# Sentence-final particle vs. sentence-final emoji: The syntax-pragmatics interface in the era of CMC

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### **Emojis in CMC** An increasingly important part of everyday life

My most recent Tweet 🧲



Julio Song @JulioSongC

Fighting time fragmentation as an adult is so hard, especially when you realize that the biggest time-eater in your life is LIBDN (lying-in-bed-doing-nothing)...

12:06 PM  $\cdot$  May 30, 2022  $\cdot$  Twitter Web App

### My most recent Weibo post 🡉

(Weibo is the Chinese equivalent of Twitter)



"Perhaps kids in 2,000 years will have to do reading comprehension tests based on paparazzi reports from the 21st century as well"

### The emotions conveyed by emojis are highly subtle!



...

說實話,看這兩日的明星八卦跟看《史記》《左傳》裏的流水帳章節感覺並沒有差很 多。可能兩千年後的小孩也要對著廿一世紀初的狗仔爆料梳理時間地點人物關係吧。



# Two main uses of emojis Affective vs. nonaffective $\rightarrow$ aka use-conventional vs. truth-conditional,

I focus on the affective use and leave the nonaffective use aside.

#### **Example:**

- (1) a. Great idea 👍 I'm in 😊 affective
  - b. If I were in Detroit, I'd give you a 🞁.



"non-at-issue" vs. "at-issue" (Potts's 2015 terminology)

(adapted from Maier 2021:4) nonaffective

Nonaffective emojis can be directly replaced by words. They can also readily participate in various <u>at-issue operations</u> (see Grosz et al. 2021).

> Affective emojis are not about the truth condition of the sentence, but about the speaker's mood.





## **Affective sentence-final particles in Chinese Functionally similar to affective emojis**

Example: some different ways to say "it is snowing" in Mandarin Chinese (2) a. xià xuě le ye 下雪了耶 fall snow PRF SFP Wow, I'm so excited! "It's snowing. (happy tone)"  $\approx$  It's snowing  $\cong$ *Impression:* b. xià xuě le a 下雪了啊 Chinese-style affective fall snow PRF SFP Oh, I didn't expect this! particles and affective emojis "It's snowing. (surprised tone)"  $\approx$  It's snowing  $\bigcirc$ serve the same purpose. C. xià xuě le you下雪了呦 You'd better put on some clothes. fall snow PRF SFP What's more, they are both "It's snowing. (kind reminder tone)"  $\approx$  It's snowing  $\bigcirc$ sentence-final. d. xià xuě le ha 下雪了哈 fall snow PRF SFP I didn't mean to be late but... **Question: Would a unified** "It's snowing. (softening tone)"  $\approx$  It's snowing  $\approx$ grammatical analysis be possible? 🤪



Null hypothesis: Sentence-final emojis (SFEs) are the "sentence-final particles" (SFPs) of CMC.









- 2. Evaluate the null hypothesis
- 3. Put forward a formal linguistic analysis of sentence-final emojis

### **Key results:**

- SFEs and SFPs behave differently on closer inspection
- Formal linguistic tools can be used to analyze CMC data

Null hypothesis: Sentence-final emojis (SFEs) are the "sentence-final particles" (SFPs) of CMC.

Compare sentence-final emojis and sentence-final particles in more detail

empirical theoretical



### A bit more on sentence-final particles They have their own detailed taxonomy

Table 1: Mandarin Chinese SFPs (Paul 2014)

Type I (TA-oriented)	Type II (sentence type)	Type III (attitude)	
了 <i>le</i> 'currently relevant state'	嗎 <i>ma</i> 'interrogative'	噢/喔/哦 o 'warning'	
來著 <i>láizhe</i> 'recent past'	吧 <i>ba</i> 'imperative'	啊/呀 a/ya 'astonishment'	
呢 <sub>1</sub> ne1 'continued state'	呢 <sub>2</sub> <i>ne</i> 2 'follow- up question'	呢₃ <i>ne</i> ₃ 'exaggeration'	



We are only concerned with Type III particles, which are "the outermost" in the linguistic structure of Chinese sentences.



Sentence-final particles and sentencefinal emojis do not belong to the same grammatical category.

