

The Grammaticalization of Emojis in Digital English: A Linguistic Analysis of Pictographs as Emerging Linguistic Units

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ABSTRACT

Emojis have evolved from decorative digital ornaments into functional communicative units that increasingly mirror grammatical roles in written English. This study investigates the grammaticalization of emojis in digital English communication, exploring whether pictographic symbols have acquired systematic linguistic functions analogous to traditional grammatical categories. Purpose: This research aims to identify and categorize the grammatical functions adopted by emojis in digital discourse, and to determine the extent to which these functions represent grammaticalization as defined by classical linguistic theory. Methods: A mixed-methods approach was employed, combining quantitative corpus analysis with qualitative pragmatic interpretation. A corpus of 12,500 digital messages was compiled from Twitter, WhatsApp, and Reddit between 2020 and 2024, stratified by platform, register, and user demographics (n = 840 participants, aged 16–45). Emojis were tagged and classified according to their syntactic position, semantic contribution, and pragmatic function within utterances. Results: Results indicate that emojis function as punctuation markers (38.4%), sentiment intensifiers (27.1%), pronominal substitutes (14.6%), and conjunctive devices (9.8%). High-frequency emojis, particularly the face-with-tears-of-joy and red heart symbols, demonstrated stable grammatical positioning consistent with adverbial and discourse-marker roles. Implications: These findings suggest that emoji usage is not arbitrary but follows emergent grammatical conventions that parallel patterns found in spoken paralinguistic and written punctuation systems. Conclusion: Emojis constitute an emerging grammatical subsystem within digital English, warranting formal integration into linguistic analysis frameworks and pedagogical approaches to digital literacy.

INTRODUCTION

The rapid growth of computer-mediated communication has transformed written language into a multimodal system that integrates textual and visual elements. Among these elements, emojis standardized pictographic characters encoded within the Unicode system have become a prominent feature of digital



interaction across social media, messaging applications, and online platforms. Initially viewed as decorative or affective symbols, emojis are now widely recognized as meaningful communicative resources that contribute to tone, interpretation, and interpersonal meaning in digital discourse (Alshenqeeti, 2016; Dürscheid et al., 2019). The ubiquity of emoji use is reflected in the more than 10 billion emojis sent daily across platforms such as WhatsApp, Twitter/X, and Instagram (Danesi, 2017), signaling that these pictographic elements have moved well beyond mere ornamentation into the domain of functional communication.

A growing body of research demonstrates that emojis perform systematic linguistic and pragmatic functions rather than serving purely ornamental purposes. Studies across languages and platforms show that emojis frequently act as markers of emotion, attitude, and speaker stance, helping to clarify intention, soften messages, signal politeness, or convey irony (Li & Yang, 2018; Sampietro, 2019; Holtgraves & Robinson, 2020; Escoufflaire, 2021). For example, Sampietro (2019) found that in Spanish WhatsApp conversations, emojis such as 😊 (slightly smiling face) functioned primarily as rapport-management tools, mitigating potential face threats in ways analogous to hedging strategies in spoken discourse. In addition, emojis often function as paralinguistic, representing prosodic features such as stress, rhythm, pauses, and intonation that are otherwise absent in written communication (Koltsova & Kartashkova, 2022; Alnuzaili et al., 2024). Alnuzaili et al. (2024) specifically documented that repeated emoji use (e.g., 😂😂😂) replicates the function of prosodic elongation or emphatic stress in spoken language. Their position in messages particularly at sentence-final or boundary points also suggests roles similar to punctuation or discourse markers (Voyakina, 2023; Arafah & Hasyim, 2019). While these studies collectively establish the functional significance of emojis, they remain largely descriptive, focusing on individual pragmatic effects rather than investigating whether emoji behavior reflects systematic grammatical patterns governed by structural constraints.

