

# Sticker and Emoji Use in Facebook Messenger: Implications for Graphicon Change

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*This study posits that graphicon use follows an evolutionary trajectory characterized by stages. Drawing on evidence that the uses and functions of emoticons have changed over time and that the introduction of emoji affected the popularity and usage of emoticons, we examine the uses of the newer types, emoji and stickers, and consider the relationship of stickers to emoji. Adapting the apparent-time method from the sociolinguistic study of language change, we compare sticker and emoji use by English-speaking Facebook Messenger users, exploring how they are used and under what conditions using semi-structured interviews and a large-scale survey. Stickers are argued to be more pragmatically marked for emotional intensity, positivity, and intimacy, characteristic of a more recent stage of evolution, while emoji use exhibits signs of conventionalization and pragmatic unmarking. The identification of patterns that characterize evolutionary stages has implications for future graphicon use.*

**Keywords:** Emoji, Emoticons, Evolution, Instant Messaging, Sociolinguistic, Motivations, Stickers

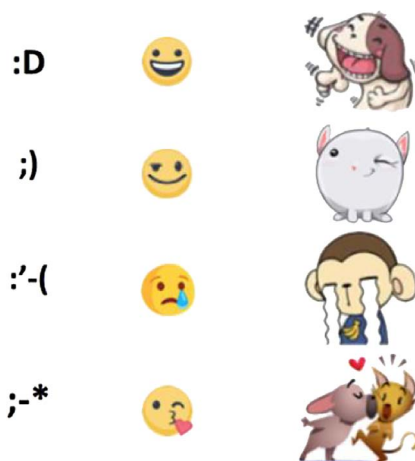
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Since its introduction in the early 1970s, textual computer-mediated communication (CMC) has been enriched by graphical icons (henceforth *graphicons*<sup>1</sup>) that express emotion and attitude. These have been introduced and adopted in successive waves, from emoticons (sideways faces typed in ASCII characters), emoji (designed, like emoticons, to facilitate emotion expression in text-based conversation, but visually richer, more expressive, and more complex), and, more recently, stickers (larger, more elaborate, character-driven illustrations or animations to which text is sometimes attached). Each wave has brought more varied and elaborate icons. At the same time, some continuity has been maintained, in that the core members of each set are representations of facial expressions associated with affect, such as smiles, laughs, winks, and frowns, and of nonverbal gestures, such as waving, kissing, and sticking out one's tongue (Figure 1).

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**Figure 1** Examples of “laugh,” “wink,” “cry,” and “kiss” emoticons, emoji, and stickers on Facebook.

As with verbal language, graphicon use appears to change dynamically over time. ASCII emoticons have evolved new uses since the 1970s. From expressing emotion, they came to indicate the illocutionary force or the intended tone of textual utterances (Dresner & Herring, 2010), and now mostly function like punctuation (Markman & Oshima, 2007; Provine, Spencer, & Mandell, 2007). In this study we ask: Are the uses and functions of the newer types, emoji and stickers, also evolving? If so, does their evolution resemble that for emoticons? Moreover, the popularity and usage of emoticons has been affected by the rise of their successor, emoji (Pavalanathan & Eisenstein, 2016). Therefore, we also ask about the relationship of stickers to emoji. Might sticker use eventually eclipse the popularity that emoji currently enjoy? To address these questions, we adopt an evolutionary approach, which views changes over time as being on a trajectory characterized by stages. Specifically, we posit the existence of an overarching evolutionary trajectory according to which newer graphicon types overtake older types in popularity and partially displace them over time. In this process, graphicon uses and functions also shift.

There is suggestive evidence of graphicon displacement taking place already. Emoji are often referred to as the new generation of emoticons (e.g., Novak et al., 2015). They are used more frequently than emoticons on social media (Pavalanathan & Eisenstein, 2016; Prada et al., 2018), and they are replacing emoticons in their illocutionary force and tone marking functions (Herring & Dainas, 2017). Analogously, Jezouit (2017) claims that “stickers are the new emoji.” They are already as popular as emoji in East Asia, if not more popular (O’Donoghue, 2016). However, less is known about the reception and use of stickers in Western countries. This article addresses this gap from a historical comparative perspective, comparing stickers and emoji. In interpreting this comparison, we draw on literature that compares emoji with their predecessor, ASCII emoticons.

It would be possible in principle to investigate the evolving relationship between emoji and stickers in the West by collecting longitudinal data dating back to the introduction of each graphicon type. However, a number of challenges inhere in such an approach. Much graphicon-rich CMC is nonpublic and/or ephemeral, and hence difficult to access. Moreover, information about users’ motivations and contexts of use are typically lacking in historical data, and social motivations play an important role in behavioral change. In this study we adopt an alternative, synchronic approach adapted from

sociolinguistic studies of language change (e.g., Labov, 1963, 1972). “Apparent time studies” (Bailey, 2002) infer evidence of change-in-progress from patterns of language use and speakers’ attitudes in present time. Usage patterns, speaker attitudes toward linguistic forms, and characteristics of the forms themselves can provide evidence that change is occurring and where it is heading (Milroy & Milroy, 1985).

Adapting this approach for graphicons, in this study we interview and survey emoji and sticker users about their current use of, and attitudes toward, emoji and stickers and make inferences about change-in-progress. In support of these inferences, we compare our findings with documented patterns of past change (cf. Labov, 1972) in the relationship between ASCII emoticons and emoji, on the assumption that there are parallels between that relationship and the relationship between emoji and stickers. As further support, we invoke contemporary graphicon use in Asia, where sticker adoption is more advanced than in the West.

Our analysis is focused on the relationship between sticker and emoji use by English-speaking Facebook Messenger users. Messenger is an ideal platform for the purposes of this comparison, in that it offers free e-stickers for users to download and use in chat sessions, in addition to a wide array of emoji. Moreover, with over one billion active users and availability in more than 40 languages, Messenger is one of the most popular messaging apps worldwide (Statista, 2019). Emoji have been available for use on Facebook since their incorporation into mobile phone apps around 2010, and stickers were enabled in Messenger in 2013 and on the web-based platform one year later (Flynn, 2014). We compare and contrast stickers and emoji in Messenger by exploring how they are used, who sends them, and under what conditions they are sent (in what moods and to which types of recipients). Toward this end, we present qualitative data from 13 semi-structured interviews and quantitative data from a survey of 2,275 users who send stickers and emoji. We ask, to what extent do stickers and emoji share functions or differ, and how is each being used? Is it possible to infer evidence of ongoing evolution based on present usage? If so, how likely are stickers to eventually displace emoji in popularity among English-speaking CMC users? To help address these questions, we draw parallels between trends in Messenger graphicon use, phases in style evolution, and processes of linguistic change.

## Background

### Evolution and language change

Evolutionary trajectories that involve changes in both frequency of use and meaning have been described for artistic styles (Schmid-Isler, 2000) and language change (Haiman, 1991). These domains can be related to graphicons, which have both aesthetic and communicative aspects.

