

The linguistic functions of emoji in French and English Facebook comments and Tweets:

A multi-modal corpus analysis of emoji in conversation

Computer-mediated discourse (CMD)

- Multiple CMD **platforms**: text messages, social media, e-mails, forums...
- Linguistic and technical **features** of CMD (Herring, 2019):
 - Mostly written language
 - Asynchronicity
 - Visualization of conversational turns
 - Size of message limitation
 - Persistence of transcript
 - Lack of non-verbal and paraverbal cues (gesture, intonation, laughter...)
- Strong presence of iconicity:
 - Pictures, videos, memes...
 - GIFs & stickers
 - Emoticons & emoji => *graphicons* (Herring & Dainas, 2017)

Emoticons & emoji

- **Emoticons:** :-) :-(\ ^^ <3
 - Invented in 1982 by Scott Fahlman, to disambiguate humorous messages
 - Became rapidly used for other linguistic functions
 - Iconicity restricted to face expressions or gestures
 - At least 2 characters
- **Emoji:** 😊 😂 🙌 🙋 🐅 🍕 💵 ❤️ 🇧🇪
 - Invented in 1997 by Shigetaka Kurita (DoCoMo)
 - Integrated into Unicode Standard in 2010
 - 3.633 different icons, divided into 7 categories (faces, nature, symbols...)
 - Multiple linguistics functions
 - Iconic relation with items/concepts/emotions

The iconicity of emoji

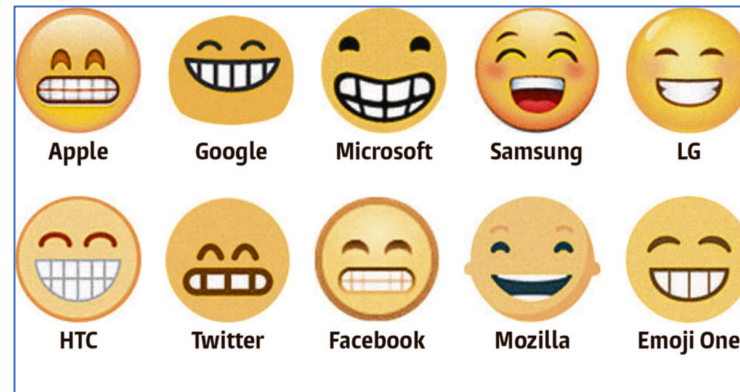
- Emoji are **the most popular icons** in the world:
 - Over **10 billion** emoji are sent every day.¹
 - **92%** on online consumers everywhere use emoji.²
- Emoji can also represent concepts **metaphorically** or **metonymically**.
- The meaning of some emoji has **evolved**: 🍆 🍑 / 🤒 / 😊
- Some emoji are **symbols** (or icons of symbols?): ❤️ 🚫 ☢️
- Emoji are often used alongside written text. They can be used on their own, but can rarely build fully functioning sentences:
 - 🧔💡👍🧔🐳🌀💵💵 (Benenson, 2010)
 - *I remembered a story of a white man--a whaleman too--who, falling among the cannibals, had been tattooed by them.*
- However, emoji repetition is very common => *beat gestures* (McCulloch & Gawne, 2018)
 - *ur so funny* 😂😂😂😂

¹ <https://www.brandwatch.com/blog/6-facts-about-emojis-found-using-new-analysis/>

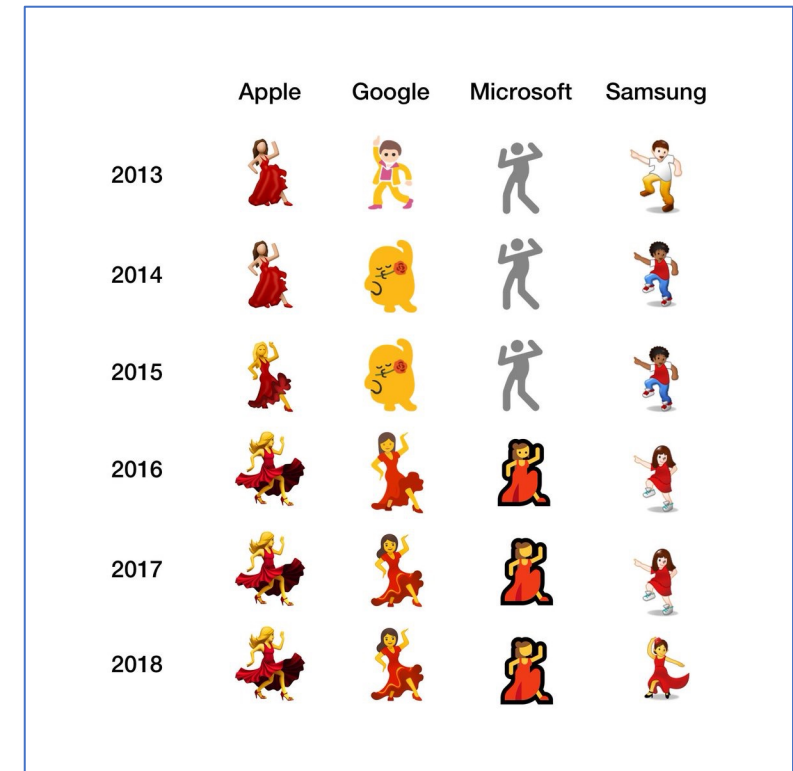
² <https://www.adweek.com/performance-marketing/report-92-of-online-consumers-use-emoji-infographic/>

The iconicity of emoji

- Emoji do not always have the same appearance depending on the platform, which can cause some confusion among users (Miller et al., 2018).



