteq (0, +\infty)}_{\text{positive presup.}}.\ \text{HEIGHT}(x) \subseteq \iota I[I - I_{\text{STDD}} = I_{\text{DIFF}}]$ Chinese

(i.e., the height of x exceeds the comparison standard, I_{STDD}.
$\rightsquigarrow$ the difference between them, I_{DIFF}, is positive)

Lexical semantics of gradable adjective *short*/*ǎi*



The meaning of *tall*/*gāo*



The meaning of *short*/*ǎi*

(19) $[\![\text{short}]\!] \stackrel{\text{def}}{=} \lambda I_{\text{DIFF}}.\lambda I_{\text{STDD}}.\lambda x.\underbrace{I_{\text{DIFF}} \subseteq [0, +\infty)}_{\text{non-negative presup.}}.\ \text{HGHT}(x) \subseteq \iota I[I_{\text{STDD}} - I = I_{\text{DIFF}}]$ English

(i.e., the height of x does not exceed the comparison standard, I_{STDD}.
$\rightsquigarrow$ the difference between them, I_{DIFF}, is non-negative)

(20) $[\![\text{ǎi}]\!] \stackrel{\text{def}}{=} \lambda I_{\text{DIFF}}.\lambda I_{\text{STDD}}.\lambda x.\underbrace{I_{\text{DIFF}} \subseteq (0, +\infty)}_{\text{positive presup.}}.\ \text{HEIGHT}(x) \subseteq \iota I[I_{\text{STDD}} - I = I_{\text{DIFF}}]$ Chinese

(i.e., the height of x is below / does not reach the comparison standard, I_{STDD}.
$\rightsquigarrow$ the difference between them, I_{DIFF}, is positive)

The positive use of gradable adjectives

- In the positive use,
  - the comparison standard is the contextual threshold
  - the difference cannot be specified by a numerical value, but can be modified by modifiers like *very*, *quite*, etc.

(21) ⟦Lucy is POS tall⟧ English

$\Leftrightarrow \textsc{height}(\text{Lucy}) \subseteq \iota I[I - \underbrace{[d^c{}_{\text{POS}}, d^c{}_{\text{POS}}]}_{I_{\text{STDD}}} = \underbrace{[0, +\infty)}_{I_{\text{DIFF}}}]$

$\Leftrightarrow \textsc{height}(\text{Lucy}) \subseteq [d^c_{\text{POS}}, +\infty)$

(i.e., the height of Lucy reaches the contextual threshold of being tall)

(22) ⟦Lucy hěn POS gāo⟧ Chinese

$\Leftrightarrow \textsc{height}(\text{Lucy}) \subseteq \iota I[I - \underbrace{[d^c_{\text{POS}}, d^c_{\text{POS}}]}_{I_{\text{STDD}}} = \underbrace{(0, +\infty)}_{I_{\text{DIFF}}}]$

$\Leftrightarrow \textsc{height}(\text{Lucy}) \subseteq (d^c_{\text{POS}}, +\infty)$

(i.e., the height of Lucy exceeds the contextual threshold of being tall)

Measurement sentences

- In measurement sentences,
  - the comparison standard is the absolute zero point, i.e., $[0, 0]$
  - the difference is specified by a numerical value, e.g., $5'8''$, $1.7m$.

(23) $[\![$Lucy is 5 feet 8 inches tall$]\!]$ English

$\Leftrightarrow \textsc{height}(\text{Lucy}) \subseteq \iota I[I - [0,0] = [5'8'', +\infty) \cap [0, +\infty)]$

$\Leftrightarrow \textsc{height}(\text{Lucy}) \subseteq [5'8'', +\infty)$

(24) $[\![$Lucy (yǒu) 1.7 m gāo$]\!]$ Chinese

$\Leftrightarrow \textsc{height}(\text{Lucy}) \subseteq \iota I[I - [0,0] = [1.7m + \infty) \cap (0, +\infty)]$

$\Leftrightarrow \textsc{height}(\text{Lucy}) \subseteq [1.7m, +\infty)$

Comparatives

- In comparatives,
  - the comparison standard is from the meaning of the *than*-clause (or context)
  - the difference can by optionally specified by a numerical value, e.g., $3''$, $5cm$.

