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## NOVERBAL VOSITALARDAN RAQAMLI SEMIOTIK RESURSLARGACHA: RAQAMLI MULOQOTDA MA'NONING FUNKSIONAL QAYTA KODLANISHI

Seytjanova Luiza Taxiroyva

Berdaq nomidagi Qoraqalpoq davlat universiteti, o'qituvchi.

e-mail: [lseytjanova7@gmail.com](mailto:lseytjanova7@gmail.com) ORCID: <https://orcid.org/0009-0006-0160-1504>

### Annotatsiya.

Maqolada an'anaviy noverbal va paralingvistik funksiyalarning raqamli semiotik resurslarda qayta kodlanishi nazariy-analitik usul asosida o'rganiladi. 1970–2026-yillarda olib borilgan tanlangan tadqiqotlar qiyosiy sintez qilinib, funksional saqlanish, semiotik transformatsiya va funksional kengayish mezonlari taklif etiladi. Natijalar bir-biriga to'liq moslik modelining cheklanganligini ko'rsatadi.

**Kalit so'zlar:** noverbal kommunikatsiya, raqamli diskurs, emoji, grafikonlar, multimodallik, paralingvistika, semiotika, raqamli pragmatika.

## ОТ НЕВЕРБАЛЬНЫХ СРЕДСТВ К ЦИФРОВЫМ СЕМИОТИЧЕСКИМ РЕСУРСАМ: ФУНКЦИОНАЛЬНОЕ ПЕРЕКОДИРОВАНИЕ ЗНАЧЕНИЯ В ЦИФРОВОЙ КОММУНИКАЦИИ

Сейтжанова Луиза Тахировна

Каракалпакский государственный университет имени Бердаха, преподаватель.

### Аннотация.

В статье теоретико-аналитическим методом исследуется перекодирование традиционных невербальных и паралингвистических функций в цифровых семиотических ресурсах. На основе сравнительного синтеза избранных исследований, проведённых в 1970–2026 годах, предлагаются критерии функционального сохранения, семиотической трансформации и функционального расширения. Результаты показывают ограниченность модели полного взаимно-однозначного соответствия.

**Ключевые слова:** невербальная коммуникация, цифровой дискурс, эмодзи, графикины, мультимодальность, паралингвистика, семиотика, цифровая прагматика.

## FROM NON-VERBAL CUES TO DIGITAL SEMIOTIC RESOURCES: FUNCTIONAL RECODING OF MEANING IN DIGITAL COMMUNICATION

Seytjanova Luiza Taxiroyva

Karakalpak State University named after Berdakh, Lecturer.

### Abstract.

The article examines the recoding of traditional nonverbal and paralinguistic functions in digital semiotic resources using a theoretical-analytical approach. Selected studies published between 1970 and 2026 are comparatively synthesized, and criteria for functional preservation, semiotic transformation, and functional expansion are proposed. The findings demonstrate the limitations of a model based on complete one-to-one correspondence.

**Keywords:** nonverbal communication, digital discourse, emoji, graphicons, multimodality, paralanguage, semiotics, digital pragmatics.

**Introduction.** Human communication is inherently multimodal. In face-to-face interaction, spoken language operates together with facial expression, gaze, gesture, posture, spatial behaviour, prosody, pauses, and other bodily or vocal resources. Classical work on kinesics emphasizes that body motion is patterned within social and cultural contexts rather than functioning as a transparent universal code [17; xi–xiv]. Poyatos likewise treats language, paralanguage, and kinesics as interrelated components of face-to-face interaction and distinguishes vocal qualities and paralinguistic differentiators from verbal language itself [16; 121–174]. These distinctions are important for digital communication because not every resource that modifies meaning online should automatically be labelled “non-verbal.”

When communication moves to digitally mediated environments, physical co-presence is reduced or absent, but communicative work associated with affect, stance, intensity, interpersonal alignment, reaction, and interaction management remains necessary. Users therefore draw on heterogeneous digital semiotic resources: emoji, stickers, GIFs, platform reactions, punctuation, capitalization, letter repetition, and other graphic or orthographic devices. Herring and Dainas use the umbrella term graphicons for graphical elements including emoticons, emoji, stickers, GIFs, images, and videos, and identify conversational functions such as reaction, tone modification, action, and narrative sequencing [1; 2185].