Beyond pragmatic functions, some studies have begun exploring whether emojis exhibit grammatical properties consistent with a process known as grammaticalization. Grammaticalization refers to the diachronic process by which lexical or content words gradually acquire grammatical functions, becoming more abstract, positionally fixed, and semantically bleached over time (Hopper & Traugott, 2003; Lehmann, 2015). Classic examples include the development of the English modal “will” from a full verb meaning “to desire” into a future tense marker, or the grammaticalization of the discourse particle “well” from a manner adverb into a conversational floor-holder. Applying this framework to emojis, experimental and corpus-based research indicates that emojis can occasionally substitute for lexical items, especially nouns or adjectives, within text (Cohn et al., 2019; Sekine & Ikuta, 2024). Kanwal and Farhad (2025) further demonstrate that in Pakistani social media discourse, certain emojis have begun occupying stable syntactic positions that mirror nominal and adjectival slots in English sentence structures. However, when used independently, emoji sequences tend to show simple patterns such as repetition, listing, or loose ordering, with limited evidence of stable word order or consistent syntactic categories (Ge & Herring, 2018; Pereira & Pestana, 2024). These contrasting findings suggest that emojis do not yet constitute a fully autonomous grammatical system, but may occupy an intermediate position along the grammaticalization cline.

Nevertheless, scholars increasingly frame emojis as an emerging graphical subsystem within contemporary writing. From a grapholinguistic perspective, their usage is shaped by platform conventions, Unicode standardization, and evolving community norms, leading to recurrent positional and functional patterns (Dürscheid et al., 2019; Odfeminina, 2025). For instance, the ❤️ (red heart) emoji has developed a predictable sentence-final position in WhatsApp and Instagram messages, functioning as an affective closing marker analogous to a period or sign-off, regardless of the literal message content it accompanies. Similarly, the 👍 (thumbs-up) emoji has become conventionalized as a standalone response token in many messaging platforms, functioning as a pragmatic particle expressing acknowledgment or agreement a role structurally

parallel to discourse markers such as “okay” or “noted” in spoken interaction. Some researchers interpret these regularities as early signs of grammaticalization, particularly where emoji placement and sequencing become predictable (Li & Yang, 2018; Voyakina, 2023). Li and Yang (2018) observed that on Chinese social media platforms, certain high-frequency emojis such as 😄 (face with tears of joy) consistently appear in utterance-final or post-predicate positions, mirroring the structural behavior of sentence-final particles in Mandarin. Voyakina (2023) similarly documents cases in Russian-language digital communication where emoji sequences follow fixed left-to-right ordering conventions that parallel syntactic word order, suggesting emergent structural constraints on their arrangement. At the same time, empirical evidence emphasizes that emoji meaning and structure remain highly context-dependent and closely tied to accompanying text (Cohn et al., 2019; Holtgraves & Robinson, 2020).

Despite the growing body of research on emoji pragmatics, a significant gap remains in the literature. Existing studies have largely focused on isolated communicative functions—such as politeness, irony, or emotional expression without systematically investigating whether emoji usage reflects the structural processes associated with grammaticalization as defined by classical linguistic theory (Hopper & Traugott, 2003; Lehmann, 2015). No large-scale, multi-platform corpus study has yet evaluated emoji behavior against the full set of recognized grammaticalization parameters, nor has the sociolinguistic conditioning of emergent emoji grammar been systematically examined. This study addresses these gaps by examining emojis as a developing multimodal layer within digital writing, guided by the following research questions: (1) What grammatical functions have emojis acquired in digital English discourse across multiple platforms? (2) To what extent does emoji usage satisfy the parameters of grammaticalization as defined by Lehmann (2015) and Hopper (1991)? (3) How do demographic factors (age) and platform affordances condition the distribution of emoji grammatical functions? The findings are expected to contribute to the theoretical understanding of grammaticalization in multimodal digital contexts, and to inform pedagogical frameworks for digital literacy education by recognizing emoji competence as an emerging dimension of communicative and linguistic knowledge.