(25) $[\![\text{Lucy is tall } \underbrace{\text{er}}_{(0,+\infty)} \underbrace{\text{than Mary is}}_{I_{\text{STDD}}}]\!]$

$\Leftrightarrow \textsc{height}(\text{Lucy}) \subseteq \iota I[I - \textsc{height}(\text{Mary}) = \underbrace{(0,+\infty)}_{[\![\text{er}]\!]} \cap [0,+\infty)]$

$\Leftrightarrow \textsc{height}(\text{Lucy}) \subseteq \iota I[I - \textsc{height}(\text{Mary}) = (0,+\infty)]$

(26) $[\![\text{Lèlè bǐ Mǐmǐ gāo}]\!]$

$\Leftrightarrow \textsc{height}(\text{Lèlè}) \subseteq \iota I[I - \textsc{height}(\text{Mǐmǐ}) = (0,+\infty)]$

Comparison in English vs. Chinese

- Within our proposed view, comparison is universally conducted by gradable adjectives
  - For languages that require the use of *-er* in comparatives (e.g., English): gradable adjectives encode a non-strict inequality
    (In terms of degrees: '$\geq$'; in terms of intervals: '$[0, +\infty)$')
  - For languages that use the same form for the comparative and non-comparative uses (e.g., Chinese):
    gradable adjectives encode a strict inequality
    (In terms of degrees: '$>$'; in terms of intervals: '$(0, +\infty)$')

Outline

Parallelism between *-er*/*more* and *another*

- *-er*/*more* has an additive use similar to *another* (see also Greenberg 2010 and Thomas 2010):

(27) **Increase in the domain of entities: Additive use**

a. I ate an^{x} apple. Then I ate **another**^{y} (apple).

base item — increase

b. A^{x} girl, Sue, met **another**^{y} girl, Mary.

base item — increase

c. I ate two^{x} bars of chocolate. Then I ate (a bit) **more**^{y}.

base item — increase

From the additive use to the comparative use of *-er*/*more*

- Additive use of *more*: in the domain of entities
- Comparative use of *-er*/*more*: in the domain of scalar values (i.e., degrees or intervals)

(27c) **Increase in the domain of entities: Additive use**
I ate two^{x} bars of chocolate. Then I ate (a bit) **more**^{y}.
base item: two^{x} bars of chocolate; increase: (a bit) **more**^{y}

(28) **Increase in the domain of scalar values: Comparative use**

a. Mary is tall. Sue is tall **er** . Across sentences
base item: HEIGHT(Mary); increase: **er**

b. Sue is tall **er** than Mary is ~~tall~~. Within the same sentence
increase: **er**; base item: HEIGHT(Mary)

More uses of *-er*/*more* and *another*

- *-er*/*more* and *another*
  - denotes an increase in the domain of entities or scalar values
  - presuppose there is a salient base that the increase is anaphoric to

(29) **Repetitive use of *-er*/*more* and *another***

a. Lucy is becoming taller and taller and taller.

b. Janice had a little lamb and another and another and another.

(30) **Accumulating increases along with a universal quantifier**

a. Every year Mary wrote a more interesting book.

b. Everyday there is another story to write.

The semantics of English *-er/more*

- Crucially, the semantics of English *-er/more* is not responsible for comparison (i.e., not responsible for establishing an ordering).
- English *-er/more* is similar to *another* in being an additive particle, denoting an increase on a discourse-salient base.

Outline

Chinese *gèng* and Korean *te* are optional in comparatives

(31) Lèlè bǐ Mǐmǐ (**gèng**) gāo.
Lèlè STDD Mǐmǐ MOREOVER tall
'Lèlè is taller than Mǐmǐ.'

(32) Chelswu-nun Mina-pota (**te**) khu-ta.
Chelswu-TOP Mina-STDD big-DECL
'Chelswu is taller than Mina.'