According to Schmid-Isler (2000, n.p.), “art history distinguishes three *style phases*: the division of an epoch style into its beginning, which is called the archaic or early phase, its high peak, which is called the classic or high phase, and its fall, which is called its decline or mannerism phase.” Although the parallel is not exact, the concept that a historical course is marked by succeeding phases of inception, growth, and decline might be applied to graphicons. We might speak of an early or novelty phase, in which a new type of graphicon is introduced and adopted; a high phase, in which the graphicon proliferates and enjoys popularity; and a conventionalization phase, in which it becomes mundane and takes on new qualities. We will argue that stickers, emoji, and emoticons, respectively, broadly represent these three phases in the Western world.

As for meaning changes, historical linguists have shown that the meanings of words change over time in predictable ways, including through processes of semantic bleaching, broadening, and

conventionalization (Burling, 1999; Haiman, 1991). Semantic bleaching is the loss of specific semantic content, such that only a word's more general or abstract content is retained (Haiman, 1991). Words expressing strong emotions are especially susceptible to bleaching over time, due to people's tendency to exaggerate (i.e., "awfully," "terribly," "love") (Jurafsky, 2014). Relatedly, the meaning of a word may broaden, or go from describing a narrow set of ideas to describing a broad range of them (Haiman, 1991). An example is the word "thing," which generalized from meaning "a public assembly" in Old English to "an entity of any kind" in Modern English (Radford et al., 2009). Last, conventionalization is a process whereby signs evolve from being motivated (e.g., iconic), to becoming more and more conventional, sometimes to the point where the relationship of meaning to form appears arbitrary. Conventionalization was involved in the historical emergence of signed languages for the deaf, for example; gestures that directly imitated actions became more arbitrary and symbolic with repeated use (Burling, 1999).

Increasingly it is recognized that graphicons (especially emoji) have language-like properties and can substitute for words (e.g., Danesi, 2016), as evidenced by Oxford Dictionaries' choice of an emoji as their 2015 "word of the year."<sup>2</sup> We will argue that emoticons, emoji, and stickers show evidence of bleaching, broadening, and conventionalization to varying degrees depending on the evolutionary phase they are in. However, rather than taking place at the level of semantics, or individual graphicon meaning, these meaning changes are occurring at the level of pragmatic function—that is, in how each graphicon type is used.

### Social mechanisms of change

Variationist sociolinguists study language change in present time by taking into account the linguistic and the social embedding of observed changes, with the aim of identifying possible social motivations for the changes (Milroy & Milroy, 1985). Social correlates of language change include the speaker's relationships with others (their social network) and the speaker's attitude toward the variables undergoing change (e.g., whether the variable enjoys prestige in the community of users) (Labov, 1972).

As regards social distance, changes are transmitted widely through weak-tie social networks (Milroy & Milroy, 1985)—that is, via acquaintances rather than intimates—because weak ties bridge between cohesive groups. However, changes often originate in close, strong-tie relationships. We expect emotional language features, including graphicons, to be used in the latter (e.g., Prada et al., 2018), although the weak-tie nature of the internet certainly facilitates their spread. Finally, as regards speaker attitudes, an innovation must enjoy prestige in order to spread (Milroy & Milroy, 1985), although what counts as prestigious varies across contexts. While graphicon use might be viewed as childish and inappropriate in a formal written document, Facebook actively supports use of a variety of graphicons; thus we expect Messenger user attitudes toward emoji and stickers to be generally positive. In this study, we draw broadly on the concepts of social distance and user attitudes in comparing emoji and stickers.

### Graphicons

To understand the relationship between emoji and stickers, it is instructive to consider the relationship of emoticons to emoji, since similar evolutionary forces may be at work.

#### *Emoticons*

Sideways faces typed in ASCII characters were a user innovation first introduced in 1979 as a playful shorthand to distinguish jokes from more serious posts (Krohn, 2004). These faces were interpreted as expressing emotions such as happiness and sadness, hence they were labelled *emoticons* (=emote or

emotion+icons).<sup>3</sup> Widely hailed as compensating for the lack of prosodic and gestural cues in textual CMC (Ganster et al., 2012), ASCII emoticons express emotion (Rezabek & Cochenour, 1998) and mimic nonverbal cues such as winks and tongues sticking out that, when performed offline, conventionally signal behaviors such as flirting and teasing (Lo, 2008). At a more abstract level, their use signals non-seriousness, lightness, and/or humorous intent (Dresner & Herring, 2010).

Emoticon use has evolved over time, however, acquiring secondary functions. In utterance-final position, where they usually occur, emoticons have conventionalized as markers of the user's communicative intent (the illocutionary force of a message; Dresner & Herring, 2010), including emphasizing or downplaying the force of the utterance (Skovholt, Grønning, & Kankaanranta, 2014) and marking its tone (Herring & Dainas, 2017). Illocutionary force or tone marking is a more abstract, "bleached" function than expressing emotion and non-verbal behavior. It also involves broadening of the emoji's original meaning, such that a smiling face, for example, has come to express not just happiness or a positive attitude but also pragmatic meanings such as sincerity, mitigation, and politeness (Dresner & Herring, 2010).

Further, emoticons are conventionalizing as a system of punctuation that indicates utterance mood, and thus are taking on a grammatical role (Dresner & Herring, 2010; Markman & Oshima, 2007; Provine et al., 2007). The history of punctuation in the Western world involved a reduction in the number of punctuation marks that were proposed by scribes and writers starting in the Middle Ages to the few in widespread use today (e.g., the period, question mark, exclamation mark) (Parkes, 2016). Similarly, the wide array of ASCII emoticons that users creatively generated in the early days of the internet distilled over time to a handful that are used most often—e.g., the smile, the open-mouth laugh, the frown, the wink, and the tongue sticking out (Dresner & Herring, 2010). This reduction further parallels trends in offline language change.

### Emoji

Emoji were first introduced in the late 1990s in Japan as part of NTT DoCoMo's i-mode mobile Internet platform (Wattention, 2015); the word means "picture" (*e*) + "character" (*moji*) in Japanese. Emoji attained global popularity after being incorporated into Unicode, furthered by Apple's support for emoji on the iPhone in 2010 (Novak et al., 2015). Designed, like emoticons, to facilitate emotion expression in text-based conversation (Kelly & Watts, 2015; Lu et al., 2016), emoji also substitute for non-verbal cues (Ganster et al., 2012) and influence the tone and intended interpretation of messages (Kelly & Watts, 2015; Novak et al., 2015).

At the same time, emoji are visually richer, more expressive, and more complex than ASCII emoticons (Herring & Dainas, 2017; Lu et al., 2016), making use of color and, in some cases, limited motion. Emoji are also more flexible in distributional terms than emoticons; they often appear in clusters and less often at the end of sentences (Novak et al., 2015). Functions have also been reported for emoji that have not been reported for emoticons, such as riffing on other graphicons and narrating sequences of events (Herring & Dainas, 2017), and to "maintain a conversational connection; end a conversational thread; play; and create new (unique, secret) meanings" (Kelly & Watts, 2015). Consistent with their greater vividness, Ganster et al. (2012) found that emoji have a stronger impact than emoticons on readers' perceptions of a writer's mood and commitment. Moreover, social media users evaluate emoji as more useful, interesting, fun, easy, and informal than emoticons (Prada et al., 2018).