- Merriam-Webster** definition of emoji:
 - Any of various **small images**, symbols, or **icons** used in text fields in electronic communication (as in text messages, e-mail, and social media) to express the emotional attitude of the writer, convey information succinctly, communicate a message playfully without using words, etc.



Emoji functions study

Research question:

- How and why are emoji used in conversation ?
- What are the linguistic functions of emoji, and how frequent are they in CMD?

Corpus

- Corpus of **1200** emoji in context, with comparable variables:
 - **Platform:**
 - 600 Facebook comments
 - 600 Tweets
 - **Language:**
 - 600 French
 - 600 English
 - **Topics:**
 - 400 about politics
 - 400 about movies & tv shows
 - 400 about lockdown
 - **Gender:**
 - 538 male
 - 514 female
 - 149 unknown

Sources

English corpus	About politics	About movies/tv-shows	About life in lockdown
Tweets	Containing #Brexit	Containing #Netflix	Twitter discussion threads
Facebook comments	From a Facebook group about politics	From a post on the @NetflixUK Facebook page	From a Facebook group of inhabitants of a British city

French corpus	About politics	About movies/tv-shows	About life in lockdown
Tweets	Containing #Brexit	Containing #Netflix	Twitter discussion threads
Facebook comments	From a Facebook group about politics	From a post on the @NetflixFR Facebook page	From a Facebook group of inhabitants of a Belgian city

Methods

- **7 linguistic functions** of emoji identified in the literature
- Manual **annotation** of the 1200 emoji
 - Inter-rater reliability computed with 1 other annotator on 50 emoji:
 - Fleiss $k = 0.61$ (*substantial*)
 - Annotated features:
 - Emoji type & code, ex. 😊 = U+1F60A
 - Emoji category
 - Position in the message (initial, final, between or inside clauses...)
 - Repetition (from 1 to 8)
 - Platform, topic, language & gender of speaker (if known)
 - Functions (up to 3 different functions per emoji)
- **Quantitative** statistical analysis

The 7 linguistic functions of emoji

1. Expressive function

- “Conveying emotion, whether the speaker’s own emotional state or someone else’s.” (Marcoccia & Gauducheau, 2007)
- The most common and straightforward emoji function.
 - ex. *We’re going to the cinema tonight* 😍
 - n20: *my aunty and uncle sadly passed* 😞

2. Interpretative function

- “Signaling the presence of an implicature in the message and guiding its interpretation.” (Dresner & Herring, 2010)
- Often used to disambiguate ironical or sarcastic utterances (original function of emoticons).
 - ex. *I hate you* 😏
 - n1082: *Because we’d all love a visit to A&E right now* 🙄

The 7 linguistic functions of emoji

3. Referential function

- “Referring to a concept inside or outside the message, by replacement, evocation or repetition.” (Schneebeli, 2017)
- Referential emoji can replace nouns, verbs, adjectives, even adverbial phrases.
- Often appear inside a message (not at the end). All emoji categories can be used.
- ex. *Wanna get some 🌮 for lunch?*
- n500: *It’s so overrated rip, the kissing booth is 100 better*
- n20: *I also have a unicorn 🦄*

4. Relational function (Spina, 2018)

- “Maintaining a positive relationship with the reader(s) of the message.” (// phatic)
- n5: *Thank you very much 😊*

The 7 linguistic functions of emoji

5. Politeness function

- “Softening the potential face-threatening value of a message.”
- Comparable to linguistics hedges. (Marcoccia & Gauducheau, 2007)
- ex. *I’m here, open the door* 😊
- n819: *But I did answer you. Read my comment* 😊

6. Emphatic function

- “Strengthening the emotional value of a message or an emoji.” (Amaghlobeli, 2012)
- Often associated with emoji repetition.
- Mostly combined with expressive emoji.
- n219: *Just finished watching #TheSkylsPink* 😭😭😭😭😭😭