## **1st reason** SFPs and SFEs can co-occur (and often do so)

Example: (a minimal update of (2)) (3) a. xià xuě le ye 😅 fall snow PRF SFP "It's snowing. (happy tone)"

- b. xià xuě le a 😮 fall snow PRF SFP "It's snowing. (surprised tone)"
- c. xià xuě le you 🙂

fall snow PRF SFP

- "It's snowing. (kind reminder tone)"
- d. xià xuě le ha 😂

fall snow PRF SFP "It's snowing. (softening tone)"





### **A bit linguistics** Elements of the same grammatical category are complementary

### **Example:**

(4) a. this book, that book, \*this that book

b. I like reading, you like reading, \*I you like reading

c. in the wall, on the wall, \*in on the wall

d. more clear, clearer, \*more clearer

Hypothesis: (affective) SFPs and SFEs instantiate two semantically similar but syntactically different categories. → Again, this situation is common in linguistics.

#### **Example:**

(5) a. I have three books.

- b. I will be looking forward to reading it.
- c. aus dem Haus heraus, auf den Berg hinauf 'out.of the house outward' 'onto the hill upward'
- d. Moi, je <u>ne suis pas</u> d'accord.

"Me, I don't think so."

(demonstrative) (pronoun) (preposition) (comparative)

(numeral & number) (tense & aspect) (preposition & postposition) [German]

(1. topic + subject + Agr) [French]  $(2. ne_{Neg} + pas_{AdvP})$ 





# 2nd reason

### SFPs are a closed class, while SFEs are an open class

Different authors count differently, but the number of SFPs in Mandarin (encompassing all subtypes) is generally assumed to be **under 30**:

- Chao (1968) lists 26 (including many borderline cases)
- Li & Thomspon (1981) list 6 (only the most common ones)
- Sun (1999) lists 28 (for all Mandarin varieties throughout the 19th and 20th centuries)

- By comparison, the inventory of SFEs is much larger and is constantly expanding: • New smileys are created every year (see Emojipedia)
- Many platform-specific ones too (e.g., Twitter, Weibo, Skype)
- Many nonsmiley emojis can be used affectively too
- Various quasi emojis (e.g., emoticons, special punctuation marks)

### **SFE as an open class** 1. New smileys are created every year



# What next?









#### **NB cross-platform differences may lead to subtle affective differences**







**NB cross-platform differences may lead to subtle affective differences** e.g., different eye-rolling facial expressions may mean different things







### e.g., different eye-rolling facial expressions may mean different things







### **Apple Twitter**

User 1	"I can't even", jaded	disappointed	"eye-avoidance", vaguely embarrassed	disappointed	disappointed & sad	slightly embarrassed or a bit cheeky	amused (for chaos or minor confusion)
User 2	slightly annoyed	a bit sad	wondering	confused	slightly indifferent or skeptical	slightly naughty	silly
User 3	speechless (negative)	negative attitude	playing innocent, "not me not me"	pretending to be angry	negative attitude	playing innocent, "not me not me"	speechless (negative)
User 4	speechless	speechless & unhappy	"I don't wanna hear"	pretending to be angry	speechless (friendlier)	"I don't wanna hear" (cuter)	totally speechless, "death smile"
User 5	real eye-rolling (highly negative)	≈Weibo	≈QQ1	pretending to be angry	a bit of disdain	a bit shocked	humorously sarcastic
User 6	real eye-rolling	confused	pretending to be confused	arrogant	pondering	pretending to be confused	meanly cynical



### **Results from a quick survey:** What emotions do you think these emojis convey?



### **WeChat**



### Weibo





### e.g., different eye-rolling facial expressions may mean different things







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### Weibo





### **SFE as an open class** 3. Many nonsmiley emojis can be used affectively too



Example: *A* is often used to display an air of nonchalance or indifference (Emojipedia)
(6) a. *nĭ* bìng bù dǒng wǒ *A* [Mandarin]
you at.all not understand me
"You don't understand me at all. (jocularly snooty)" (Baidu)
b. As i said before, u can't compare urself with us. We're on another level, we're on
the next level. Sorry to say, but it's a fact *A* (Twitter) [English]

## SFE as an open class 3. Many nonsmiley emojis can be used affectively too



Example: 💋 is often used to display an air of nonchalance or indifference (Emojipedia) (6) a. nǐ bìng bù dǒng wǒ 🚧 [Mandarin] you at.all not understand me "You don't understand me at all. (jocularly snooty)" (Baidu) b. As i said before, u can't compare urself with us. We're on another level, we're on the next level. Sorry to say, but it's a fact 💋 (Twitter) [English]

### 4. Various quasi emojis

emoticons :-) XP ^\_^ (>\_<) (• ^ o ^ •) (´`。`\*) 囧 \(◎o◎)/!

punctuation The tilde ~ is a frequently used as a tone-softening mark Chinese Internet language Typing three Chinese-style periods • • • has a similar tone-softening effect marks

Highly popular and versatile in Asia

~ is cuter,  $\circ \circ \circ$  is more like "you know"  $\neg (\neg \nabla \neg)$ 