There is considerable evidence that emoji have displaced emoticons in popularity and use. Internet users report using emoticons less frequently than emoji (e.g., Prada et al., 2018). In the 17 months after Twitter introduced emoji in March 2014, Pavalanathan and Eisenstein (2016) found that emoji use increased while emoticon use dramatically decreased, leading the authors to conclude that emoji and

emoticons “are competing for the same paralinguistic role.” In a comparative analysis of the functions of various graphicon types in Facebook comment threads, [Herring and Dainas \(2017\)](#) found that emoticons and emoji mostly expressed the same functions, especially tone marking. However, emoji were used far more frequently than emoticons (69% vs. 12% of all graphicons). Finally, some platforms, including Messenger, now automatically translate the most common ASCII emoticons into emoji by default. There are work-arounds to prevent this, but automatic translation has doubtless accelerated the displacement of emoticons by emoji.

The decline over time in use of emoticons, together with the bleaching, broadening, and conventionalization they have undergone, places them in the third phase of graphicon evolution: decline and conventionalization. Emoji, in contrast, appear to be in the second phase: peak popularity. Their tendency to become conventionalized as tone markers, similar to emoticons, suggests that they are trending toward the latter part of the second phase.

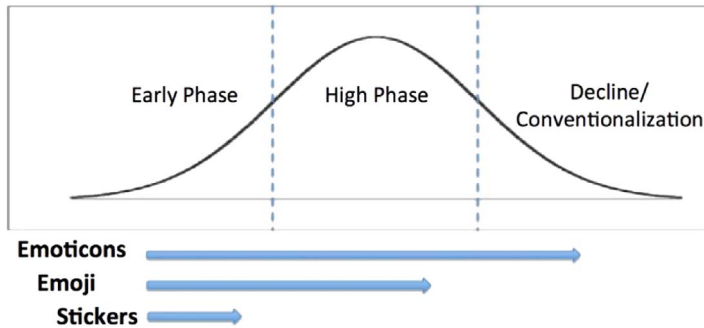
### *Stickers*

Stickers were first introduced in Japan by the Korean internet company Naver in 2011 for the Line mobile platform ([Wikipedia, 2017](#)), and they spread from there to other mobile platforms.<sup>4</sup> Described as “big bold emojis” ([Jezouit, 2017](#)) and “oversized cartoon-like and character-driven emoticons” ([Wang, 2016](#)), stickers are illustrations or animations of characters to which words or phrases are sometimes attached. The elaborate and character-driven nature of stickers portrays body language and facial expressions more explicitly than emoji—they are demonstrative, rather than symbolic—and the rapid rate at which stickers are being generated offers users a great variety of ways to express their emotions, moods, and actions.

Beyond these core uses, stickers have strategic and functional uses. [Lee et al. \(2016\)](#) interviewed users in Korea and identified strategic motivations for sticker use that included self-representation—using stickers “to express self as how one wishes to be perceived by others”; maintenance of social status—using stickers “to adapt to others’ communicative behavior and maintain social ties”; and impression management—using stickers “to project to others a particular image one wishes to be perceived by—for instance, to appear courteous or witty.” The researchers also identified functional uses of stickers such as a substitute or supplement to text, and as greetings and closings in instant messaging conversations.

Another interview study ([Zhou, Hentschel, & Kumar, 2017](#)) asked participants in China about their use of stickers and emoji in WeChat. The participants reported using the two graphicon types for many of the same reasons, including to give non-verbal cues, to modify a textual message, to send greetings on festivals and holidays, and “when they do not know what to say.” However, several reasons motivated them to use stickers over emoji, including because stickers better represent their personality traits and physical features, and because stickers “embed [...] meanings that [a]re rich, subtle, and culturally relevant” ([Zhou et al., 2017](#), p. 5). Users also exchanged stickers to construct collaborative stories, or simply for the sake of exchanging them. One heavy sticker user said she even sent stickers to her boss, suggestive evidence that, for that Chinese user, the uses of stickers had generalized to workplace environments.

One reason for the popularity of stickers in Asian countries is that Chinese, Japanese, and Korean characters are tricky to input digitally, and stickers save text input time and effort ([Ma, 2016](#); [Russell, 2013](#)). In the West, stickers are available on the web on Facebook, on mobile platforms such as Messenger, iMessage, and WhatsApp, and Skype offers free e-stickers for use in chat sessions. Still, [Russell \(2013, n.p.\)](#) speculates that “the appeal of stickers may be different in Western markets, in part because Romanic alphabets are better supported on smartphones.”



**Figure 2** Three phases of graphicon evolution.

Little research has reported on sticker use in Western contexts. Tagg (2015), in a case study of immigrant communication in the UK, notes in passing that “[s]tickers in Viber are used both by themselves to convey a message and alongside other semiotic modes, chiefly language. [They] can be used to fulfill a range of functions: to add an element of fun, convey emotion, or make a point, [such as when a] sticker serves as a ‘nudge’ to prompt a response” (pp. 25–26). In their study of Facebook comment threads, Herring and Dainas (2017) found that both emoji and stickers are used to express emotional reactions and (especially when standing alone in a message) non-verbal actions. But whereas emoji often signal tone, stickers were used more to illustrate (“mention”) textual content and to “riff” or elaborate playfully on other graphicons. Stickers were also much less frequent (about 8% of graphicons, compared to 69% for emoji). Herring and Dainas (2017) speculate that this was due, in part, to stickers having been introduced on Facebook more recently, but also to stickers being larger and more complex than may be ideal.

In terms of popularity, stickers appear to be in the second phase of evolution (high phase) in Asia, and their popularity continues to rise. In the West, we posit that stickers are in the latter part of the early phase. On Facebook, they are no longer a novelty, but they have yet to achieve extremely widespread adoption. Assuming a Western perspective, and based on the findings of research reviewed in the previous sections, we provisionally situate the relative position of each of the three graphicon types along a broad evolutionary continuum as in Figure 2.<sup>5</sup>

In a recent Taiwanese study, Wang (2016) similarly suggests that “emoticons”<sup>6</sup> have evolved from “text-based” [ASCII emoticons] to “emoticons” [emoji] to “Line stickers/Facebook Messenger stickers/Kakao Talk emoticons” [stickers]. However, aside from the fact that the different types were introduced at different points in time, Wang offers no comparative or functional evidence to support her trajectory. The present study seeks such evidence by comparing the use and functions of emoji and stickers for English speakers.