The 7 linguistic functions of emoji

7. Structural function

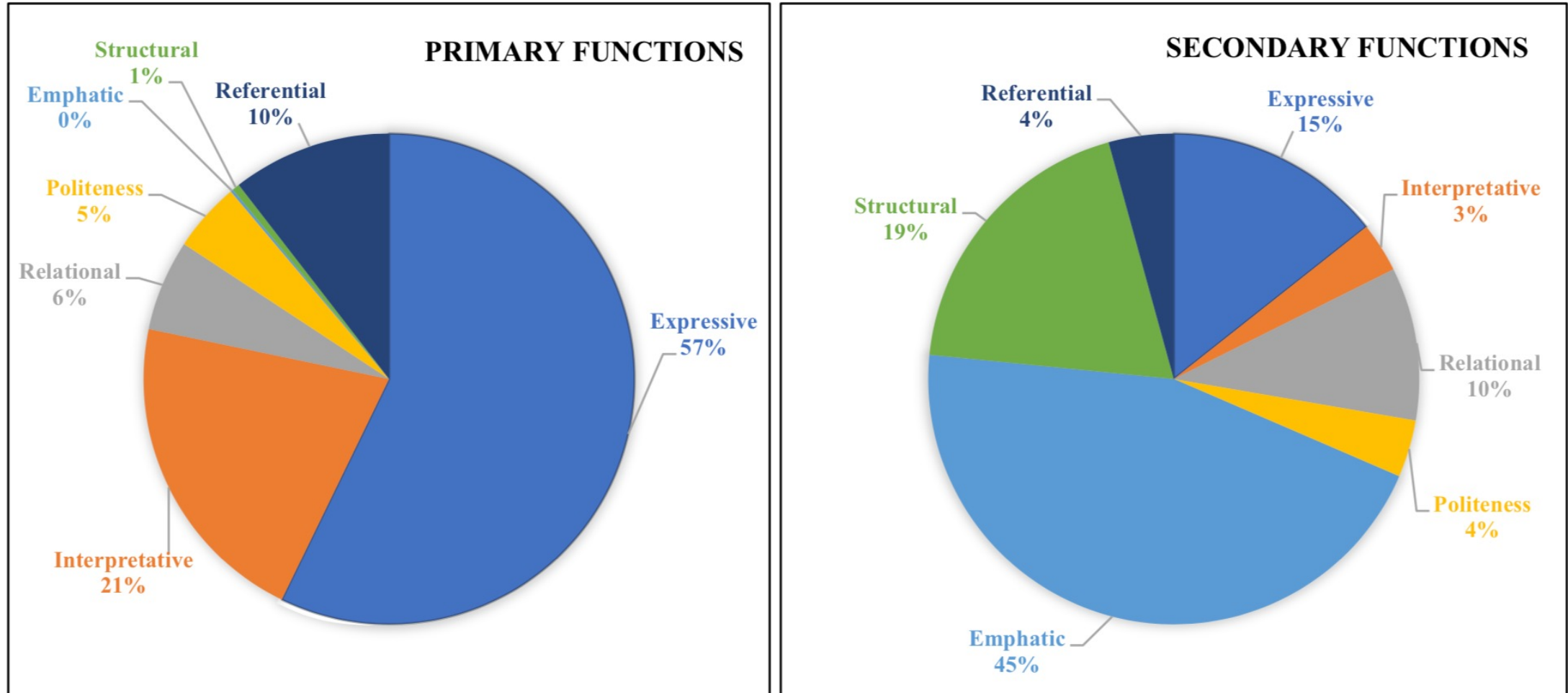
- “Separating, framing and punctuating clauses.” (Cramer et al., 2016)
 - Can replace all sorts of punctuation signs, and can be combined with any other linguistic function.
- ex. *I bought dinner for tonight 😊 what movie do you want to watch?*

○ Additional function : the aesthetic function

- “Adding a decorative value to the emoji, making the message more attractive, more colorful or playful.”
 - Mainly combined with referential emoji.
- n1037: *Vegan pizza!* 🌱🍕🌱🍕🌱🍕

Emoji functions: results

Figure 1. Distribution of primary and secondary functions of emoji in the corpus.



Emoji functions: results

Primary function	10 most frequent emoji types									
										
Expressive	55	24	49	50	1	28	35	15	20	31
Interpretative	62	40	3	0	22	1	0	14	11	0
Relational	0	0	0	1	15	8	3	3	0	0
Politeness	2	0	0	0	10	0	0	1	1	0
Emphatic	0	0	0	0	0	0	0	1	0	0
Structural	0	0	0	0	0	0	0	0	0	0
Referential	0	0	0	0	0	3	0	0	0	0

$X^2 = 3990.6^{***}, p < 2.2 \times 10^{-16}$

Primary function	Emoji category							
	Smileys & People 	Animals & Nature 	Food & Drink 	Activity 	Travel & Places 	Objects 	Symbols 	Flags 
Expressive	627	9	0	0	0	3	48	0
Interpretative	249	3	0	0	0	0	1	0
Relational	57	0	0	0	0	0	15	0
Politeness	54	1	0	0	0	0	0	0
Emphatic	1	0	0	0	0	0	1	0
Structural	1	0	0	0	1	0	4	0
Referential	39	15	11	4	4	10	13	30

$X^2 = 702.3^{***}, p < 2.2 \times 10^{-16}$

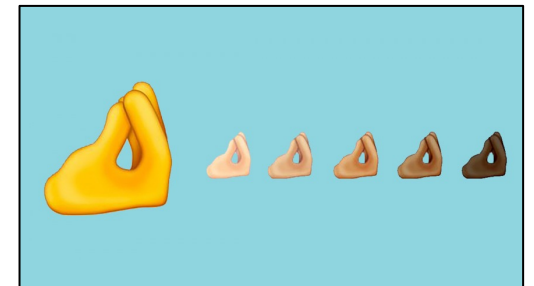
Emoji functions: results

Primary function	Emoji position					
	Final	Between	Inside	Initial	Quasi-final	Between & final
Expressive	585	67	5	17	7	4
Interpretative	215	32	1	0	3	2
Relational	64	5	1	5	1	0
Politeness	49	6	0	0	0	0
Emphatic	2	0	0	0	0	0
Structural	0	3	0	3	0	0
Referential	77	22	21	0	0	1
$X^2 = 1443.7^{***}, p < 2.2 \times 10^{-16}$						

- Observations:
 - Some functions appear much more than others at **primary** level:
 - **Expressive, interpretative & referential**
 - Other functions are more often considered **secondary** functions:
 - **Politeness, relational, structural & emphatic**
 - This should be considered to build an updated two-layered typology of emoji functions.

Emoji variation

- **Contextual** variation:
 - Emoji are used differently depending on the **platform**, the **relationship** between speakers, whether the message is **private/public**...
- **Sociological** variation:
 - **Gender**: female users tend to use more emoji (Chen et al., 2017).
 - **Age**: younger users are more likely to use emoji (Nishimura, 2015).
 - User experience with CMD also influences emoji usage.
- **Linguistic & cultural** variation:
 - Some emoji are culturally encoded: 👍 🤔 🧕 🍱 割 (Barbieri et al., 2016)
 - Some emoji have different meanings in different languages (e.g. 🔥)
 - Some emoji are more popular in some languages
 - Emoji: the « ubiquitous language » ?



