Pragmatic Functions of Emoji on Chinese Social Media

Weining Zeng*

Tsinghua University High School International, Beijing, China

*Corresponding Author: wnzeng@hotmail.com

Abstract. Emojis, expressive symbols on social media, gained popularity due to its convenience and versatility. This paper explores the pragmatic functions of four specific emojis (doge, smile, funny face, love) from comments on Bilibili and Weibo. A corpus of 229 comments is created through manual collection and crawler, and annotated according to the intext functions of the emojis. The results show that the four emojis are mainly used as "external tonal complements" and used for friendliness or joking, which can be explained by the renderings of the emojis. Furthermore, the friendly-looking love emoji and smile emoji also have occasional uses for sarcasm. Emojis used mainly for joking have softening uses, while emojis used mainly for friendliness are found to have sarcastic uses instead of softening uses. A possible cause of these negative uses is the censorship in Chinese social media. The research serves as a basis for Chinese emoji uses research of greater scale and provides insight for sentiment analysis with emojis.

Keywords: emoji; pragmatics; social media; corpus; Bilibili; Weibo.

1. Introduction

The widespread use of online communication and social media apps lead to the creation of emojis. With emojis, users can compensate for the unavailability of nonverbal cues in face-to-face communication such as facial expression and gestures. [1] Emojis act as gestures, for their absence of grammar and syntactic restriction, and context dependence. Similar to gestures, emojis assist speakers to describe concepts, convey tones, perform speech acts, and respond to others (also called "backchannelling"). [2] Furthermore, "co-text emojis react with logical operators in the same manner that gestures do" in inference. [3] Despite the functions mentioned above, emojis also help to build social relationships [4], enhance informality [5], and create desired ambiguity or clarity [6]. Emojis are creative, convenient, and efficient substitutes for conveying non-textual information in an online setting. [7, 8]

Context is the key to analyze and interpret emojis [9]. The meaning of an emoji relies on the accompanied text if it exists. However, text cannot reduce the ambiguity of an emoji to readers due to the presence of irony. [10] Cultural context is another significant factor to be considered. It shapes the shared knowledge of people and determines how individuals perceive each visual element. [1,8] In addition, online platforms with different renderings of emojis can also affect individual's interpretation. [11] Thus, Bilibili and Weibo, which are both Chinese social media and have similar emoji renderings are chosen for this study.

In order to explore the function of emojis, Yang and Liu suggested five ways that emojis are used with text [12]:

1) "Componential substitution": emojis are used to replace part of a sentence and create the same meaning
2) "Inter-modal reinforcement": emojis are used to repeat an idea or subject in a piece of text
3) "tonal complement (external and internal)": emojis are used to add a tonal effect or a piece of emotional information to the message
4) "non-tonal complement": emojis are used to add contextual information to the message
5) "creative illustration": emojis are used freely to construct desired playful sequences

This is an overall complete framework as it includes the main ways that emojis are used. However, it is not specific enough, especially for "external tonal complement". Providing a tone is vague, for tones vary very much. To make the framework more detailed, the category can be divided into subcategories based on the emoji's tone or speaker's intent.

After the start of the COVID-19 pandemic, emoji uses by Chinese people were largely influenced. [13] In the present study, based on Yang and Liu's framework, the latest use of specific emojis on Chinese social media becomes the focus. Therefore, the goal of this study is to find the current patterns of the use and the functions of the four emojis (shown in Table 1) on Chinese social media platforms, Bilibili and Weibo:

1) doge emoji
2) smile emoji
3) funny face emoji
4) love emoji

Table 1. Selected Emojis of This Study

Funny Face Emoji (Bilibili)	Doge Emoji (Bilibili)	Doge Emoji (Weibo)	Smile Emoji (Bilibili)	Love Emoji (Bilibili)
				

The reason for selecting the four emojis above is that they are expected to have multiple functions depending on different contexts. The potential of their ambiguity is a question worth exploring. Plus, they are predicted to be the most frequently used emojis on Bilibili and Weibo. Therefore, the choice will also benefit the ease of data collection.

2. Methodology

2.1 Data Collection

Data of the corpus are collected manually or using a crawler on Github. The crawler is designed to collect comments on a given Bilibili video. With modification, the program can filter comments and record those that include one of the four selected emojis. Eventually, the comment is saved and annotated in an Excel document.