## Methods

The methodology employed in this study is an adaptation of the apparent-time method in sociolinguistics, which considers patterns of usage, as well as factors such as social distance and attitude, and makes use of interview and survey methods. In the following sections, we describe how we interviewed and surveyed usage patterns of Messenger users.

### The interview study

To gain initial insight into sticker and emoji use, in August 2014, we identified and recruited English speakers who had sent at least one sticker and one emoji using Messenger on their iOS or Android phone in the previous month. We then sent these people an email survey asking a series of standard screener questions (ensuring that they did not work in the tech industry, verifying their age and gender, etc.) and inviting them to participate in research interviews. Thirteen active Messenger users responded and took part in semi-structured interviews at the Facebook campus in Menlo Park, California, nine male and four female, aged 18–47 ( $M = 29$ ,  $SD = 9.5$ ). All interview participants lived in the vicinity of Menlo Park and signed Facebook's informed consent form.

The interviewees were asked to scroll through their conversations, first with close, then distant relationships. As they scrolled, they were asked why they had sent specific stickers and emoji as each appeared. Toward the end of the interview, they were asked to summarize their uses of stickers and emoji. Each interview lasted about one hour. The interviews were conducted by the first author and video- and audio-recorded for note taking and analysis purposes.

The recorded interviews were thematically analyzed to discover patterns and gain insight into sticker and emoji use. An inductive process was followed, whereby key words, concepts, and reflections were first noted while reviewing the recordings; these were then clustered and refined in successive stages as themes emerged. The resultant themes were then cross-checked against each relevant example to assure fit. Themes centered around *reasons* for use of emoji/stickers; the *closeness* of the person they were sent to; and the *mood* the interviewee was in when they sent the emoji or sticker; as well as how the interviewee thought emoji and stickers differed and what they felt the limitations were of stickers, in particular. The themes were developed by the first author and reviewed by the second author.

### Findings

On average, each interviewee identified one emoticon, 1.8 emoji, and 2.4 stickers in the messages they had recently sent; 70 graphicon sends were identified in total.

#### *Reasons for use*

The interviewees reported that emoji are used to modify a textual message, whereas stickers are more self-contained. Expressing emotion was the most common reason given for sending an emoji or a sticker, especially for emoji. Stickers express emotion, but they are more intense and louder than emoji due to their size.

Stickers are usually their own self-contained message. Whereas emojis, I'll add them into most of my messages to convey emotions, but because they're smaller and can be put with words, they're easier to use. Whereas stickers you can't use them with words, so you only use them for their size and intensity. (Male, P12)

Reasons that were given for using emoji specifically include making the message more fun and colorful; strengthening a verbal message; softening its tone; to clarify that something is a joke; and to add cuteness to a message. In other words, most usages for emoji revolve around modifying the textual message itself.

For stickers, interviewees mentioned all of the same usages as listed above, especially to add cuteness. Stickers used to modify a textual message, though, generally did so in a louder, more intense way.

[Stickers] are for hyperbole, melodrama (. . .) they're over the top. (Female, P6)

Both stickers and emoji also fulfilled miscellaneous functions, such as to acknowledge receipt of a message, to respond with speed and convenience, and to send a graphicon in response to another





**Figure 3** Stickers used to express the sender’s personality.

**Table 1** Graphicon Usage Themes That Emerged From the Interviews

Emoji Usage Themes	Sticker Usage Themes
Express emotion	Express emotion
Emphasize the message	Emphasize the message
Soften the message	Soften the message
Clarify a joke	Clarify a joke
Make conversation fun	Make conversation fun
Add cuteness	Add cuteness
Acknowledgment	Acknowledgment
Speed or convenience	Speed or convenience
Reciprocal exchange	Reciprocal exchange
	Convey something specific
	Make others laugh
	Relate with the receiver
	Be playful or flirty
	Start or end conversation
	Express personality

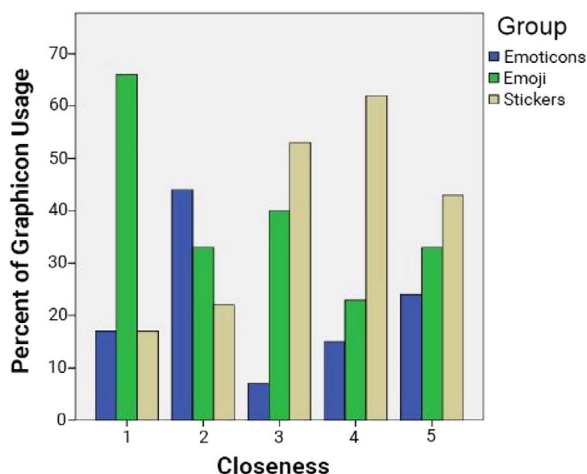
graphicon, such as in a “sticker war.” The latter sometimes resulted in a string of back-and-forth sticker exchanges riffing off of the same topic or emotion (e.g., a dog with heart eyes, followed by a girl holding a big heart, followed by a bunny blowing lots of kisses, etc.).

In addition, interviewees mentioned more autonomous and self-contained sticker uses. For instance, several interviewees mentioned that they used stickers to express their personality, e.g., through sending a nerdy-looking face with glasses to express that the sender is a nerd, or a cat character to “express my inner cat” (Figure 3). None of the interviewees mentioned personality expression when describing emoji use.

Some interviewees also preferred stickers for expressing specific meanings and behaviors that were not available in emoji. For example, one male interviewee pointed to a sticker of a sleepy-looking dog holding a coffee cup that he had sent to his girlfriend that morning.

It kind of reminds the other person how you would act if you were there in person, and that’s what we really like about stickers (. . .) An emoji doesn’t really have that expression. (Male, P1).

Finally, interviewees reported that stickers were better for making others laugh, being playful or flirty, starting and ending conversations, and relating with the receiver by sending something only they would understand. These are all stand-alone usages, rather than modifying the message. Table 1 summarizes the reasons for use that emerged from the interviews.



**Figure 4** Emoticon, emoji, and sticker use by closeness of interviewee to recipient (1 = distant, 5 = intimate).

### Conditions for use

#### *Mood at time of send*

Most of the interviewees said they send stickers and emoji when in a good mood, and for less serious conversations. However, emoji can also be used when feeling mildly upset, or for somewhat serious conversations, because they are not as intense as stickers.

I'm still gonna be less likely [to use an emoji] if I'm depressed or in a bad mood, but maybe a little more likely than to use a sticker. (Male, P7)

I'll use [stickers] in more light conversations like if it's a joke between me and my friends. (Female, P3)

#### *Closeness to recipient*

Stickers and emoji are both used in close relationships. However, stickers are used more in closer relationships, and emoji are more appropriate than stickers for distant relationships (Figure 4). One interviewee explained:

For less close friends I would more likely use emojis. Stickers come out sometimes as loud and overly expressive which I wouldn't do in person with a distant friend. (M P1)

The mood and closeness findings mentioned above are explored quantitatively further below.