The present study distinguishes three analytical domains. First, non-verbal cues refer to embodied visual

behaviour such as facial expression and gesture. Second, paralinguistic resources refer to vocal phenomena accompanying language, including intensity, pitch-related effects, hesitation, and vocal lengthening. Third, digital semiotic resources refer to platform-enabled visual, graphic, typographic, and orthographic means through which comparable communicative functions may be represented or recorded. This terminology avoids treating capitalization or punctuation as non-verbal behaviour in the classical sense.

The central concept of the article is functional recoding. It is defined here as an analytical relationship in which a communicative function associated with an embodied or vocal cue is realized through a materially different digital resource. Functional recoding is not presented as a historical claim that one sign literally developed from another. It includes functional analogy, pragmatic compensation, and multimodal re-encoding where these relations are supported by previous research. Consequently, a face emoji is not assumed to be the digital equivalent of a facial expression, and capitalization is not assumed to be literal written intonation.

Recent research reinforces the need for such caution. Weissman shows that emoji can contribute to speaker commitment and that their pragmatic interpretation varies with conventionality and meaning agreement [11; 21–28]. Grosz et al. propose that face emoji accompanying text may comment on a proposition rather than make an independent discourse contribution [12; 905–957]. Herring and Ge-Stadnyk further distinguish emoji that modify textual utterances, function as stand-alone speech acts, or virtually perform actions [13; 124–155]. These accounts demonstrate that digital resources can acquire functions that cannot be reduced to imitation of offline cues.

The study therefore proposes a theoretical-analytical framework for describing relations between traditional non-verbal/paralinguistic functions and digital semiotic resources. Rather than claiming a direct substitution model, it asks how functions are preserved, recoded, or expanded when communication is technologically mediated.

The study addresses three research questions:

RQ1. Through which digital semiotic resources are communicative functions associated with traditional non-verbal and paralinguistic cues reconstructed in digitally mediated discourse?

RQ2. What analytically distinguishable types of relationship can be identified between traditional cues/functions and digital semiotic resources?

RQ3. Why is a one-to-one correspondence model insufficient for explaining the relationship between offline non-verbal behaviour and digitally mediated meaning?

## **LITERATURE REVIEW AND METHODOLOGY**

### **Theoretical Background**

The theoretical point of departure is that embodied communication is structured, contextual, and culturally patterned. Birdwhistell's kinesic approach treats bodily movement as communicatively patterned within culture [17; xi–xiv], while Poyatos's language–paralanguage–kinesics framework separates but relates linguistic, vocal, and bodily channels [16; 121–174]. This distinction prevents the present study from collapsing gesture, vocal intensity, punctuation, and emoji into a single undifferentiated category.

Research on computer-mediated communication has progressively moved from a deficit perspective toward analyses of digitally specific meaning-making. Dresner and Herring argue that emoticons can contribute to illocutionary interpretation rather than merely display emotion [2; 255]. Herring and Dainas broaden this perspective through graphicons and their conversational functions [1; 2185]. Vandergriff similarly treats emoticons, nonstandard punctuation, and lexical surrogates as contextual CMC cues whose meanings are interactionally interpreted rather than fixed [10; 1].

More recent work has refined the pragmatic and multimodal picture. Koltsova and Kartashkova describe emoji as part of multimodal digital communication and identify non-verbal, emotive, pragmatic, punctuation, substitutional, decorative, and rhetorical functions [18; 769–783]. Sasamoto compares emoji and reaction GIFs as resources for communicating emotion and attitude from a relevance-theoretic perspective [19; 393–417]. Herring and Ge-Stadnyk provide a unified illocutionary account of emoji functions [13; 124–155], while Dainas demonstrates empirically that GIFs are multifunctional, with reaction and riffing among their prominent uses [14; 295–325].

Platform and technological affordances also constrain digital meaning. Yudytska's cross-platform study of Twitter/X and Discord shows that technological affordances influence the use of graphic features, while contextual factors and individual preferences limit simple technological determinism [15]. This evidence supports treating “digital discourse” as an analytical umbrella rather than assuming identical practices across platforms.