Emoji variation study

- **Research question 2:**

- Are emoji used differently across languages, platforms, topics and by male and female users ?

OR

- How do different parameters **influence** the distribution of emoji functions?
 - **Platform** (Facebook/Twitter)
 - **Language** (French/English)
 - **Topic** (entertainment/politics/everyday life)
 - **Gender** (male/female)

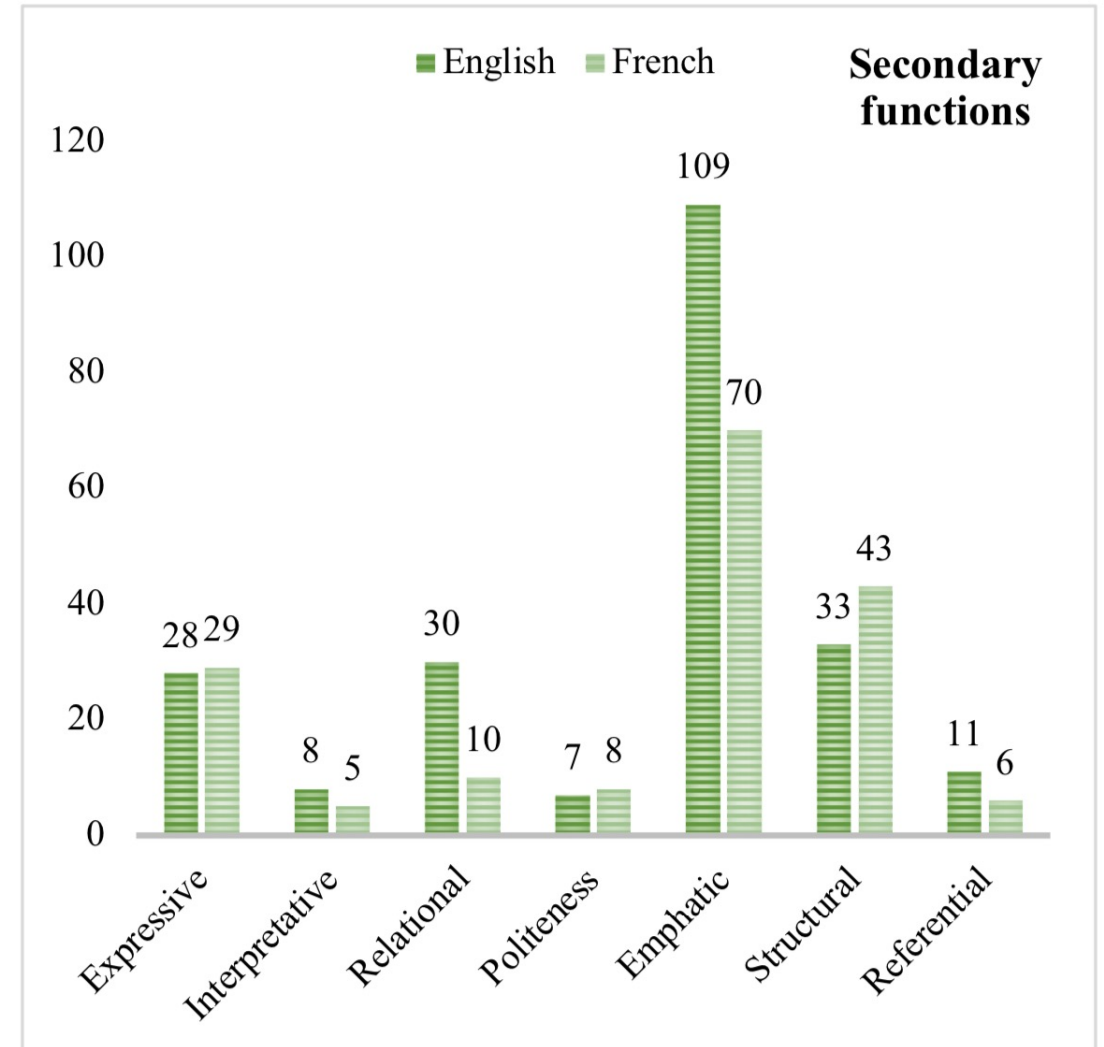
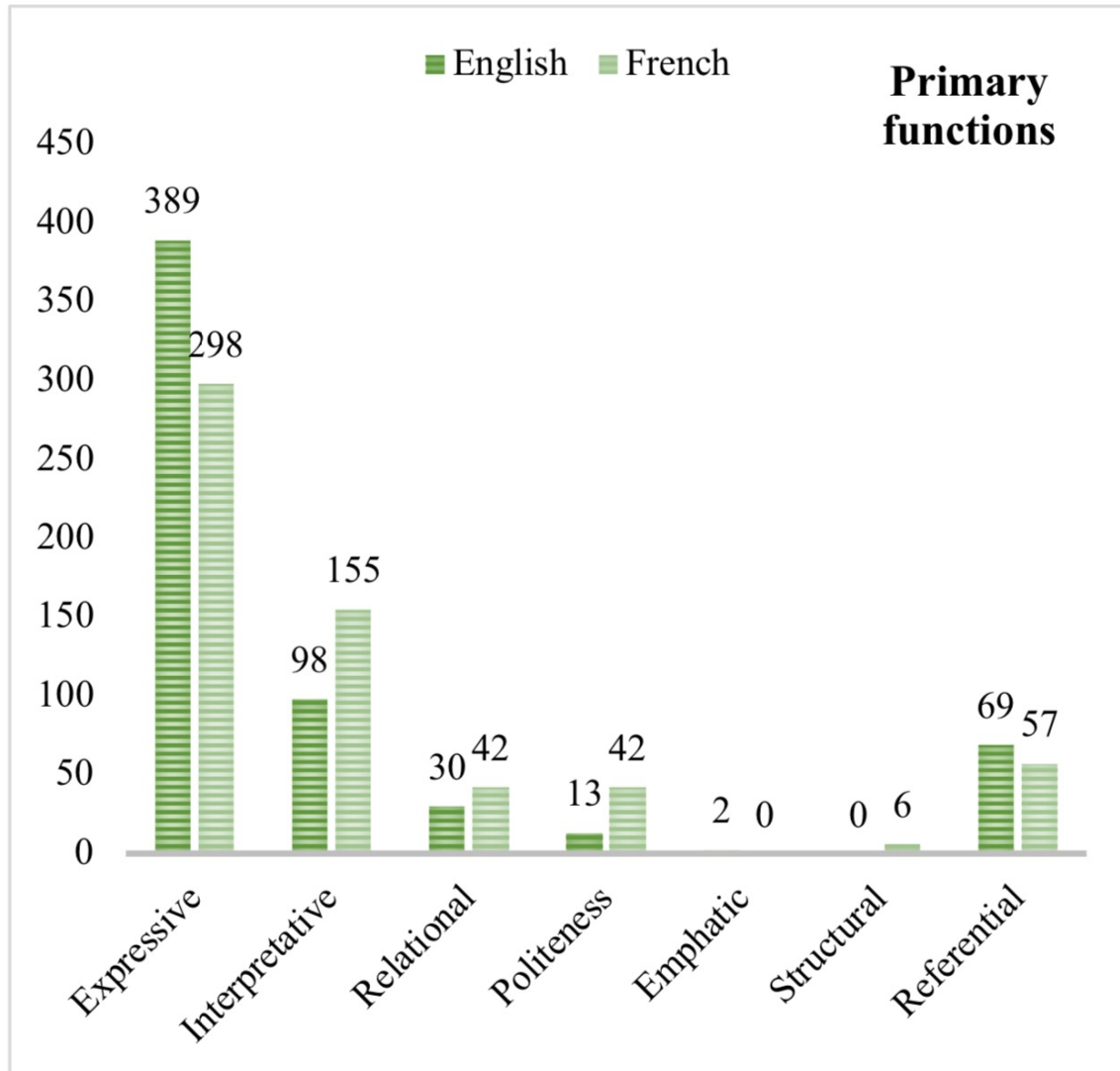
Emoji variation: results