#### *Reasons for non-use*

At the end of the interviews, we asked the interviewees about the limitations of stickers and why they did not use them more often. Four people thought stickers were too *cute*, *playful*, *feminine*, or *childish*. Relatedly, five of the nine male interviewees said that stickers are for females or that they contain aspects they perceived as feminine. One commented that "stickers are really girly." Yet, when messaging female friends, these men all sent stickers.

Two people thought stickers were too *big*. Others thought stickers were either too *specific* or too *complicated*. One interviewee preferred the stickers in the Line app because she perceived them to be less complicated and character-driven, which made them less distracting from the meaning they expressed. These comments provide insight into users' attitudes toward stickers, which in turn affect their likelihood of sticker use.

## The survey study

Studies of spoken language change often employ survey methods (e.g., Labov, 1963). In online research, surveys are possible on a much larger scale. To verify the usages and conditions identified in our interview study, we conducted an online survey that asked how stickers and emoji are used and in what conditions. All survey data were anonymized and aggregated.

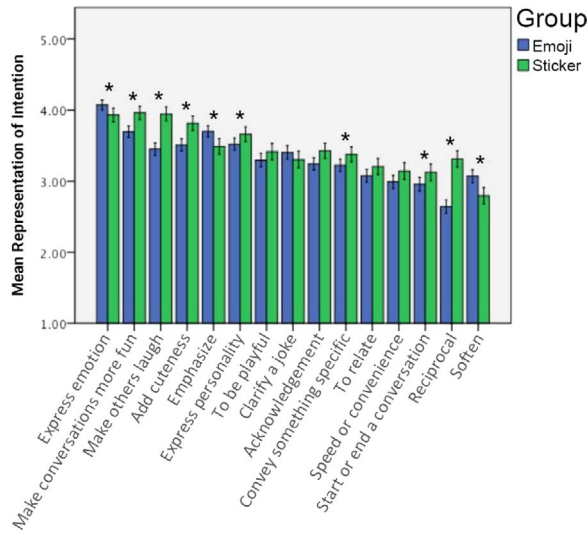
### Participants

To recruit English speaking Messenger users, in September 2014 a standard survey invitation was broadcast to Facebook users above their News Feed on Facebook's web interface, asking if they would like to share their opinion. This invitation came directly from Facebook as an official notice, and clicking on the invitation took participants to the full survey screen. The survey received 2,275 responses: 872 sticker senders (Age:  $M = 32.82$   $SD = 14.29$ , 40% female) and 1,403 emoji senders (Age:  $M = 26.83$   $SD = 11.48$ , 37% female). Sticker senders qualified for the survey if they had sent a Messenger sticker in the previous week but no emoji in the past two weeks. Emoji senders qualified if they had sent a Messenger emoji in the past week but no stickers in the past two weeks. We adopted this two-week constraint so that participants would not be confused about which graphicon they were referring to in the survey. We set the graphicon send window to one week, however, so that participants would be more likely to remember why they sent that particular graphicon. Aside from these graphicon usage requirements and the English-language Messenger requirements, no other constraints were put on recruitment. Not every question was completed by every respondent, so degrees of freedom in reported statistics represent the number of responses available for each test.

### Survey design

The instructions for the survey asked the respondents to locate the most recent Messenger sticker/emoji on their mobile phone and answer questions about it. We had them describe what the sticker or emoji was, as a way of double checking that they were referring to the appropriate graphicon (emoji or sticker) when answering the survey questions. Responses that clearly referred to the wrong graphicon type (less than 1% of the data) were not included in the analyses.

The survey asked why the respondents used emoji or stickers, and under what conditions they were sent. A list of reasons for sticker or emoji use was compiled based on the reasons given by participants in the interview study (see Table 1). We asked survey respondents to locate the last sticker or emoji they sent in Messenger, then to rate on a scale of 1 to 5 (not at all well to extremely well) "how well does each of the following reasons represent why you sent this particular emoji/sticker?" Last, we asked questions about respondents' mood at the time of send ("how did you personally feel at the time you sent this emoji/sticker?" Very negative to very positive) and how close they were to the recipient ("how close do you feel to the person (or people) that you sent this emoji/sticker to?" Not at all close to extremely close).



**Figure 5** Sticker vs. emoji usages. Asterisks represent significant differences ( $P < .05$ ).

**Survey results**

*Reasons for sticker vs. emoji usage*

Independent t-tests were run to compare groups (emoji vs. sticker) for how well each usage represented why the respondent sent the graphicon. These results are summarized in Figure 5. Emoji were significantly preferred for expressing emotion, emphasis, and softening the tone of a textual message ( $P < .05$ ). This is consistent with our interview findings that emoji were better for expressing emotion (less intense) and for modifying the textual message. Stickers were significantly preferred for conveying something specific, starting or ending a conversation, expressing personality, making others laugh, making messages more fun, and adding cuteness, as well as for reciprocal exchanges of stickers ( $P < .05$ ). This supports the interview findings that stickers, too, can modify a message (such as when adding cuteness and making the message more fun), but they are distinct in self-contained usages (such as conveying something specific, starting/ending conversations, expressing personality, and making the recipient laugh).

*Conditions for sticker vs. emoji usage*

We asked the survey respondents about their mood when they sent the graphicon, and how close a relationship they had with the recipient. Both stickers and emoji were sent in a good mood, especially stickers, although differences in mood were not significant,  $t(1633) = 1.56, P = .12$  (Stickers:  $M = 4.33, SD = .94$ , Emoji:  $M = 4.25, SD = .93$ ). On a 5-point scale, from very negative to very positive, 4 was somewhat positive, so these averages are between somewhat and very positive. Stickers were sent in significantly closer relationships than emoji,  $t(1906) = 5.24, P < .001, d = .23$  using Levene’s correction for heterogeneity of variance (Stickers:  $M = 4.00, SD = 1.09$ , Emoji:  $M = 3.74, SD = 1.18$ ). On a 5-point scale from not at all close to extremely close, 4 was very close, and 3 was somewhat close, so both emoji and stickers were sent to close relationships, albeit stickers more so than emoji.

## Discussion

This study set out to describe and compare present-day emoji and sticker use. Specifically, we asked: To what extent do stickers and emoji share functions or differ, and under what conditions is each used? What evidence, if any, can be inferred of the evolutionary stage of each graphicon type? Below we discuss our findings in relation to these questions.

Although our interview subjects identified more functions for stickers than for emoji (Table 1), the survey responses (Figure 5) suggest that the differences in the reasons reported by Messenger users for emoji and sticker use are more a matter of degree than of kind. Compared to emoji, stickers are more fun, cute, humorous, specific, and expressive of personality. Moreover, emoji typically modify text, whereas stickers more often communicate self-contained propositions. This can be traced in part to the larger size of stickers: They cannot appear on the same line as the preceding text, unlike emoji, while their size permits a greater degree of detail and specificity, enabling them to communicate an action or concept on their own, without the need for supporting text. Both graphicon types, but especially stickers, tend to be sent in a good mood (positivity) and to close recipients (strong network ties).