### **Review Design and Source Selection**

The study uses a structured, targeted theoretical review rather than a systematic review or meta-analysis. The review was conducted in September 2026 through scholarly web indexing and publisher/disciplinary repositories, including publisher platforms (Elsevier/ScienceDirect, Springer Nature, Oxford Academic, John Benjamins, Frontiers, SAGE, and university-press pages), the ACL Anthology, and journal repositories. Searches combined the terms “non-verbal communication”, “paralanguage”, “emoji pragmatics”, “emoji semantics”, “graphicons”, “reaction GIF pragmatics”, “digital multimodality”, “platform affordances”, “digital discourse”, “capitalization”, “letter repetition”, and “computer-mediated communication”.

Two temporal layers were used. Foundational works published before 2022 were retained where they supplied definitions or established analytical categories for kinesics, paralanguage, emoticons, graphicons, orthographic cues, or digital pragmatics. To address the current state of the field, a second search focused on publications from 2022 to September 2026. Twenty-five candidate publications were screened by title, abstract, bibliographic metadata, and relevance to the research questions. Nineteen sources were retained for the final analytical synthesis.

Inclusion criteria were: (1) direct relevance to non-verbal/paralinguistic communication or digital semiotic resources; (2) an explicit semantic, pragmatic, multimodal, interactional, or affordance-based analysis; (3) peer-reviewed journal articles, scholarly books/chapters, or established conference proceedings; and (4) sufficient bibliographic information to verify the source. Sources were excluded when they focused primarily on sentiment classification, emoji prediction, computer vision, marketing outcomes without communicative analysis, or technical encoding issues without relevance to meaning-making. The review is therefore purposive and concept-driven rather than exhaustive.

The analytical procedure involved four stages. First, each retained source was coded for the type of resource discussed (embodied cue, vocal/paralinguistic cue, graphicon, typography/orthography, or platform reaction), the communicative function attributed to it, and the theoretical status of that function. Second, comparable functions across offline and digital modalities were grouped without assuming formal equivalence. Third, the relationships were tested against three diagnostic categories developed in this study. Fourth, the resulting correspondences were checked against the source base and summarized in Table 2. Because no new corpus or experiment is introduced, the proposed framework is explicitly theoretical-analytical and is not presented as an empirically validated model.

#### **Diagnostic Criteria for the Proposed Framework**

The framework distinguishes three relations. Functional preservation is assigned when the principal communicative function remains comparable across modalities while the digital resource mainly provides another channel for that function; affective display through a face emoji is a typical case. Semiotic transformation is assigned when a comparable function is materially recoded into another sign system or modality, such as vocal intensity represented through capitalization or sound lengthening represented through repeated letters. Functional expansion is assigned when a digital resource performs additional discourse-pragmatic work that is not adequately explained by the presumed offline analogue, for example, an emoji functioning as a stand-alone speech act or a GIF simultaneously reacting, riffing, and invoking a recognizable cultural scene.

The categories are diagnostic rather than mutually exclusive natural kinds. A single instance may involve more than one process. For example, an emoji may preserve affective expression while simultaneously expanding into illocutionary modification. Classification therefore follows a dominant-relation principle: the category identifies the analytically most relevant change for the claim being examined, while secondary relations may be noted. This principle explains why the framework contains three categories rather than treating every digital function as a separate transformation type.

#### **Discussion**

##### **Relation to Previous Functional and Pragmatic Models**

The proposed framework differs in analytical level from earlier classifications. Dresner and Herring focus on what emoticons can do pragmatically, including their contribution to illocutionary force [2; 255]. Herring and Dainas classify conversational functions performed by graphicons, such as reaction, tone modification, action, and narrative sequence [1; 2185]. Herring and Ge-Stadnyk classify emoji according to their illocutionary relation to language: modifying an utterance, acting as a stand-alone speech act, or virtually performing an action [13; 124–155]. Dainas examines the multiple discourse functions attributed specifically to GIFs [14; 295–325].

The present framework does not replace these taxonomies and does not relabel their categories as original findings. Instead, it addresses a different question: what kind of relationship exists between a function conventionally associated with embodied/vocal communication and the way a digital semiotic resource realizes, recodes, or extends that function? Thus, “reaction” or “tone modification” describes a discourse function, whereas functional preservation, semiotic transformation, and functional expansion describe the cross-modal relation through which that function is reorganized. This distinction constitutes the specific contribution of the present study.