Table 15. Results of chi-squared tests for independence of the 4 external factors on the 3 functional levels.

Functional level	Independent factor							
	Language		Platform		Topic		Gender	
	X^2	p	X^2	p	X^2	p	X^2	p
Prim. function	51.33***	<0.001	87.27***	<0.001	97.84***	<0.001	79.17***	<0.001
Second. function	25.69***	<0.001	7.87°	0.34	52.56***	<0.001	17.69°	0.22
Tert. function	2.31°	0.68	9.48*	0.05	8.18°	0.41	9.16°	0.33

- **All four variables** (language, platform, topic & gender) seem to influence the distribution of emoji functions.
 - **Topic** is the most influential factor.
 - **Language** is the least significative (but it also influences secondary function distribution).

Language and emoji functions

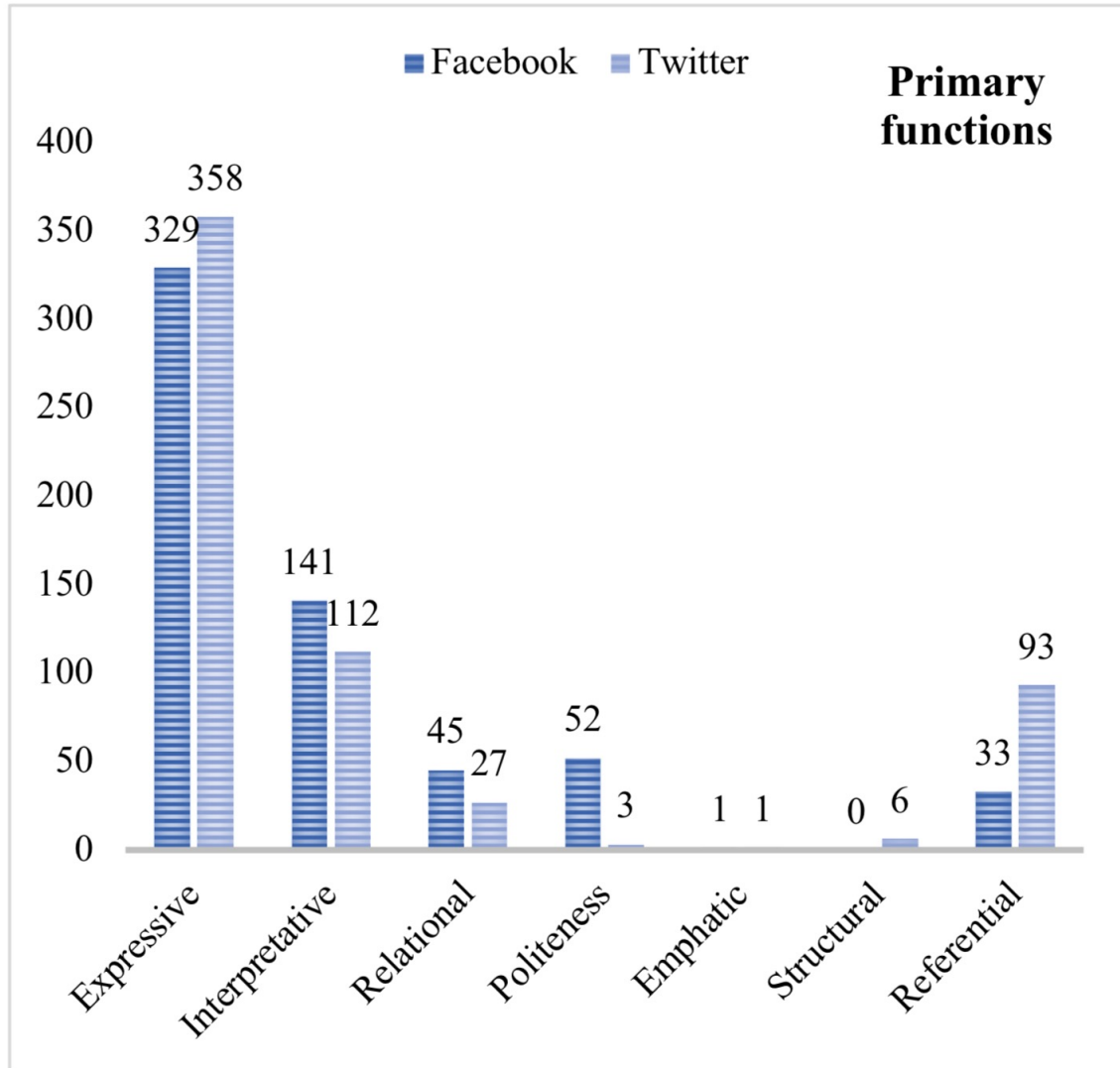


Language and emoji functions

Observations:

- **English**-speaking users tend to use more **expressive** and **emphatic** emoji (than French-speaking users)
 - n1009: *Ha ha ha ha ha ha ha ha!!!! Love It!!!!* 😂😂😂
- **French**-speaking users tend to use more **interpretative** and **politeness** emoji
 - n179: *s'est sur que le train avec les sacs de courses s'est pratique.. S'est bien connu* 😂
 - n169: *ça n'impacte aucunement la circulation ! Faut se renseigner avant de critiquer !* 😊