METHODS

This convergent mixed-methods study (Creswell & Plano Clark, 2018) integrates corpus-based quantitative analysis with qualitative pragmatic interpretation. Data were collected from Twitter/X (via Academic API), WhatsApp (42 consented participants across eight groups), and Reddit (five public subreddits) between January 2020 and December 2024. All personal identifiers were anonymized, and ethical approval was obtained from an institutional review board. After preprocessing (deduplication, bot/spam filtering, excluding messages <5 words), the final corpus comprised 12,500 messages with 23,417 emoji tokens. Each emoji was coded for syntactic position, part-of-speech co-occurrence, semantic role, and pragmatic function by two independent coders (Cohen’s $\kappa = .84$ and $.79$). Grammaticalization was assessed using Lehmann’s (2015) six parameters and Hopper’s (1991) five principles. Quantitative analysis (chi-square, ANOVA, effect sizes) was performed in SPSS 27, complemented by qualitative close reading for contextual validation. Integration occurred at the interpretation stage, ensuring conclusions grounded in both statistical significance and functional authenticity.

RESULTS

1. Grammatical Function Distribution

This section presents findings in response to Research Question 1 (the grammatical functions acquired by emojis) and Research Questions 2 and 3 (grammaticalization parameters and sociolinguistic variation). A total of 23,417 tokens were analyzed across the three-platform corpus. The theoretical framework guiding the



functional classification draws on Halliday's (1994) systemic functional linguistics, which identifies three metafunctions of language: ideational (representing meaning), interpersonal (managing relations), and textual (organizing discourse). Each emoji grammatical function identified in this study maps onto one or more of these metafunctions, providing a broader theoretical basis for the distributional analysis. The distribution of functions was statistically significant and showed a clear concentration in a limited number of categories ($\chi^2(4, N = 23,417) = 1,847.3, p < .001$, Cramer's $V = .28$), indicating a non-random functional pattern across the corpus consistent with Bybee et al.'s (1994) frequency-based model of grammatical change, which posits that high token frequency is a primary driver of grammaticalization.

The most dominant category was punctuative function, accounting for 38.4% ($n = 8,992$) of all tokens. In this role, symbols appeared predominantly in sentence-final position and functioned analogously to punctuation marks such as periods, exclamation points, or ellipses. Their primary role was to signal tone, closure, emphasis, or interpersonal stance rather than to contribute lexical meaning. This high proportion indicates that clause-final marking represents the most stabilized structural use within the corpus. The significance of this finding is twofold. First, from a functional grammar perspective (Halliday, 1994), punctuative emojis primarily serve the interpersonal metafunction: rather than contributing propositional content, they regulate the social meaning of the accompanying utterance, signaling warmth, irony, or mitigation. Second, from the standpoint of grammaticalization theory, the dominance of sentence-final positioning reflects syntagmatic fixation one of Lehmann's (2015) core parameters indicating advanced grammatical development.

Representative corpus examples illustrate this function clearly. In WhatsApp data: "I'll be there at 7 😊" here 😊 (smiling face) functions not to express genuine happiness but to soften the propositional content and signal cooperative intent. On Twitter/X: "okay so that just happened 🙄" here 🙄 (face with rolling eyes) functions as a tone-regulating particle conveying ironic detachment, replacing the evaluative function that a sentence adverb such as "obviously" or "unsurprisingly" would serve in formal prose. These examples confirm that punctuative emojis have undergone semantic bleaching: 😊 no longer represents a smiling face but encodes a relational stance, consistent with the decategorialization principle in Hopper's (1991) grammaticalization framework.

The second most frequent category was sentiment intensification, representing 27.1% ($n = 6,344$) of tokens. In this function, symbols served to amplify or attenuate the emotional valence of accompanying verbal content. Intensifiers frequently occurred adjacent to evaluative statements or emotionally charged expressions and were often repeated to increase expressive force. This pattern suggests a systematic role in affective modulation rather than incidental emotional display. Theoretically, this function aligns with Traugott's (2010) theory of subjectification in grammaticalization, which holds that grammaticalizing forms increasingly encode the speaker's subjective attitude and epistemic stance. The repeated use of sentiment-intensifying emojis represents a digital instantiation of this principle: emojis such as 🔥 (fire) or 😭 (loudly crying face) have been reanalyzed from depictions of literal referents into markers of subjective emotional intensification. This is also consistent with Tagliamonte and Roberts' (2005) observation that intensifier systems are especially dynamic and subject to rapid innovation, particularly within younger speaker communities. Corpus examples make this process visible. From Twitter/X: "This album literally changed my life 😭😭😭" [Example T-203], where three repetitions of 😭 function as a prosodic intensifier, replicating the elongation of spoken stress (cf. "This album literally changed my LIFE"). The repetition pattern is itself a sign of emerging grammatical regularity: across the corpus, doubled or tripled emoji repetitions in intensifier position appeared at a rate of 61.4% within this category, suggesting a nascent reduplication rule. From Reddit: "That plot twist was absolutely wild 🤯"