These results reinforce previous findings as regards the emotionality, positivity, and playfulness/non-seriousness of emoji (e.g., Kelly & Watts, 2015) and indicate that stickers possess these qualities to an even greater extent. Along with their relative newness compared to emoji, their size and specificity makes them more intense. They can seem “loud,” “overly expressive,” and hyperbolic, and they are used in more intimate relationships,<sup>7</sup> where their intensity is less likely to be misconstrued as inappropriate. This parallels the finding by Ganster et al. (2012) that emoji are more intense—have a greater impact on the reader’s mood—than emoticons. In other words, stickers are pragmatically *marked* for emotional intensity, positivity, and playfulness relative to emoji, where markedness refers to “the state of standing out as unusual or divergent in comparison to a more common or regular form” (Wikipedia, 2019). Newer forms tend to be more marked than older, more familiar forms.

Conversely, we found that emoji are less playful than stickers, can be used in semi-serious messages, and are more likely to be used in less close relationships than has been previously reported (cf. Kelly & Watts, 2015). This evidence suggests that emoji are becoming pragmatically *unmarked*. That is, as they become more commonplace, their specific pragmatic meanings of playfulness, emotionality, and indexing social intimacy are starting to weaken, consistent with the tendency for words expressing strong emotions to bleach over time (Jurafsky, 2014).

Considered together, the above evidence simultaneously supports and suggests refinements to the evolutionary trajectory in Figure 2. Table 2 identifies seven stages in this trajectory and indicates where each (Western) graphicon type is situated. The table synthesizes knowledge gained through the present study from multiple sources. The findings for emoticons and the relationship of emoticons to emoji are based on previous studies reviewed earlier. The usage findings for emoji and stickers derive from questions asked in the interviews and survey, and the stages for emoji and stickers are our interpretations of observations from the present study in relation to the literature reviewed earlier on language change.

Frequency of use and shifts in pragmatic function show that emoticons and emoji have progressed along the trajectory in Table 2, and suggest that stickers represent a continuation of the same trajectory. ASCII emoticons have passed through all the stages in Table 2, with the exception of “displacing older forms,” since emoticons were the first graphicon type. As they rose in popularity, the emotional intensity of emoticons weakened, and they took on secondary, conventional functions, such as punctuation (Provine et al., 2007), consistent with the tendency for iconic forms to become more arbitrary and symbolic with repeated use (cf. Burling, 1999). Emoticon use has been declining for several years. Meanwhile, emoji are currently very popular (e.g., Prada et al., 2018); they overlap in function with

**Table 2** Phases and Stages in the Life-Cycle of Graphicons

Phase	Stage	Usage	Emoticons	Emoji	Stickers
Early Phase	1. Initial innovation	Pragmatically marked: emotional; playful, informal use w/ close relationships	X	X	X
	2. Highly variable use		X	X	X
	3. Rise in popularity/frequency of use		X	X	X
High Phase	4. Overlap in meaning/function with older form(s)	↕	X	X	X
	5. Displacing older form(s)		n/a	X	
Decline/Convention-ization	6. Conventionalization, bleaching, broadening	Pragmatically unmarked: less emotionally intense; can be used in semi-formal messages w/ distant relationships	X	X	
	7. Declining popularity/frequency of use		X		

emoticons (Herring & Dainas, 2017); and they are displacing emoticons in use in social media (Pavalanathan & Eisenstein, 2016), evidence that they have reached the high phase. Further, emoji have conventionalized as tone indicators of accompanying textual utterances (Herring & Dainas, 2017). To this, the present study adds the comparative evidence that emoji are starting to undergo pragmatic unmarking relative to stickers, bringing emoji to stage 6. Their frequency of use has not yet started to decline, however.

As for stickers, we know from observational evidence that they have increased in use on Messenger since sticker sets were first made available for use in messages. Our interview evidence suggests that attitudes toward stickers are still quite variable; some people commented that stickers are too big and complicated; others, especially men, said they are too cute and “girly,” although they used stickers themselves. We also found extensive overlap between sticker and emoji functions, suggesting that stickers have progressed as far as stage 4. Beyond that, there are hints as to what the future might bring. Our interview participants sent more stickers than emoji, hinting at possible future displacement (stage 5). Both our interview and survey data showed that emoji are currently preferred for softening the tone of a textual message due to the larger size and intensity of stickers, suggesting potential ways the design of stickers could be leveraged to soften message tone. If stickers do eventually take on this conventional function, they will move further along the graphicon life-cycle trajectory to stage 6.<sup>8</sup>

Further evidence in support of this trajectory comes from Asia, where graphicon evolution is more advanced (Wang, 2016). Emoji and stickers were first introduced in Japan, stickers by a Korean company. Over a decade ago, Markman and Oshima (2007) reported that the use of emoticons or kaomiji as punctuation was more conspicuous in Japan than the United States, due to their highly specific and conventionalized meanings. Now stickers are more popular than emoticons or emoji in some Asian contexts, including Chinese mobile messaging.<sup>9</sup> If Asian sticker usage would show signs of conventionalization or pragmatic unmarking, it would further support the evolutionary trajectory

proposed here. The case of the Chinese woman who reported using stickers with her boss (Zhou et al., 2017), a non-intimate social relation, is suggestive in this regard.

As stickers increase their presence worldwide, it has been predicted that they will become “as synonymous with messaging as the humble smiley” (Russell, 2013, n.p.). However, despite the trajectory they are on, several factors suggest that stickers may not displace emoji in contexts such as Facebook Messenger any time soon, at least not without design modifications. Attitude plays a role in users’ willingness to adopt new communicative forms, and our interviewees identified a number of limitations of stickers, including being childish, overly-specific, and too large. The larger size of stickers limits their position in a message, making it harder for them to modify the tone of adjacent text or appear together with other stickers in linear sequences. Of course, stickers could be designed to be smaller. To distinguish them from emoji, they could be personalized beyond what is possible with emoji (e.g., skin tone), to make the experience more intimately about the sender. If they maintain their current size, they could be designed to allow the user to add text to them so that they could substitute for text messages, as is already the case for Chinese stickers (Ma, 2016). Less specific, less cute, and/or more “adult” stickers could also be created, such that they could be sent to platonic friends, when not in a good mood, or in conversations that are not always so lighthearted. Such changes could potentially increase the use of stickers at the expense of emoji. However, another factor inhibiting the spread of stickers is that emoji can be used across operating systems and apps with minor differences, while stickers are typically app-specific, resulting in a more constrained distribution.

### Limitations and directions for future research

A limitation of the survey data is that we included a sampling constraint to reduce participant confusion about which graphicon they had sent. We ensured that they had only sent one type of graphicon in the past two weeks so that survey responses would be more accurate. However, graphicon usages might differ for an unconstrained sample. Further, the data we analyzed from the survey responses reflect self-reported emoji and sticker use, and may not accurately represent the respondents’ actual use. Still, the survey results were generally consistent with the interview findings in terms of mood, closeness to recipient, and reasons for use, which lends validity to the self-report data.