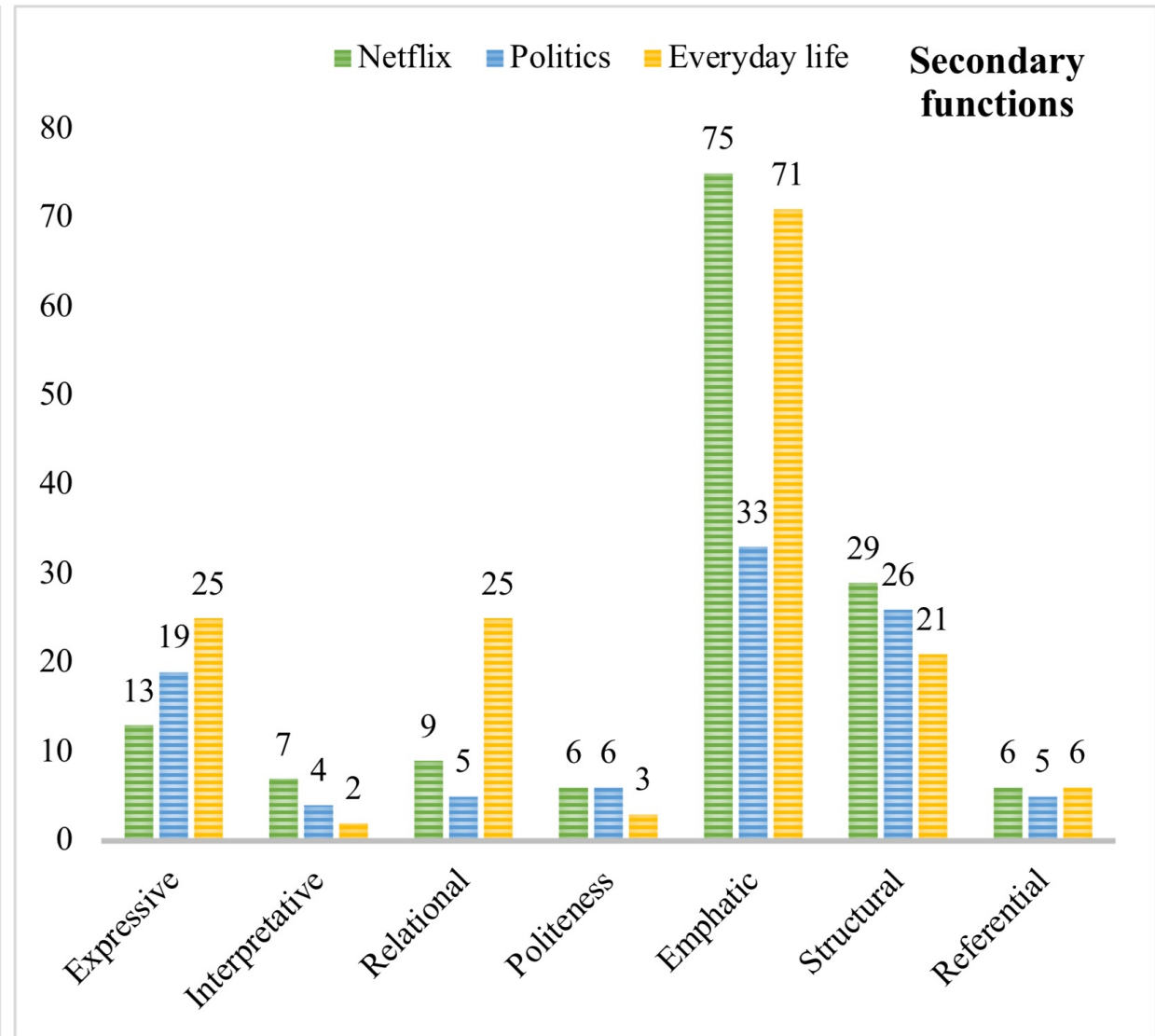
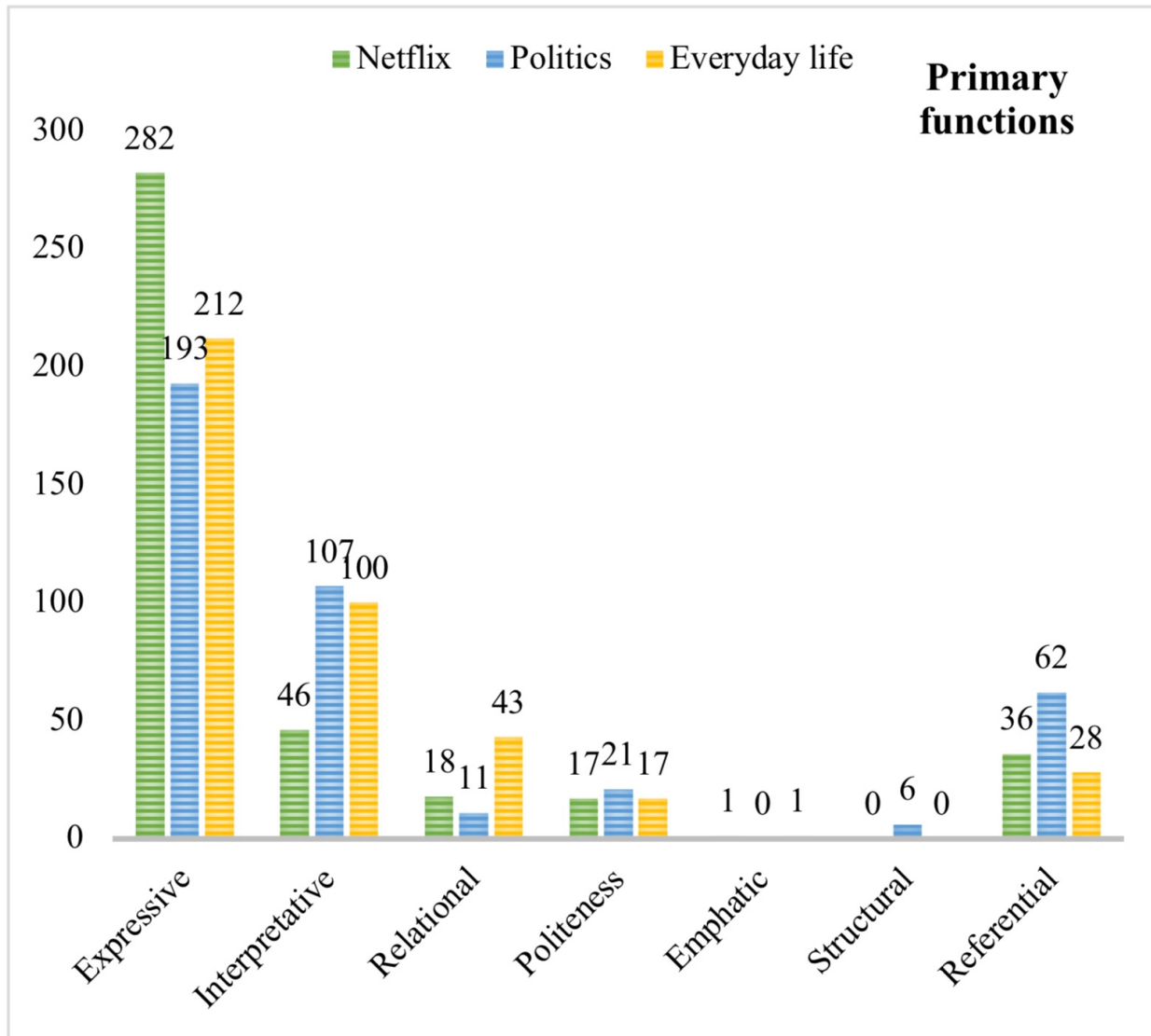
Platform and emoji functions



Observations:

- **Relational** and **politeness** emoji are more used on **Facebook**.
 - Facebook => more proximity between users & non-anonymous.
 - n38: *I had a feeling it wasn't the Yorkshire Street shop but thank you just the same 😊*
- **Referential** emoji are more used on **Twitter**.
 - n619: *it's *always* easier for 🇬🇧 to just blame 🇪🇺 for anything and everything*