- The discussion below focuses on Chinese *gèng* (but with some brief comparison between Chinese *gèng* and Korean *te*).

Observations on *gèng* (I): evaluativity (positive inference) about Mǐmǐ's height?

(31) Lèlè bǐ Mǐmǐ (**gèng**) gāo.
Lèlè STDD Mǐmǐ MOREOVER tall
'Lèlè is taller than Mǐmǐ.'

- Some scholars (Liu 2010, Chen 2023, Chen and Greenberg 2024) claim that the semantic contribution of *gèng* is similar to English *even*, and the above sentence means that Lèlè is even taller than Mǐmǐ, indicating that Mǐmǐ is already tall.
  $\rightsquigarrow$ Evaluativity: a positive inference about Mǐmǐ: Mǐmǐ is tall.
- Others (e.g., Guo 2022) claim that there is no obvious meaning distinction between the sentence with vs. without *gèng*.
  $\rightsquigarrow$ The positive inference about Mǐmǐ is an implicature and cancellable

Observations on *gèng* (I): evaluativity (positive inference) about Mǐmǐ's height?

(33) Mǐmǐ bù gāo. Lèlè (gèng) gāo yī-diǎn.
Mǐmǐ NEG tall. Lèlè taller a-bit
'Mǐmǐ is not tall. Lèlè is a bit taller'.
The presence of *gèng* is optional

(34) Mǐmǐ hěn gāo. Lèlè gèng gāo yī-diǎn.
Mǐmǐ every tall. Lèlè taller a-bit
'Mǐmǐ is tall. Lèlè is even a bit taller'.
The presence of *gèng* is obligatory or strongly preferred

- The presence of *gèng* does not require positive inference about Mǐmǐ.
- But when there is a positive inference about Mǐmǐ, the presence of *gèng* is required.
- (What about Korean *te*?)

Observations on *gèng* (II): Incompatibility with numerical differentials

- The use of *gèng* is incompatible with numerical differentials (see Ma 2019, Zhang 2023).

(35) * Lèlè bǐ Mǐmǐ **gèng** gāo wǔ límǐ.
Lèlè STDD Mǐmǐ MOREOVER taller five cm
Intended: 'Lèlè is 5 cm taller than Mǐmǐ.'

- Korean *te* is compatible with numerical differentials:

(36) Chelswu-nun Mina-pota 2cm te khu-ta.
Chelswu-TOP Mina-STDD 2cm big-DECL
'Chelswu is taller than Mina by 2 cm. '

Observations on *gèng* (III): additive use

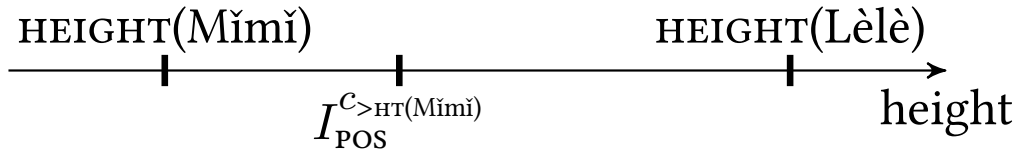
- *gèng* also has an additive use (see also Chen 2023, Chen and Greenberg 2024):

(37) Jīnqián mǎi-bú-dào yǒu-yì, **gèng** mǎi-bú-dào àiqíng
money buy-NEG-get friendship MOREOVER buy-NEG-get love
'Money cannot buy friendship. Moreover, it cannot buy love.' ⇝
Love exceeds friendship in being unable to be bought with money.

Summary of the empirical data

- The use of *gèng* in comparatives (Japanese *motto* is similar):
  - *gèng* does not require positive inference
  - a standard with positive inference requires / prefers the presence of *gèng*
  - The use of *gèng* is incompatible with numerical differentials.
- *gèng* also has an additive use.
- Korean *te* is similar to but not exactly the same as Chinese *gèng*.

Proposal: the semantic contribution of *gèng*



⟦Lèlè bǐ Mǐmǐ gèng gāo⟧: Compared to Mǐmǐ, Lèlè is tall.