Another limitation is that our study explored graphicon use by English-speaking users; however, there are likely cultural and national differences beyond the scope of this study that are important to disentangle in future work (see, e.g., Ge & Herring, 2018 on emoji use in China). In particular, this study underscores a need for comparative studies of Asian and Western graphicon use to identify cultural differences as well as evolutionary trends. Variation in graphicon use across platforms should also be explored.

In this study we considered emoji and stickers as broad classes of elements. However, instances of each likely vary in reasons for use, mood at time of use, and relationship to the recipient. For instance, we observed in the interview study that unhappy emoji (frowns, crying faces) were used more with distant relationships, and playful and flirtatious emoji (winks, kisses) were used more with closer relationships. A challenge in analyzing the data at this level, however, is reducing stickers to a set of functional categories—such as unhappy, flirtatious, etc.—due to their specificity. At the same time, this degree of specificity is an important characteristic of stickers that distinguishes them from emoji. As such, it merits systematic study.

Finally, this study used principles of language change to inform the design of an in-depth, mixed-methods study to guide the identification of evolutionary trends in CMC. However, although we make claims about graphicon evolution, this is not a longitudinal study that provides direct evidence of change over time. Rather, trends involving emoji and stickers were inferred in apparent time (Bailey, 2002)

from interview and survey data by analogy with previously attested trends for emoticons and emoji, informed by principles of stylistic and semantic (pragmatic) change. That said, longitudinal research is highly desirable to test the evolutionary claims made here. It is also possible that graphicon evolution has changed or progressed since our data were collected in 2014; thus additional studies are needed to monitor the evolutionary trajectory moving forward.

## Conclusion

Our study of English-speaking Messenger users found considerable functional overlap between emoji and stickers, with differences being mainly ones of degree: Stickers are more pragmatically marked for expressivity, intensity, and intimacy. The specificity of stickers also lends itself to self-contained uses and self-representation. But some users commented negatively on the size of stickers, their complexity and specificity, and others found them childish and overly feminine. Based on these findings, we suggested possible design modifications that could increase sticker use.

The findings of this study have implications for the future of stickers on Western platforms beyond Facebook Messenger. We proposed that emoji and stickers are following an overarching evolutionary trajectory like the one that is already well advanced for emoticons and emoji. As part of this trajectory, the highly marked playful and emotive meanings of the older graphicon type in each case weaken and take on secondary, less emotional functions. Another potential outcome of this evolution is a blurring or convergence of the older and the newer types. This already occurs with emoticons input as ASCII characters that convert automatically to, and appear indistinguishable from, emoji on social media platforms such as Facebook and Messenger. Similarly, emoji are automatically rendered in a larger size on Messenger when they appear alone on a line, causing them to resemble stickers. This is another mechanism by which a graphicon type may overtake another, that is, by merging with it and ultimately subsuming it.

The fact that the displacement of emoji by stickers is further advanced in Asia lends additional credence to our claim that a similar evolution is taking place in the West. At the same time, cultural differences must be considered. The popularity of anime cartoons in Asia and the difficulty of inputting words in Asian languages through mobile phones predispose Asian users to like and use stickers (Ma, 2016; Rezabek & Cochenour, 1998). Absent these cultural supports, and given the limitations identified in this study, it is possible that stickers will remain a secondary graphicon type in Western mobile and web-based media, overlapping in function with, but never entirely displacing, emoji. Thus, the future of stickers, rather than being predetermined by evolution, is subject to the decisions of designers and social media developers, as well as cultural factors.

## Notes

- 1 Graphicons on Facebook include emoticons, emoji, stickers, animated GIFs, image macros, and video clips as they are used in CMC (Herring & Dainas, 2017). This study focuses on emoji and stickers (and emoticons, for comparison). These types share general forms and functions that set them apart from the other graphicon types.
- 2 The “crying tears of joy” emoji; <http://blog.oxforddictionaries.com/press-releases/announcing-the-oxford-dictionaries-word-of-the-year-2015/>, accessed June 14, 2016.
- 3 While horizontal [sideways] emoticons like :) and :( are used more in Western countries, kaomoji (literally *kao* “face” + *moji* “character”), or vertical emoticons such as ^\_^ and >\_<, are more popular



- among Asian users (Lu et al., 2016). The first kaomoji was a user innovation that appeared on the Japanese ASCII Net in 1986 (Wattention, 2015).
- 4 These include Viber, WeChat, WhatsApp, MessageMe, Kik, Line, and Kakao Talk. Y-C. Lee (2017) estimated that over one billion users send e-stickers daily online alone.
  - 5 This is an idealized representation that is not intended to reflect empirical data.
  - 6 In Chinese, the word *biaoqing* “expression” refers to emoticons, emoji, and stickers (de Seta, 2018). Asian scholars sometimes use “emoticons” in English to refer to all three.
  - 7 Wang (2016) found that the use of stickers can also actively enhance perceptions of intimacy, especially in positive communicative contexts.
  - 8 There is less evidence of conventionalization and pragmatic unmarking for emoji and (especially) stickers than for emoticons because emoticons are older and have had more time to evolve. Nonetheless, the available evidence is suggestive that similar processes are taking place for emoji and stickers, especially when compared with their usage in Asia.
  - 9 Ying Tang, personal communication, September 30, 2018.

## References

- Bailey, G. (2002). Real and apparent time. In J. K. Chambers, P. Trudgill & N. Schilling (Eds.), *The handbook of language variation and change* (pp. 312–332). Malden, MA: Blackwell.
- Burling, R. (1999). Motivation, conventionalization, and arbitrariness in the origin of language. In B. J. King (Ed.), *The origins of language: What nonhuman primates can tell us* (pp. 307–350). Santa Fe, NM: School of American Research Press.
- Danesi, M. (2016). *The semiotics of emoji: The rise of visual language in the age of the Internet*. London, England: Bloomsbury Publishing.
- de Seta, G. (2018). *Biaoqing*: The circulation of emoticons, emoji, stickers, and custom images on Chinese digital media platforms. *First Monday*, 23(9). <http://dx.doi.org/10.5210/fm.v23i9.9391>.
- Dresner, E., & Herring, S. C. (2010). Functions of the nonverbal in CMC: Emoticons and illocutionary force. *Communication Theory*, 20, 249–268.
- Flynn, K. (2014). Now you can put stickers in your Facebook comments. *HuffPost Tech*. Retrieved from [http://www.huffingtonpost.com/2014/10/14/facebook-stickers-comments\\_n\\_5982546.html](http://www.huffingtonpost.com/2014/10/14/facebook-stickers-comments_n_5982546.html).
- Ganster, T., Eimler, S. C., & Krämer, N. C. (2012). Same but different!? The differential influence of smiles and emoticons on person perception. *CyberPsychology, Behavior & Social Networking*, 15(4), 226–230.
- Ge, J., & Herring, S. C. (2018). Communicative functions of emoji sequences on Sina Weibo. *First Monday*, 23(11) (5 November). Retrieved from <https://firstmonday.org/ojs/index.php/fm/article/view/9413/7610>.
- Haiman, J. (1991). From V/2 to subject clitics: Evidence from Northern Italian. In E. C. Traugott & B. Heine (Eds.), *Approaches to grammaticalization: Focus on theoretical and methodological issues* (pp. 135–158). Amsterdam, The Netherlands: John Benjamins.
- Herring, S. C., & Dainas, A. (2017). “Nice picture comment!” Graphicons in Facebook comment threads. In *Proceedings of the Fiftieth Hawai’i International Conference on System Sciences* (pp. 2185–2194). Los Alamitos, CA: IEEE Press.
- Jezouit, B. (2017). Stickers are the new emoji. *Envato Blog*. Retrieved from <https://envato.com/blog/stickers-new-emoji/>.
- Jurafsky, D. (2014). *The language of food: A linguist reads the menu*. New York: WW Norton & Company.