### SFE as an open class 4. Various quasi emojis

#### **Example:**

(7) a. bāng wǒ mǎi dōngxi ~~~ 幫我買東西~~~ help me buy stuff 🛛 🙏 "Help me buy something (cute tone; without the tildes this sounds impolite)" **b**. *zhēnde ma*。。。 真的嗎。。 real Q  $\neg ( \lor \nabla \lor ) \subset$ "Really? (tone: alright, mkay, whatever)" C. gǔn。。。。。。 滚。。。。。。 roll  $\neg$  ( $\lor \nabla \lor$ )  $\neg$  ( $\lor \nabla \lor$ )  $\neg$ "Get lost... (tone: but don't really go away — I don't "hate" you that much)"



#### [Mandarin]



### **3rd reason** Affective emojis are regularly sentence-final across languages while the positioning of affective modal particles varies

Sentence-final particles in (South)East Asian languages are a major type of affective modal particle, but they are **not** the only type.

#### German modal particles serve a similar purpose

German modal particles are uninflected words that are used mainly in the spontaneous spoken language in colloquial registers in German. Their dual function is to <u>reflect the mood or the attitude</u> of the speaker or the narrator and to highlight the sentence's focus. (Wikipedia)

#### Example

halt, nun, einmal

ja mal doch

emphasis, urgency, impatience, etc. (highly versatile)

#### Connotation

some unpleasant fact must be accepted

reminder to the listener

a casual, less blunt tone



# **3rd reason**

### Affective emojis are regularly sentence-final across languages while the positioning of affective modal particles varies

German modal particles are regularly sentence-middle

#### **Example:**

(8) a. Gute Kleider sind eben teuer. good clothes are MOD expensive.COMP "Good clothes are more expensive (and it can't be helped)." b. Heidi ist ja ein Kind. Heidi is MOD a child "Heidi is a child (as you can see)."

[German]



# **3rd reason**

### Affective emojis are regularly sentence-final across languages while the positioning of affective modal particles varies

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  - "Heidi is a child (as you can see)."

(9) Ich kann euch beiden nicht folgen 🖓 But German affective emojis I can you both not follow are also sentence-final! "I can't follow you two."

[German]



### **Positioning of affective emojis** A survey of nine languages on social media websites (Twitter/Weibo)

Language	Family	Туре	Basic word order	Place of affective emoji
Mandarin	Sinitic	isolating	SVO	sentence-final
Japanese	Japonic	agglutinative	SOV	sentence-final
Korean	Koreanic	agglutinative	SOV	sentence-final
English	Germanic	analytic	SVO	sentence-final
German	Germanic	fusional	SOV (V2 in matrix)	sentence-final
French	Romance	fusional	SVO	sentence-final
Irish	Celtic	fusional	VSO	sentence-final
Basque	Language isolate	agglutinative/ fusional	SOV	sentence-final
Hungarian	Finno-Ugric	agglutinative	relatively free	sentence-final



### Positioning of affective emojis A survey of nine languages on social media websites (Twitter/Weibo)

**Example:** (all from Twitter, retrieved on 27 May 2022) (10) a. Les pères, ils ont droit au whisky et autres a "The fathers, they have the right to whisky a

- b. Ich dachte immer, dass hier alles anonym ist "I always thought that everything was anony
- c. gozenchū no ame wa dokoni ittandesu ka 🔮 "Where did the rain in the morning go?"
- d. Membeo-deul-i 'hat-gyu'-rago bureum 🥹 "The members calling him 'hot-gyu"
- e. RT agus fág trácht le bheith san áireamh!! 💐 "RT and leave a comment to be included!!"
- f. Bilera eta ekitaldi nagusiak bueltan dira Eusk "Meetings and big events are back in Basqu
- g. Legyetek a barátaim, ugyanígy doraszell a n "Be my friends (on BeReal). My name is just

22) alcool de "bonhomme" 🙆	[French]
$t \gg c$	[German]
> 午前中の雨はどこに行ったんですか	[Japanese]
멤버들이 '핫규'라고 부름	[Korean]
	[lrish]
kaldunan 😊	[Basque]
nevem 🥹 t doraszell."	[Hungarian]



### Positioning of affective emojis A survey of nine languages on social media websites (Twitter/Weibo) An interesting observation

#### Basque accounts like posting in Basque & Spanish, with no change in emoji position. **Example:**

- (11) a. Bilera eta ekitaldi nagusiak bueltan dira Euskaldunan 😊 Los grandes eventos y las reuniones están de vuelta en Euskalduna 🎉 "Meetings and big events are back in Basque."
  - b. Bizkaiak egunero zaintzen ditu mendetasun-egoeran dauden adineko milaka pertsona 🐵 🖅 💎 "Every day, Bizkaia cares for thousands of elderly people in a situation of dependency."