(38) a. Lèlè bǐ Mǐmǐ **gèng** gāo.
Lèlè STDD Mǐmǐ MOREOVER tall
'Lèlè is taller than Mǐmǐ.'

b. Compared to Mǐmǐ, Lèlè is tall. **Implicit comparison**
⇝ Lèlè's height reaches a threshold that Mǐmǐ's height doesn't. (see also Sawada 2009)

- The use of *gèng* in a comparative is reminiscent of implicit comparison, involving an update of the threshold for the positive use (see Barker 2002). With the use of *gèng*, a gradable adjective has a positive use.
- ⟦gèng⟧(p)
  - asserts the prejacent p
  - presupposes that the prejacent p and alternatives are associated with scalar values on a scale, and compared with alternatives, p exceeds a positive level that alternatives don't.

Proposal: the semantic contribution of *gèng*

Compared to friendship, love is more precious.

- The additive use of *gèng* involves a contextually salient scale, and the prejacent and its alternatives are mapped onto this scale (see also the meaning of *even* in Greenberg 2018, Zhang 2022).

(39) a. Jīnqián mǎi-bú-dào yǒu-yì, **gèng** mǎi-bú-dào àiqíng
money buy-NEG-get friendship MOREOVER buy-NEG-get love
'Money cannot buy friendship. Moreover, it cannot buy love.'

b. Money cannot buy friendship. **Moreover**, it cannot buy love.
$\rightsquigarrow$ The preciousness of love reaches a threshold that the preciousness of friendship doesn't.

How the empirical data are accounted for

- The use of *gèng* in comparatives:
  With the use of *gèng*, the sentence is no longer a genuine comparative, but rather like an **implicit comparison** in English, i.e., a positive use
  - *gèng* does not require positive inference
    With an update of the threshold, a previous / out-of-context threshold becomes obsolete anyway.
  - a standard with positive inference requires / prefers the presence of *gèng*
    An update of the threshold (to a higher threshold) relies on the presence of *gèng*
  - The use of *gèng* is incompatible with numerical differentials.
    A *gèng*-sentence is a positive use, not a genuine comparative.
- *gèng* also has an additive use.
  The use of *gèng* maps entities / events onto a salient scale (see also Greenberg 2018, Zhang 2022 on a similar analysis of English *even*).

An interesting consequence of the current proposal: Chinese *gèng* vs. Chinese *hái* in a metaphorical / hyperbolic comparison

- Only the use of *hái*, but not the use of *gèng*, is felicitous for a comparison with metaphorical or hyperbolic meaning.

(40) a. Lèlè bǐ shīzi **hái** yǒnggǎn.
Lèlè STDD lion STILL brave
'Lèlè is even braver than lions.'

b. #Lèlè bǐ shīzi **gèng** yǒnggǎn.
Lèlè STDD lion MOREOVER brave
Intended: 'Lèlè is braver than lions.'
(According to the proposal on *gèng*, this sentence means 'compared to lions, Lèlè is brave.' $\rightsquigarrow$ there is a threshold of courage such that Lèlè's courage reaches, but lions don't)

Outline

Concluding remarks

- Comparison / inequality is universally conducted by gradable adjectives, which encode (strict or non-strict) inequalities.
  - English gradable adjectives encode a non-strict inequality.
  - Chinese gradable adjectives encode a strict inequality, making it unnecessary to use an *-er*-like morpheme in comparatives.
- English morpheme *-er*/*more* is an additive particle like *another*, denoting an increase anaphoric to a contextually salient base item.
- Languages like Chinese and Korean also have optional morphemes in comparatives.
  - In particular, Chinese *gèng* works like additive particle *moreover*, updating a threshold for the positive use of gradable adjectives (and leading to an interpretation similar to **implicit comparison**).
  - Korean *te* is yet different from Chinese *gèng*.

Thank you!

zhanglinmin@gmail.com, florence.zhang@yale.edu

For the manuscript of this project, please see
https://ling.auf.net/lingbuzz/008122

Selected references I

Barker, Chris. 2002. The dynamics of vagueness. *Linguistics and philosophy* 1–36. https://doi.org/10.1023/A:1014346114955.