The sources of the data are the two Chinese social media platforms, Weibo and Bilibili. The former platform is a blogging website. The latter one, where most data come from, is a video posting platform. The searching range is limited to the popular recent posts of the platforms only, for the corpus can be more representative of the majority on the most users of the platforms. Comments that contain a wanted emoji and have more than 20 likes are collected. Setting this threshold excludes invalid uses of emojis that are not recognized by other users.

2.2 Data Analysis

To build a corpus, the collected comments are then annotated with the function of the emoji by the two standards: Yang and Liu's emoji co-occurrence framework and the six functions below.

In the collection process, it is found that the comments belong to either tonal complement or inter-modal reinforcement. For further analysis, I subcategorized two groups into six specific function types:

1) *Friendliness*: Emojis are used for decorating the text and modifying the speaker's attitude to seem more positive and polite. Otherwise, a piece of text may look too serious.

2) *Joking*: Emojis are used to produce humor, to clarify a joke made by the speaker, or to respond to others' jokes.

3) *Softening*: Emojis are used to be more "friendly" when attacking someone and make the speaker less aggressive.
4) *Sarcasm*: Emojis are used to offend others ironically
5) *Like*: emojis are used to express appreciation
6) *Romantic*: Emojis are used as a reference to romantic relationships

Categories 1-4 belong to the tonal complement group. Categories 5&6, designed intentionally for the love emoji, belong to the inter-modal reinforcement group. A criterion is shown in Figure 1 to identify each emoji as one of the six functions above.

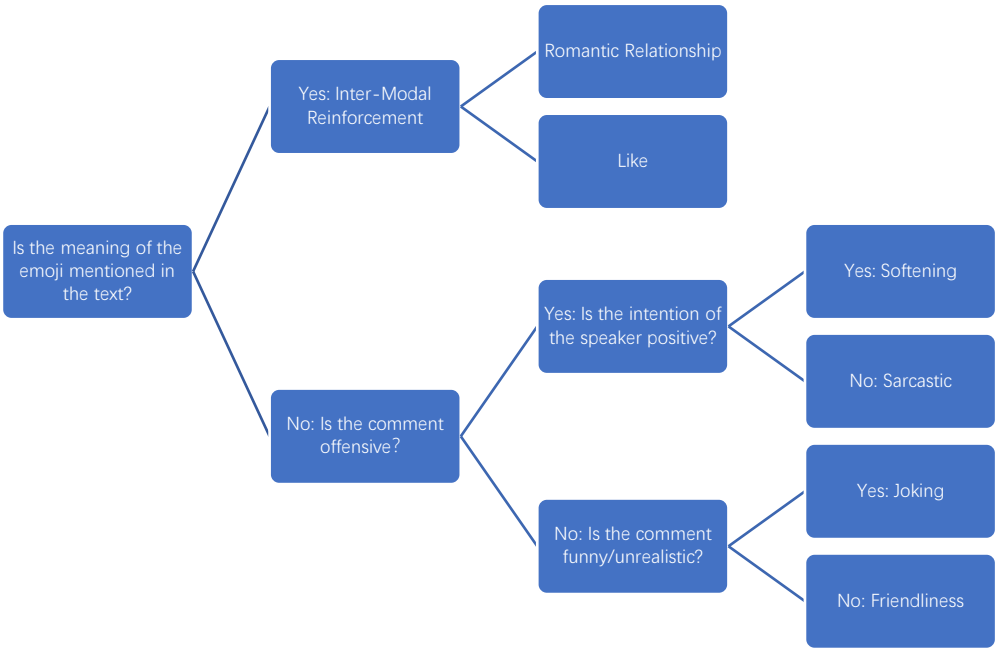

Fig. 1 Criterion for identifying emoji function

After annotation, the occurrence of each type of emoji is analyzed and studied.

3. Results

3.1 Platforms

Overall, the corpus has 229 items of text-emoji mixed comments from Weibo (51 items) and Bilibili (178 items). Since the two platforms have different renderings for some emojis, only the comments including the doge emoji or the funny face emoji are collected because they resemble the Bilibili version.

3.2 Emoji

The corpus includes 100 comments with the doge emoji, 50 comments with the smile emoji, 50 comments with the love emoji, and 29 comments with the funny face emoji. (See Table 2)

Table 2. Number of items of each emoji

Emoji	love	doge	smile	Funny face	Total
Occurrence	50	100	50	29	229

3.3 Annotation Samples

Table 3 provides six annotated comments from the corpus as examples for each of the six emoji functions.