Topic and emoji functions

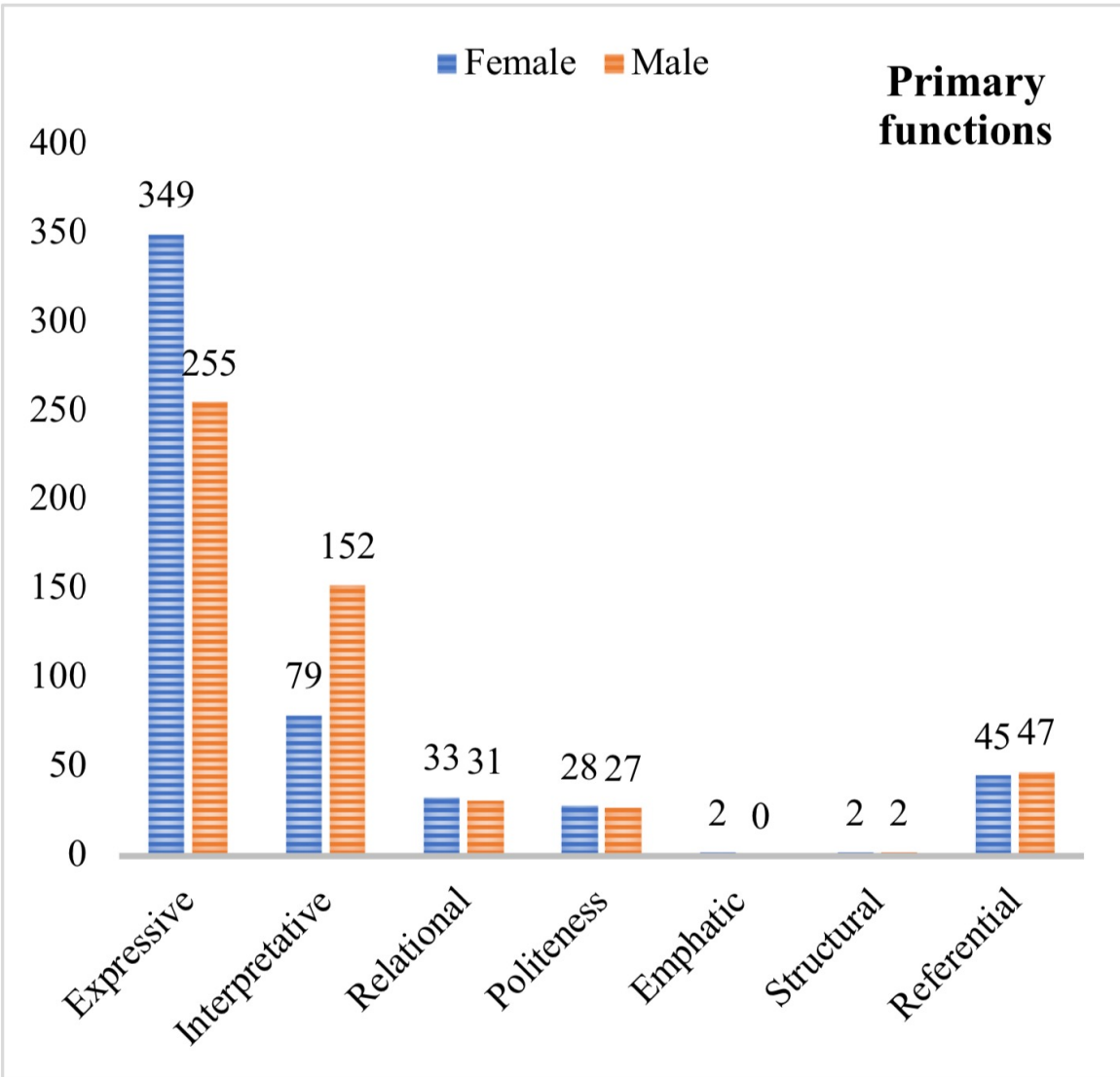


Topic and emoji functions

Observations:

- **Entertainment:** more **expressive** emoji, fewer interpretative emoji.
 - n228: *#NiNoKuni, finally on #Netflix! It's beautiful* 🥰🥰🥰🥰
- **Politics:** more **interpretative** and **referential** emoji, fewer expressive, relational and emphatic emoji.
 - n653 : *So #Brexit's goin' great, then* 🙄
- **Everyday life:** more **relational** emoji, fewer structural emoji.
 - n1046 : *I went looking for them but they'd all gone xx is this a regular thing to look out for?* 💕💕

Gender and emoji functions



Observations:

- **Female** users tend to use more **expressive** emoji.
 - n859: *I think Boris should make lock down compulsory and all country's should shut their borders to protect their citizens* 😞
- **Male** users tend to use more **interpretative** emoji.
 - N681 : *Since today Berlin is the largest city in the EU. Thanks #brexit* 🙌
- Other emoji functions are evenly distributed.
- Overall, slightly more emoji were sent by women (538 vs. 514).

Conclusions

- Emoji can display a **wide variety of functions**, though some functions are more frequent.
- Emoji are not used in the same way in different **contexts**, in different **languages**, and by different **people**.
- Some examples are hard to classify:
 - *F1 Drive to Survive S2 out on my birthday. Get In 🏎️🏎️*
 - *christmas is almost there! 🎄👴📺*
 - *can't say it's not been entertaining 🤔😂😂*
 - *Wednesday nights 🙌👯*
 - 😊 *do you also think this emoji is creepy?*
 - *Selon Emmanuel Macron, l'Europe, "c'est le choix de la Nation française, plusieurs fois réaffirmé dans des référendums" 🤔 🎵 Le problème, c'est l'arem 🎵*

Conclusions

- **Further research perspectives:**
 - Collecting **more data**, analyzed by more annotators.
 - Comparing the use of emoji in **other languages and platforms**
 - Examining emoji functions in a **longitudinal perspective** (ex.: 2012 vs. 2022).
 - Using **deep learning** models to understand emoji meanings (“emoji embeddings” ?)

Thank you ! 🙏

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