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

Emojis are an important part of computer-mediated communication (CMC), in that they compensate for the lack of nonverbal (or "paralinguistic"; Carey 1980) cues in online textual communication. They in a sense correspond to "tone of the voice and body language in face-to-face communication" (Gawne & McCulloch 2019). Emojis can be used either affectively (i.e., in a use-conventional or "non-at-issue" fashion), as in (1a), or nonaffectively (i.e., in a truth-conditional or "at-issue" fashion), as in (1b) (Grosz et al. 2021, Pierini 2021, Maier 2021).

(1) a. Great idea 👍 I'm in 😊
b. If I were in Detroit, I'd give you a 🎁. (adapted from Maier 2021:4)

I focus on the affective usage in this study and leave the nonaffective usage aside. Specifically, I show that sentence-final emojis (SFEs) like those in (1a) are functionally similar to affective sentence-final particles (SFPs) in languages like Chinese, as illustrated in (2).

(2) a. *xià xuě le ye* [Mandarin Chinese]
fall snow PRF SFP
"It's snowing. (happy)" ≈ It's snowing 😄
b. *xià xuě le a*
fall snow PRF SFP
"It's snowing. (surprised)" ≈ It's snowing 😮

The same Chinese sentence can convey different speaker attitudes depending on which SFP is used. Note that SFPs fall in several categories themselves (see, e.g., Law 2002, Paul 2014). Here I only discuss the affective ones—namely, those encoding speaker emotions or attitudes. Comparing (1a) and (2), especially considering the word-to-emoji "translations" in (2), we get the impression that affective emojis are like visual SFPs. This suggests a potential unified grammatical analysis of the two types of discourse markers from two different communicative channels. However, such a unification is not as easy as it appears. There are at least three challenges. First, SFPs and SFEs can and often coexist, as in (3), which means they do not occupy the same syntactic position despite their shared semantic function.

(3) *xià xuě le ye* 😄 (≈ (2a), with the smiley strengthening the happy mood in *ye*)

Second, SFPs are a closed class, while SFEs are an open class. Various new facial expressions are regularly added to the emoji inventory (4a), and nonfacial emojis can be used affectively too (4b).

(4) a. 🥰🥵🥶🥳🥴🥺 (2018) 🤒 (2019) 🥲🤓 (2020) 🫠🤥🫨🫡 (2021/2022) (Emojipedia)
b. *nǐ bìng bù dǒng wǒ* 💅 [Mandarin]
you at.all not understand me
"You don't understand me at all. (jocularly snooty)" (Baidu)

Third, the affective emojis accompanying texts are consistently sentence-final in CMC around the world regardless of the crosslinguistic word order variation. This is rather unusual from a linguistic perspective and suggests that the syntactic relation between an affective emoji and its host sentence may be different from that between an affective SFP and its host sentence after all. In sum, if we want to give SFEs a place in the grammar of CMC, we need to take more factors into account. While nonverbal cues in face-to-face communication (e.g., gestures) can be routinely analyzed on a par with verbal elements—e.g., in terms of positions on a functional hierarchy (see, e.g., Colasanti 2021)—with their modality differences being identified as a matter of externalization (in the sense of Chomsky 1995), the same methodology cannot be readily applied in the analysis of CMC, for it is not entirely clear to what extent CMC utterances with nonverbal cues (e.g., emojis, GIFs) are externalizations of classical syntactic derivations—"classical" in the sense that the derivation of a sentence involves the selection of a list of words, the assembling of those words into a hierarchical structure, and the shipping of that structure to the interpretive interfaces of the

language faculty. Deviations from this classical model are well imaginable in an adequate analysis of CMC grammar. Thus, a single CMC utterance may involve more than one derivational routine, with nonverbal symbols being processed on a separate track. Alternatively, CMC utterances may not be products of the language faculty alone but are produced by the joint force of multiple cognitive faculties. Two facts may support this possibility: (i) word-based thinking and image-based thinking dominate different brain hemispheres; (ii) many affective emojis are ineffable and cannot be easily translated into words. In short, in order to properly model the syntax-pragmatics interface of CMC, we need to think outside the conventional linguistic box.

In this study, I develop a formal syntactic theory for SFEs based on a proposal in Song (2019), which not only resolves the three challenges mentioned above but also provides a new angle to approach cross-cognitive-faculty interaction. Moreover, the syntactic theory I develop here matches an independently developed formal semantic theory for SFEs in Grosz et al. (2021). SFEs impose their interpretive effects on sentences via the syntactic schema in (5).

(5) $[_{EP}$ Sentence $[_{EP}$ E $\sqrt{\text{IMAGE}}$]] (adapted from Song 2019:93)

Here E is a syntactic category for emotions, $\sqrt{\text{IMAGE}}$ is a root in the sense of root syntax (see, e.g., Halle & Marantz 1993, Borer 2013), and the E-$\sqrt{}$ combination corresponds to a surface SFE. The sentence, on the other hand, is adjoined to this structure. Thus, we have a reversed perspective on the relation between sentences and SFEs, where the host is not the sentence but the emoji. The emoji functions as an emotional wrapper around the sentence, while the sentence modifies the emotion with its content. Semantically, this schema has the logical form in (6), where x, p, V, and m respectively stand for an author-speaker, their "discourse value," the semantic content of a sentence, and the affective value of an emoji.

(6) $[\![\text{E}]\!] = \lambda m \lambda x \lambda p \lambda V.\{w \mid x \text{ is } m \text{ about how } p \text{ bears on } V \text{ at } w\}$ (adapted from Grosz et al. 2021:7)

The values for m and p come from the CMC utterance, and those of x and V, from the discourse. By analyzing SFEs as categorized "emoji roots" (i.e., syntacticized emotions), we can explain their open-class status; by positioning the emoji outside the sentence, we can explain the coexistence of SFPs and SFEs; and by identifying the syntactic relation between the sentence and the emoji as adjunction, we can explain the insensitivity of affective emojis to crosslinguistic variation in head-complement directionality (i.e., basic word order).

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