Table 3. Number of items of each emoji

Sample Translation	Annotation
I called the national postal office last time and it compensated me at full price [doge]	Friendliness
You always verbally support Shanghai during its disease outbreak, are you implying that you support Shanghai to be independent? [doge]	Joking
Take my blessing and go away immediately [smile]	Softening
Go rob the banks, it's unfair to make you design games [smile]	Sarcasm
Wow! What a pleasant song to hear!	Like
Here I bless the couple to be forever in love [love][love][love]	Romantic

3.4 Componential patterning

The pie chart in figure 2 shows the percentage of each componential patterning. Most of the emojis (214 items) work as an external tonal complement. There are also 12 items of inter-modal reinforcement, mainly contributed by the love emoji comments, and 3 items of internal tonal complement, contributed by the doge emoji comments. This proves the distribution in Yang and Liu's corpus study, and creates the need for a deeper analysis using the categories designed in this paper.

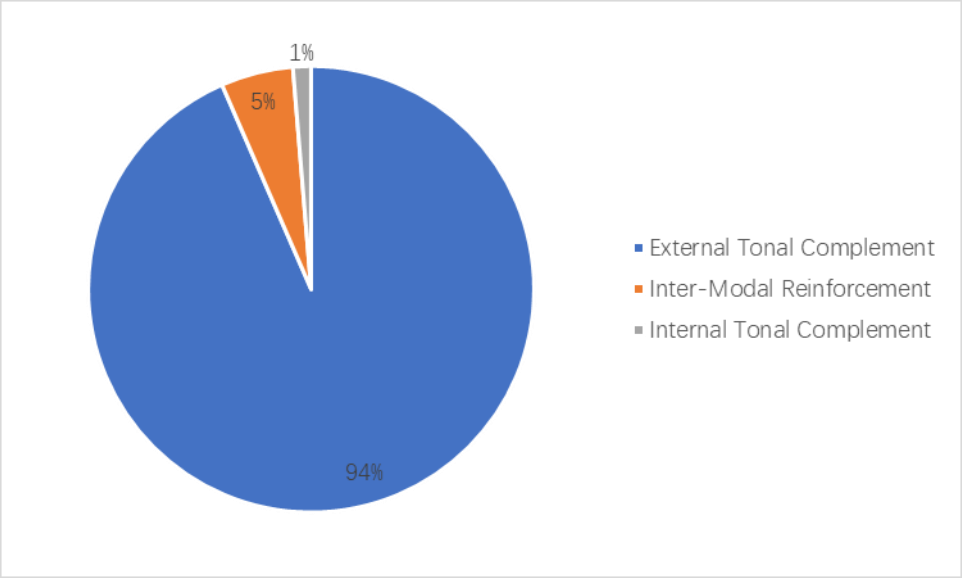

Fig. 2 Componential Patterning Distribution

3.5 Emoji Function

The distribution of the six functions for each emoji is shown in Table 4.

Table 4. The Distribution of Function of each Emoji

Function\Emoji	Doge	Love	Smile	Funny	Total
Friendliness	35	18	33	5	91
Joking	56	0	9	23	88
Like	0	21	0	0	21
Softening	9	0	3	1	13
Sarcasm	0	4	5	0	9
Romantic	0	7	0	0	7
Total	**100**	**50**	**50**	**29**	**229**

According to Table 4, more than half (56%) of the doge emoji comments are used for joking. The second most common use, which is being friendly, consists of 35% of the emoji doge items. In addition, it can be also used for softening, as shown in the remaining 9% of the doge emoji comments.

The love emoji is mainly used to express like (42%), which is its literal meaning. Another frequent use is being friendly, taking up 36% of the 50 love emoji comments. The love emoji can be used for reference to romantic relationships (14%) and sarcasm (8%) as well.

Within the 50 comments including the smile emoji, 66% of those are identified as friendliness and 18% are identified as joking. It also has exceptional uses for softening (6%) and sarcasm (10%).

Lastly, the dominant use of the funny face emoji is joking (79%), followed by friendliness (17%) and softening (4%) in the 29 funny face emoji comments.