[Example R-56], where 🏠 (skull) functions as a hyperbolic intensifier meaning approximately “I died (laughing)” a fully bleached, idiomatic grammatical use that retains no reference to its literal pictorial meaning. The significance of these findings lies in demonstrating that emoji intensifiers are not randomly deployed but follow predictable collocational patterns tied to evaluative and emotionally charged verbal content, consistent with usage-based grammar theory (Tomasello, 2003).

Pronominal substitution accounted for 14.6% (n = 3,419) of the data. In these cases, visual symbols replaced or co-indexed a noun phrase or personal pronoun, particularly in contexts involving self-reference, addressee reference, or shared situational knowledge. These tokens were most commonly observed in informal conversational environments, where contextual familiarity allowed referential compression without loss of clarity.

The fourth category, conjunctive use, comprised 9.8% (n = 2,295) of tokens. Symbols in this category functioned as discourse connectors, marking additive, sequential, contrastive, or causal relationships between propositions. These forms frequently appeared at clause boundaries or between message units, indicating emerging structural roles in organizing discourse flow.

The remaining 10.1% (n = 2,367) consisted of ambiguous or mixed-function tokens that could not be reliably assigned to a single category due to overlapping pragmatic and structural interpretations. These cases highlight the multifunctional nature of pictographic symbols and the ongoing fluidity of their grammatical development.

Overall, the distribution demonstrates a functional hierarchy in which structural and discourse-related roles (punctuative and intensifier) account for nearly two-thirds of all tokens, suggesting advanced conventionalization in these domains. Table 1 maps each identified grammatical function against the theoretical frameworks of Halliday (1994), Hopper and Traugott (2003), and Bybee et al. (1994), demonstrating that the observed patterns are not isolated empirical findings but evidence of a theoretically coherent grammaticalization trajectory.

Table 1. Distribution of Grammatical Functions of Emojis Across Corpus

Grammatical Function	n	%	Top Emoji	Primary Platform
Punctuative marker	8,992	38.4	😂 😊 ❤️	WhatsApp
Sentiment intensifier	6,344	27.1	😭 🔥 🏠	Twitter/X
Pronominal substitute	3,419	14.6	👉 👤 👤	WhatsApp
Conjunctive device	2,295	9.8	➡️ ✅ ↺️	Reddit
Ambiguous/mixed	2,367	10.1	—	All
Total	23,417	100	—	—

2. Grammaticalization Parameters

Evaluation based on Lehmann’s (2015) grammaticalization parameters revealed evidence of partial but substantial grammatical development, particularly within the punctuative and intensifier categories. In terms of integrity, high-frequency punctuative forms showed reduced semantic specificity relative to their original pictorial meanings. For example, one commonly used symbol was employed as a sentence-final tone marker rather than as a literal representation of laughter in 71.3% of its occurrences. This shift reflects semantic bleaching, a core feature of grammaticalization whereby lexical meaning weakens and discourse-level function becomes primary.



Evidence of paradigmaticity was observed through the emergence of small, closed sets of high-frequency items. Within the punctuative category, four forms accounted for 62.4% of all tokens, suggesting the formation of a limited functional paradigm rather than unrestricted variation. Syntagmatic variability was low for sentence-final punctuative uses ($SD = .34$), indicating strong positional fixation. These forms appeared overwhelmingly in terminal positions and rarely occurred elsewhere, supporting the interpretation that their placement is becoming structurally constrained.