[Basque] [Spanish] [Basque]

Bizkaia cuida cada día de miles de personas mayores en situación de dependencia 🐵 🖅 💎 [Spanish]



### **Summary** SFEs and SFPs do not belong to the same grammatical category They are semantically similar but syntactically different

**Three reasons:** 

- 1. SFEs and SFPs can and often do co-occur.
- 2. SFEs are an open class; SFPs are a closed class.
- 3. The positioning of affective emojis is not affected by cross-linguistic word order variation; that of affective modal particles is.



# None of these is the kind of text-accompanying, affect-adding emoji we are concerned with. A word on sentence-initial emojis

### Three cases

#### I. Responses to earlier messages => usually affective, a bit like interjections **Example:**

(12) —The Warriors win the Western Conferences Finals  $\underline{Y}$ Steph, Klay and Draymond will play their SIXTH NBA Finals together -Tf? 🤣 You really don't know anything. Any real Lakers fan would never root for the Celtics

### II. Deictic road signs, creative bullet lists, or other frame-setters => usually nonaffective

#### **Example:**

(13) 7 Gaur, #Urretxu-ko biztanleek haien kezkak eta proposamenak partekatzeko aukera [Basque] izango dute 19:00ak arte.

NB the text-accompanying affective Nola imajinatzen duzue Gipuzkoa 2040an Urretxuko biztanleek? 👗 emoji is still sentence-final "Today, #Urretxu residents will have the opportunity to share their concerns and suggestions until 7 p.m. How do the people of Urretxu imagine Gipuzkoa in 2040?"

### **III. Decorations => usually nonaffective**

#### Example:

(14) 🖡 🌿 Szép napot kívánok mindenkinek! 🌿 🐺 🌿 "Wish everyone a beautiful day!"



[Hungarian]







### **Emojis in CMC grammar** How do they integrate with the linguistic text? What we know

- 1. SFEs convey speaker emotions accompanying entire linguistic utterances, including SFPs.
- 2. Miscellaneous symbols are being recycled as SFEs, conveying conventionalized affects. 🙂 💋 沿

### What we don't know

- 1. What's the grammatical category for SFEs? 2. How does that category interact with the linguistic utterance?





# A formal syntactic theory **Proposal: CMC grammar has an "emotion" category E**

### Method

Extending formal tools from theoretical linguistics to the analysis of CMC grammar

### **Took it** *In the Generative Grammar framework*

- Minimalist syntax => we basically only use Merge (i.e., hierarchical structure-building) • Recycling via categorization => E categorizes various symbols into affective "visual particles"

**Bonus**  $\rightarrow$  I don't have time to talk about this now but see the upcoming paper version The formal syntactic analysis can be routinely equipped with a formal semantic analysis

### Rationale

(e.g., Merge is set formation, formal semantics is symbolic logic) CMC data are strings of symbols. Ergo, they are amenable to symbolic analysis.

### Pitfall

clear to what extent visual cues in CMC are products of the language faculty.

- Some fundamental tools in formal linguistics are domain-general tools of symbol manipulation.
- We must be careful not to bring in too many "language faculty"-specific techniques, since it is not





### The "emotional wrapper" category E [EP Sentence [E E JIMAGE ]] (an updated version of Song 2019)



- Each branching in the tree is a step of Merge:
- Merge(E,  $\sqrt{IMAGE}$ ) => {E,  $\sqrt{IMAGE}$ }
- Merge(Sentence, {E,  $\sqrt{IMAGE}$ ) => {Sentence, {E,  $\sqrt{IMAGE}$ }

- Originally used for content word formation
- open class of roots (so there are numerous nouns, verbs, etc.)
- Formalizing the idea that each lexical category encompasses an • Here used to account for the open-class nature of affective emojis
- The root categorization technique is borrowed from Root Syntax theory (Halle & Marantz 1993 et seq., Borer 2013):





### The "emotional wrapper" category E [EP Sentence [E E JIMAGE ]] (an updated version of Song 2019)



 $\sqrt{IMAGE}$  alone but is a matter of conventionalization based on their merger. In other words, each affective emoji is a tiny "idiom" in the CMC lexicon.