Overall, all four emojis are used for friendliness. Emojis that have the function of joking can also be used for softening tension. Additionally, emojis that are rarely used for joking have the function of sarcasm.

4. Discussion

4.1 Componential Patterning

The occurrence of tonal complement and inter-modal reinforcement resembles the pattern shown in the study by Yang and Liu, where tonal complement and inter-modal reinforcement are the most common. The absence of componential substitution, non-tonal complement, and creative illustration can be explained by their rareness shown in Yang's and Liu's study. In addition, the choice of emoji can also influence the results. All four emojis chosen for this study are widely recognized by online users as tone modifiers. Thus, it is extremely rare for the four emojis to have functions other than tonal complement and inter-modal reinforcement.

4.2 Problems in Data Gathering

There are only 29 comments collected for the funny face emoji, whereas 50 items are expected. One possible explanation is the replacement of the funny face emoji with another similar and more popular emoji on Bilibili called Chigua (Shown in Figure 3). The eyes of the Chigua emoji resemble those of the funny face, but the Chigua emoji has an additional element: eating a watermelon. "Eating a watermelon" in an online context is the same as "eating popcorn" in western countries, which means anticipating something interesting to happen. Combining the funny face with "eating a watermelon" allows the Chigua emoji to be used in a wider range of scenarios. Thus, it can be inferred that users preferred the more inclusive Chigua emoji over the funny face one.

Fig. 3 Chigua Emoji

Another explanation is the replacement of the funny face emoji with the doge emoji. Even though they look different, the doge emoji has the same functions as those of the funny face emoji, according to Table 4. Moreover, the doge emoji appears to be less extreme and more versatile. Therefore, it is reasonable that the funny face emoji is used rarer than expected when they are so many "competitors".

4.3 Limitations of Data Analysis

The sorting of the emoji uses is based on subjective judgments. Since individuals that are different in age and gender have varied interpretations on emojis [14, 15], the results are limited to the annotator's interpretation. A more rigorous standard that minimizes the variation of subjective judgments is necessary to make the patterns more sound. Surveys can also be employed to create a more representative interpretation.

Mixed functions also occur in some items of the corpus. On some occasions, a doge emoji can be used for joking and friendly at the same time. Furthermore, depending on the reader's standpoint, the emoji can have different meanings. As the possible uses of an emoji widen, it can have vague meanings. For this reason, more confusions and difficulties appear when annotating the data.

4.4 Emoji Function

From the results based on Table 4, all four emojis can make a message friendly. This can be explained by the cartoon style and the funny, cute facial expressions of the emojis. Readers automatically relate the emoji to the speaker's attitude. Consequently, it affects the tone readers perceive from the text.

In agreement with He [16], the sarcastic use of the love emoji and the smile emoji can be explained by the environment of the Chinese social media platform. Due to the relatively strict censorship on comments and users' desire to express their discontent, they invented ambiguous expressions that seem more polite to avoid being banned. This also influences the use of emojis, for their meanings are indefinite and context-dependent in nature.

4.5 Future Advancement

The size of the corpus can be enlarged with data samples from multiple sources. In this way, the corpus can be more inclusive and representative of all Chinese social media users. A larger corpus can also contribute to the development of sentiment analysis in natural language processing technology. Providing machines with a training set including emojis can improve their accuracy when handling text-emoji mixed messages.

5. Conclusion

A text-emoji mixed comment corpus is created with annotations of the functions of the four emojis (doge, love, funny face, smile). The annotation is based on the five types of componential patterning suggested by Yang's paper and is based on the six functions (friendliness, joking, like, romantic, softening, sarcasm) mentioned in this study. Data samples originate from popular posts on Bilibili and Weibo.

The emojis are mostly used for tonal complement. According to Table 4, doge emoji and funny face emoji are used for joking mostly. The dominant use of the love emoji is for expressing like, and the smile emoji is used mainly for being friendly. All four emojis can be used for being friendly because of their art styles. Emojis that are used for joking are also used for softening tension. The use of love and smile emojis for sarcasm is caused by censorship.

Limitations occur in the methodology for annotation. Emojis with mixed functions and subjective evaluation questions the soundness of the results. A larger corpus, gathering samples from more sources, is needed to solve the problem. In addition, a more rigorous standard for annotation is necessary for confirming the results. The study can provide insight into the development of sentiment analysis in the future, helping with emoji-related tasks.