Beck, Sigrid. 2011. Comparative constructions. In *Semantics*, ed. Claudia Maienborn, Klaus von Heusinger, and Paul Portner, volume 2, 1341–1390. Berlin, Boston: de Gruyter. https://doi.org/10.1515/9783110255072.1341.

Chen, Zhuang. 2023. Associating with covert focus. In *The Workshop on Theoretical East Asian Linguistics*, volume 13. https://sites.google.com/ntnueng.tw/teal13/program/program-day-2.

Chen, Zhuang, and Yael Greenberg. 2024. An Overt Operator Associating with Covert Focus: An *Even*-Like Semantics for Mandarin *Gèng*. In *Logic and Engineering of Natural Language Semantics. LENLS 2023.*, ed. D. Bekki, K. Mineshima, and E. McCready, 134–154. https://doi.org/10.1007/978-3-031-60878-0_8.

Cresswell, Max J. 1976. The semantics of degree. In *Montague grammar*, ed. Barbara Partee, 261–292. New York: Academy Press. https://doi.org/10.1016/B978-0-12-545850-4.50015-7.

Greenberg, Yael. 2010. Additivity in the domain of eventualities (or: Oliver twist's *more*). In *Sinn und Bedeutung*, volume 14, 151–167. https://ojs.ub.uni-konstanz.de/sub/index.php/sub/article/view/465.

Greenberg, Yael. 2018. A revised, gradability-based semantics for even. *Natural Language Semantics* 26:51–83. https://doi.org/10.1007/s11050-017-9140-0.

Guo, Rui. 2022. The semantic analysis of adverbs "HAI" and "DOU" in Chinese comparative constructions. *Journal of Shanxi University (Philosophy & Social Science)* 45:62–72. https://doi.org/10.13451/j.cnki.shanxi.univ(phil.soc.).2022.05.007.

Selected references II

Heim, Irene. 1985. Notes on comparatives and related matters. https://semanticsarchive.net/Archive/zc0ZjY0M/Comparatives%2085.pdf, unpublished ms., University of Texas, Austin.

Hellan, Lars. 1981. *Towards an integrated analysis of comparatives*. Tübingen: Narr.

Kennedy, Christopher. 1999. *Projecting the adjective*. New York: Routledge. https://doi.org/10.4324/9780203055458.

Kennedy, Christopher. 2007. Modes of comparison. In *Chicago Linguistic Society*, volume 43, 139–163. https://semantics.uchicago.edu/kennedy/classes/w11/comparatives/docs/kennedy07.pdf.

Liu, Chen-Sheng Luther. 2010. The Chinese *geng* clausal comparative. *Lingua* 120:1579–1606. https://doi.org/10.1016/j.lingua.2009.09.005.

Ma, Zhen. 2019. *20 lectures on function words in Modern Chinese*. Shanghai: The Commercial Press.

Sawada, Osamu. 2009. Pragmatic aspects of implicit comparison: An economy-based approach. *Journal of Pragmatics* 41:1079–1103. https://doi.org/10.1016/j.pragma.2008.12.004.

Schwarzschild, Roger. 2008. The semantics of comparatives and other degree constructions. *Language and Linguistics Compass* 2:308–331. https://doi.org/10.1111/j.1749-818X.2007.00049.x.

von Stechow, Arnim. 1984. Comparing semantic theories of comparison. *Journal of semantics* 3:1–77. https://doi.org/10.1093/jos/3.1-2.1.

Thomas, Guillaume. 2010. Incremental *more*. In *Semantics and Linguistic Theory*, volume 20, 233–250. https://doi.org/10.3765/salt.v20i0.2558.

Selected references III

Zhang, Linmin. 2022. The presupposition of *even*. In *Semantics and Linguistic Theory*, volume 32, 249–269. https://doi.org/10.3765/salt.v1i0.5355.

Zhang, Linmin. 2023. Degree expressions in Chinese. In *Oxford research encyclopedia of linguistics*. Oxford University Press. https://doi.org/10.1093/acrefore/9780199384655.013.906.