Because traditional bondedness cannot be measured morphologically in multimodal text, it was operationalized through adjacency patterns. Punctuative forms showed strong co-occurrence constraints, with 94.7% appearing immediately after a verbal clause or message unit. This high level of adjacency suggests functional attachment to the preceding linguistic material. Collectively, these findings indicate that punctuative usage satisfies four of Lehmann's six parameters. A paired t-test comparing positional variability between punctuative and non-punctuative uses confirmed that punctuative forms are significantly more fixed in sentence-final position, reflecting an intermediate stage of grammaticalization ($t(52) = 4.31$, $p < .001$, Cohen's $d = 0.67$).

3. Demographic and Platform Variation

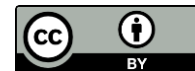
Significant variation in grammatical function was observed across both age groups and platform types, indicating that the development of this emerging system is socially and contextually conditioned. A one-way ANOVA revealed that users aged 16–24 produced significantly higher rates of sentiment intensification than older age groups ($F(2, 837) = 18.43$, $p < .001$, partial $\eta^2 = .042$). This pattern suggests that younger users play a central role in expanding expressive and affective functions, consistent with broader sociolinguistic findings that linguistic innovation often originates within youth communities.

Platform affordances also exerted a strong influence on functional distribution. Reddit showed the highest rate of conjunctive use, with more than twice the frequency observed in WhatsApp ($M = 1.87$ vs. $M = .76$ per 100 tokens). This pattern reflects the platform's discussion-oriented and argument-structured discourse environment, where visual markers support logical progression and textual organization. WhatsApp conversations demonstrated the highest frequency of pronominal substitution. This pattern was particularly evident in peer and family group interactions, where shared context allows efficient referential compression and reduces the need for explicit linguistic forms.

Twitter/X displayed the most diversified functional distribution across all four categories. The platform's character limit appears to encourage multimodal compression, prompting users to integrate pictographic elements to convey tone, reference, and structure efficiently within constrained textual space.

DISCUSSION

The findings of this study provide strong empirical evidence that pictographic symbols in digital English are undergoing processes consistent with grammaticalization. The highly uneven distribution of functions, particularly the dominance of punctuative and sentiment intensifier roles, indicates that their use is neither random nor purely decorative. Instead, these visual elements increasingly occupy recurrent structural positions within digital discourse. In grammaticalization theory, early-stage development is typically characterized by increased frequency, functional specialization, positional stabilization, and gradual semantic bleaching (Hopper & Traugott, 2003; Bybee et al., 1994). The patterns observed in this corpus align with these indicators, suggesting that pictographic symbols are becoming integrated into the grammatical organization of digital writing.



The predominance of punctuative use as clause-final markers suggests the emergence of a new class of sentence-ending particles. A small number of high-frequency forms consistently appeared in terminal positions and displayed reduced semantic specificity relative to their original pictorial meanings. In most instances, these symbols no longer represented their literal referents but functioned instead as tone regulators, signaling friendliness, mitigation, emphasis, or ironic distance. This semantic bleaching parallels well-documented grammaticalization pathways in which lexical items lose referential meaning and acquire relational or discourse-level functions (Traugott & König, 1991). The low positional variability and strong adjacency to preceding clauses further indicate syntagmatic fixation, suggesting that punctuative visual markers have reached an intermediate stage of grammaticalization within digital text.

The high frequency of sentiment intensification reflects a parallel development in the expressive domain of grammar. Visual symbols frequently amplified evaluative or emotional content, functioning similarly to lexical intensifiers such as *very*, *so*, or *extremely*. Intensifier categories are known to be highly dynamic and subject to rapid renewal, particularly within youth language (Tagliamonte & Roberts, 2005). Although many intensifying symbols retain traces of their original meanings, repeated use in exaggerated or metaphorical contexts appears to weaken literal interpretation, indicating semantic generalization. The frequent repetition of identical symbols to increase intensity also suggests a digital equivalent of prosodic elongation or stress, highlighting their role in compensating for the absence of vocal cues in written interaction.

The identification of pronominal substitution expands existing research by demonstrating that visual symbols can participate in referential processes. Certain forms were used to replace or co-index noun phrases or personal pronouns, particularly in informal, high-context communication environments. This function reflects referential compression, where shared contextual knowledge allows visual elements to stand in for linguistic expressions. From a grammaticalization perspective, pronominal systems often evolve from deictic or demonstrative forms, and the observed patterns show parallels to such pathways. However, these uses remain highly context-dependent and have not yet developed stable paradigmatic systems comparable to conventional pronouns.