- Kelly, R., & Watts, L. (2015). Characterising the inventive appropriation of emoji as relationally meaningful in mediated close personal relationships. In *Experiences of Technology Appropriation: Unanticipated Users, Usage, Circumstances, and Design*. University of Bath.
- Krohn, F. (2004). A generational approach to using emoticons as non-verbal communication. *Journal of Technical Writing and Communication*, 43, 321–328.
- Labov, W. (1963). The social motivation of a sound change. *Word*, 19, 273–309.
- Labov, W. (1972). *Sociolinguistic patterns*. Philadelphia, PA: Philadelphia University Press.
- Lee, Y.-C. (2017). Effects of branded e-stickers on purchase intentions: The perspective of social capital theory. *Telematics and Informatics*, 34, 397–411.
- Lee, J. Y., Hong, N., Kim, S., Oh, J., & Lee, J. (2016). Smiley face: Why we use emoticon stickers in mobile messaging. In *Proc. 18th International Conference on Human-Computer Interaction with Mobile Devices and Services Adjunct* (pp. 760–766). New York: ACM.
- Lo, S. K. (2008). The nonverbal communication functions of emoticons in computer-mediated communication. *CyberPsychology and Behavior*, 11(5), 595–597.
- Lu, X., Ai, W., Liu, X., Li, Q., Wang, N., Huang, G., & Mei, Q. (2016). Learning from the ubiquitous language: An empirical analysis of emoji usage of smartphone users. In *Proceedings of the 2016 ACM International Joint Conference on Pervasive and Ubiquitous Computing* (pp. 770–780).
- Ma, X. (2016). From Internet memes to emoticon engineering: Insights from the Baozou comic phenomenon in China. In *HCI 2016* (pp. 15–27). doi:10.1007/978-3-319-39513-5\_2.
- Markman, K. M., & Oshima, S. (2007, October). *Pragmatic play? Some possible functions of English emoticons and Japanese kaomoji in computer-mediated discourse*. Paper presented at the Association of Internet Researchers Annual Conference 8.0: Let's Play!, Vancouver, B.C., Canada
- Milroy, J., & Milroy, L. (1985). Linguistic change, social network and speaker innovation. *Journal of Linguistics*, 21(2), 339–384.
- Novak, P. K., Smailovic, J., Sluban, J., & Mozetic, I. (2015). Sentiment of emojis. *PloS One*. doi: <https://doi.org/10.1371/journal.pone.0144296>
- O'Donoghue, J. J. (2016, September 2017). Emoji: The evolution of emoticons. *The Japan Times*. Retrieved from <http://www.japantimes.co.jp/life/2016/09/17/digital/emoji-evolution-emoticons/#.WPBDoRLytPM>.
- Parkes, M. B. (2016). *Pause and effect: An introduction to the history of punctuation in the West*. London, England: Routledge.
- Pavalanathan, U., & Eisenstein, J. (2016). More emojis, less: The competition for paralinguistic function in microblog writing. *First Monday*, 21(11).
- Prada, M., Rodrigues, D. L., Garrido, M. V., Lopes, D., Cavalheiro, B., & Gaspar, R. (2018). Motives, frequency and attitudes toward emoji and emoticon use. *Telematics and Informatics*, 35(7), 1925–1934.
- Provine, R. R., Spencer, R. J., & Mandell, D. L. (2007). Emotional expression online: Emoticons punctuate website text messages. *J. Language and Social Psychology*, 26(3), 299–307.
- Radford, A., Atkinson, M., Britain, D., Clahsen, H., & Spencer, A. (2009). *Linguistics: An introduction* (2nd ed.). Cambridge, England: Cambridge University Press.
- Rezabek, L. L., & Cochenour, J. J. (1998). Visual cues in computer-mediated communication: Supplementing text with emoticons. *Journal of Visual Literacy*, 18, 201–215.
- Russell, J. (2013). Stickers: From Japanese craze to global mobile messaging phenomenon. Retrieved from [https://thenextweb.com/asia/2013/07/12/stickers/#.tnw\\_OydN6oLa](https://thenextweb.com/asia/2013/07/12/stickers/#.tnw_OydN6oLa).
- Schmid-Isler, S. (2000). The language of digital genres – A semiotic investigation of style and iconology on the World Wide Web. In *Proceedings of the 33rd Hawaii International Conference on System Sciences* (pp. 1–9). Los Alamitos, CA: IEEE.

- Skovholt, K., Grønning, A., & Kankaanranta, A. (2014). The communicative functions of emoticons in workplace e-mails. *Journal of Computer-Mediated Communication*, 19(4), 780–797.
- Statista (2019). Most popular global mobile messenger apps as of January 2019, based on number of monthly active users. Retrieved from <https://www.statista.com/statistics/258749/most-popular-global-mobile-messenger-apps/>.
- Tagg, C. (2015). Language, business and superdiversity: A report on social media across case studies. *Working Papers in Translanguaging and Translation*, Paper 6. Retrieved from <http://www.birmingham.ac.uk/generic/tlang/index.aspx>.
- Wang, S. S. (2016). More than words? The effect of line character sticker use on intimacy in the mobile communication environment. *Social Science Computer Review*, 34(4), 456–478.
- Wattention. (2015). Western emoticons vs. Japanese kaomoji. Retrieved from <http://www.wattention.com/western-emoticons-vs-japanese-kaomoji/>.
- Wikipedia. (2017). Sticker (Messaging). Retrieved from <https://en.wikipedia.org/wiki/Sticker>.
- Wikipedia. (2019). Markedness. Retrieved from <https://en.wikipedia.org/wiki/Markedness>.
- Zhou, R., Hentschel, J., & Kumar, N. (2017). Goodbye text, hello emoji: Mobile communication on WeChat in China. In *Proceedings of CHI 2017*. Retrieved from <http://www.tandem.gatech.edu/wp-content/uploads/2017/01/CHI17-Zhou-GoodbyeTextHelloEmoji.pdf>.