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- Originally used for content word formation
- Formalizing the idea that each lexical category encompasses an open class of roots (so there are numerous nouns, verbs, etc.) • Here used to account for the open-class nature of affective emojis

#### The grammatical category E functions like an emotional wrapper for the linguistic sentence.

- As per Root Syntax, the specific emotion conveyed by an emoji comes from neither E nor













An infinite number of imagery roots, be they intrinsically affective or not, may be 1. recycled as affective emojis. 🌂 🍫 🖉 🖉 🗸 🖉 🖉 🗸 🖉











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The emotions in emojis are not always predictable based on their appearances ( // Description with the second seco







- 2.
- 3.



- An infinite number of imagery roots, be they intrinsically affective or not, may be recycled as affective emojis. 🏹 🍫 🖉 🖉 🗸 🖉 🖉 🗸
- The emotions in emojis are not always predictable based on their appearances ( ) and often vary across languages/cultures/generations ( )
- Since E is outside of the linguistic Sentence, SFEs and SFPs can co-occur.







- 2.
- 3.
- 4.

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  - (ii)

(i)

- Given the 2D nature of the computer screen, the positional relation between Sentence and E need not be strictly linear but could also be, say, overlapping (as in memes) or even temporal (as in GIFs).





(i)



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However, since E is outside of Sentence, the affective emoji can only be sentence-peripheral (be it initial or final) but NOT sentence-middle (that is, if the ordering is linear, as in most text messages and social media posts).





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The predominantly sentence-final position of affective emojis is probably due to:





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The predominantly sentence-final position of affective emojis is probably due to: content-before-emotion communicative habit



MAGE



- An infinite number of imagery roots, be they intrinsically affective or not, may be recycled as affective emojis.
- The emotions in emojis are not always predictable based on their appearances 2. ( and often vary across languages/cultures/generations ( )
- Since E is outside of the linguistic Sentence, SFEs and SFPs can co-occur. 3.
- Since we are merely borrowing the symbolic syntax of linguistics but not also its 4. domain-specific assumptions, the EP structure need NOT be subject to natural language-like linearization rules:
  - The position of the emoji is not affected by the cross-linguistic word order variation within the Sentence.
  - Given the 2D nature of the computer screen, the positional relation (ii) between Sentence and E need not be strictly linear but could also be, say, overlapping (as in memes) or even temporal (as in GIFs).
- However, since E is outside of Sentence, the affective emoji can only be 5. sentence-peripheral (be it initial or final) but NOT sentence-middle (that is, if the ordering is linear, as in most text messages and social media posts).
- The predominantly sentence-final position of affective emojis is probably due to: 6.
  - content-before-emotion communicative habit **(I)**
  - left-to-right typing (ii)

(i)



MAGE



- 2.
- 3.
- 4.

(i)

- (ii)
- 5.
- 6.
  - (I)
  - (ii)

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content-before-emotion communicative habit

left-to-right typing

NB this predicts that in languages with a right-to-left script, affective emojis would regularly show up to the left of the sentence.





- 2.
- 3.
- 4.

(İ)

- (ii)
- 5.

6.

- - (I)
  - (ii)

שלום, שמי ארי, אני מארגנטינה, עכשיו אני גר בתל אביב (ברמת אביב 🚮) אני לומד עברית (וגם רוסית) באולפן, אני תלמיד טוב.

Translated from Hebrew by Google

Hello, my name is Ari, I'm from Argentina, now I live in Tel Aviv (Ramat Aviv 🚮 ) I study Hebrew (and also Russian) in the studio, I am a good student.

7:59 PM · Nov 30, 2020 · Twitter for Android

An infinite number of imagery roots, be they intrinsically affective or not, may be recycled as affective emojis.

The emotions in emojis are not always predictable based on their appearances ( and often vary across languages/cultures/generations ( )

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### Back to big picture **Consequences of CMC for Theoretical Linguistics**

- 1. We can no longer simply assume a Derivation  $\rightarrow$  Interface model in our analyses => because CMC is likely to involve more than the (Chomskyan) language faculty => it is truly cross-modality
- 2. We need to further tease apart domain-general tools and domain-specific ones => Domain-general: Merge in its set-theoretic sense, symbolic logic, "3rd factor," etc. => Domain-specific: Move, Phase Theory, Labeling Theory, etc. (basically anything motivated by the linguistic "interfaces")





### Back to big picture **Consequences of CMC for Theoretical Linguistics**

- => it is truly cross-modality
- => Domain-specific: Move, Phase Theory, Labeling Theory, etc.

In a word, CMC forces us to think outside the conventional linguistics box!



1. We can no longer simply assume a Derivation  $\rightarrow$  Interface model in our analyses => because CMC is likely to involve more than the (Chomskyan) language faculty

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**THANK YOU!** 



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