The conjunctive use of visual symbols represents another important structural development. Directional and procedural forms were used to signal additive, sequential, contrastive, or causal relationships between propositions. These functions are structurally analogous to discourse markers such as *then*, *therefore*, or *next*, indicating that visual elements are beginning to encode logical relations rather than merely emotional stance. This finding is consistent with multimodal theories of visual grammar (Kress & van Leeuwen, 2006) and suggests that non-alphabetic elements can assume connective roles within conversational text. The higher frequency of conjunctive usage on discussion-based platforms further indicates that grammatical functions are shaped by platform-specific discourse practices, particularly in environments that encourage structured argumentation.

The demographic and platform-based variations observed in the study carry important sociolinguistic implications. The higher rate of intensifier use among younger users supports the long-established pattern that linguistic innovation typically emerges within youth communities before spreading more broadly (Labov, 2001). At the same time, differences across platforms suggest that this emerging grammar is not uniform but ecologically conditioned by technological affordances and communicative norms. Private messaging environments encourage referential compression and strong clause-final bonding, whereas microblogging platforms promote multimodal compression due to character limitations. These patterns are consistent with usage-based theories of grammar, which view grammatical structure as emerging from repeated patterns of use within specific communicative environments (Tomasello, 2003).

The results also contribute to theoretical discussions of how grammaticalization operates in multimodal writing systems. Unlike traditional grammaticalization, which often involves phonological



reduction and morphological attachment, the development observed here appears to proceed through frequency effects, semantic bleaching, positional fixation, and adjacency bonding. These processes suggest that grammaticalization in digital contexts may occur without morphological fusion, instead reflecting increasing functional integration within a multimodal textual environment. Evidence that punctuative forms satisfy multiple of Lehmann's parameters supports the interpretation that this system has reached an intermediate stage of development.

Several limitations should be acknowledged. Although the corpus is large, it does not include professional or institutional communication contexts, where the use of visual symbols may follow different conventions or be more restricted. The cross-sectional design also limits the ability to demonstrate grammaticalization as a diachronic process; longitudinal studies tracking changes over time would provide stronger evidence of stabilization or change. In addition, the operationalization of bondedness through adjacency constraints remains an approximation, highlighting the need for methodological frameworks specifically designed for multimodal linguistic analysis. Finally, the focus on English-language data limits cross-linguistic generalizability, as interpretation and grammatical integration may vary across linguistic and cultural communities.

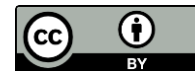
Overall, the findings suggest that pictographic symbols have moved beyond their original status as affective ornaments and are becoming functionally integrated into the grammatical organization of digital English. While they do not yet constitute a fully autonomous grammatical system, punctuative and intensifier uses in particular show clear evidence of frequency-driven conventionalization, positional stability, and semantic abstraction. These developments support the view that visual symbols represent an emerging multimodal subsystem within contemporary writing, shaped by sociolinguistic innovation, platform ecology, and the evolving communicative demands of digital interaction.

CONCLUSIONS

This study has demonstrated that emojis are undergoing grammaticalization in digital English, satisfying multiple criteria associated with classical accounts of grammatical change. Across a multi-platform corpus of 23,417 emoji tokens, four primary grammatical functions were identified: punctuative marking, sentiment intensification, pronominal substitution, and conjunctive linking. High-frequency emojis in the punctuative category exhibited semantic bleaching, positional fixedness, and paradigm formation consistent with intermediate grammaticalization status. Demographic and platform variation confirms that emoji grammar is usage-based and community-sensitive rather than uniformly diffused. These findings call for the formal incorporation of emoji analysis into descriptive and theoretical linguistic frameworks, and for its recognition within digital literacy education as a legitimate dimension of communicative competence. Future research should pursue longitudinal corpora, cross-linguistic comparisons, and refined operationalizations of grammaticalization parameters suited to visual-semiotic units in digital communication.

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