References

[1] Q. Bai, Q. Dan, Z. Mu, and M. Yang, "A Systematic Review of Emoji: Current Research and Future Perspectives," Frontiers in Psychology, vol. 10, Oct. 2019, doi: 10.3389/fpsyg.2019.02221.

[2] R. Zhou, J. Hentschel, and N. Kumar, "Goodbye Text, Hello Emoji," Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems - CHI '17, May 2017, doi: 10.1145/3025453.3025800.

[3] J. Ge-Stadnyk, "Communicative functions of emoji sequences in the context of self-presentation: A comparative study of Weibo and Twitter users," Discourse & Communication, vol. 15, no. 4, pp. 369–387, Mar. 2021, doi: 10.1177/17504813211002038.

[4] D. L. Rodrigues, B. P. Cavalheiro, and M. Prada, "Emoji as Icebreakers? Emoji can signal distinct intentions in first time online interactions," Telematics and Informatics, vol. 69, Apr. 2022, doi: 10.1016/j.tele.2022.101783.

[5] T. L. Sandel and P. Qiu, "Code Switching and Language Games in Contemporary China; or, Convergence and Identity Construction on WeChat," in Communication Convergence in Contemporary China, P. S.-W. Dodge, Ed. Michigan State University Press, 2021, pp. 193–195.

[6] Y. Wang, Y. Li, X. Gui, Y. Kou, and F. Liu, "Culturally-Embedded Visual Literacy," Proceedings of the ACM on Human-Computer Interaction, vol. 3, no. CSCW, pp. 1–24, Nov. 2019, doi: 10.1145/3359170.

[7] B. Fischer and C. Herbert, "Emoji as Affective Symbols: Affective Judgments of Emoji, Emoticons, and Human Faces Varying in Emotional Content," Frontiers in Psychology, vol. 12, Apr. 2021, doi: 10.3389/fpsyg.2021.645173.

[8] R. Pasternak and L. Tieu, "Co-linguistic content inferences: From gestures to sound effects and emoji," Quarterly Journal of Experimental Psychology, vol. 75, no. 10, pp. 1828–1843, Feb. 2022, doi: 10.1177/17470218221080645.

[9] A. Wagner, S. Marusek, and W. Yu, "Sarcasm, the smiling poop, and E-discourse aggressiveness: getting far too emotional with emojis," Social Semiotics, vol. 30, no. 3, pp. 305–311, Apr. 2020, doi: 10.1080/10350330.2020.1731151.

[10] A. Wagner, S. Marusek, and W. Yu, "Emojis and Law: contextualized flexibility of meaning in cyber communication," Social Semiotics, vol. 30, no. 3, pp. 396–414, Apr. 2020, doi: 10.1080/10350330.2020.1731198.

[11] C. L. Franco and J. M. B. Fugate, "Emoji Face Renderings: Exploring the Role Emoji Platform Differences have on Emotional Interpretation," Journal of Nonverbal Behavior, vol. 44, pp. 301–328, Jan. 2020, doi: 10.1007/s10919-019-00330-1.

[12] X. Yang and M. Liu, "The pragmatics of text-emoji co-occurrences on Chinese social media," Pragmatics. Quarterly Publication of the International Pragmatics Association (IPrA), vol. 31, no. 1, pp. 144–172, Aug. 2020, doi: 10.1075/prag.18018.yan.

[13] C. Liu, X. Tan, T. Zhou, W. Zhang, J. Liu, and X. Lu, "Emoji use in China: popularity patterns and changes due to COVID-19," Applied Intelligence, Mar. 2022, doi: 10.1007/s10489-022-03195-y.

[14] J. Cui, "Respecting the Old and Loving the Young: Emoji-Based Sarcasm Interpretation Between Younger and Older Adults," Frontiers in Psychology, vol. 13, May 2022, doi: 10.3389/fpsyg.2022.897153.

[15] S. C. Herring and A. R. Dainas, "Gender and Age Influences on Interpretation of Emoji Functions," ACM Transactions on Social Computing, vol. 3, no. 2, pp. 1–26, Apr. 2020, doi: 10.1145/3375629.

[16] J. He, "Sharing emotions or/and making allies: emoji's interpersonal function in Chinese social media news comments," Social Semiotics, Jan. 2022, doi: 10.1080/10350330.2021.2025355.