##### **Facial Expression and Face Emoji**

Face emoji are visually reminiscent of facial expressions, but visual resemblance does not establish communicative equivalence. Boutet et al. demonstrate that emoji affect emotion interpretation, social attribution, and information processing [7; 1]. Grosz et al. show that face emoji accompanying text can operate as comments on a proposition [12; 905–957]. These findings support two simultaneous relations: affective meaning may be functionally preserved, while the placement of an emoji within written discourse permits pragmatic functions that embodied facial expression does not perform in the same compositional way.

Accordingly, the relation is better represented as facial affect → affective/interpersonal function → face emoji → preserved affect plus digitally organized pragmatic interpretation. The key point is not that the emoji reproduces a face, but that a selected graphic sign participates in the interpretation of a written utterance.

##### **Gesture, Emoji, Stickers, and Platform Reactions**

Hand emoji and stickers may visually represent conventional gestures such as applause, waving, pointing, or approval. Yet their interpretation is mediated by cultural conventions and platform use. The shift from an embodied gesture to a selectable sign also changes agency and timing: the user can place, repeat, combine, or withhold the sign as part of message composition. In such cases, functional preservation may coexist with semiotic transformation.

Platform reactions require an additional distinction. A reaction icon is not merely an emoji inserted into a message; it is often an interface-level action attached to another user’s post or message. Its meaning therefore depends on platform affordances and available reaction inventories. Yudytska’s evidence that technological affordances influence graphic-feature use across platforms supports treating such mechanisms as platform-specific rather than universal digital equivalents [15].

### **Prosody, Paralanguage, and Graphic Recoding**

Prosody and vocal qualities belong to the paralinguistic domain rather than to visual non-verbal behaviour. Poyatos discusses loudness, pitch, voice qualities, and other vocal phenomena as components of paralanguage [16; 175–244]. In informal digital writing, some comparable functions can be visually recoded through capitalization, repeated punctuation, unconventional spelling, and letter repetition. Bai et al. summarize earlier CMC research associating capitalization with increased vocal intensity and multiple exclamation marks with excitement [6; 1].

Letter repetition illustrates semiotic transformation particularly clearly. Kalman and Gergle found that repetitions in CMC often, though not invariably, emulate spoken non-verbal cues [9; 187]. A form such as “soooo” visually extends a written segment and can evoke temporal or expressive extension in speech. However, once conventionalized online, such forms also develop graphostylistic meanings that cannot be reduced to acoustic imitation. The appropriate relation is therefore paralinguistic function → graphic/orthographic recoding, not “non-verbal cue → written substitute.”

### **Pauses, Hesitation, and Contextual CMC Cues**

Ellipsis and lexical surrogates such as “hmm”, “uh”, and extended forms such as “hmmm” can invite interpretations of hesitation, reservation, delay, or stance. Vandergriff’s contextual analysis groups emoticons, nonstandard punctuation, and lexical surrogates among CMC cues and emphasizes their contextual interpretation [10; 1]. This is another case where functional analogy should not be mistaken for historical transformation: an ellipsis is not a physical pause, but it may pragmatically cue a reading associated with hesitation or incompleteness.

### **Reaction GIFs and Represented Bodily Performance**

Reaction GIFs provide the clearest case of represented rather than embodied performance. Sasamoto analyzes emoji and reaction GIFs as resources for communicating emotion and attitude [19; 393–417]. More recently, Dainas found that GIFs can perform multiple pragmatic functions and that reaction and riffing are especially prominent in one-to-one text-message conversations [14; 295–325]. A GIF may therefore represent laughter, shock, applause, dismissal, or another bodily reaction without asserting that the sender physically performed the depicted behaviour.

This relation often combines semiotic transformation with functional expansion. Movement and facial behaviour are re-presented as a selected media object, while the GIF can additionally quote a recognizable scene, establish intertextual alignment, or perform a conversational riff. The communicative function is detached from the sender’s actual body and reorganized through a reusable digital artefact.

### **Platform and Cultural Variability**

The framework should not be interpreted as platform-neutral. Emoji keyboards, sticker systems, GIF search tools, message reactions, display size, threading, and interactional visibility differ across WhatsApp, Telegram, Instagram, TikTok, Facebook Messenger, X/Twitter, Discord, and other environments. Cross-platform research indicates that technological affordances shape graphic-feature use while interacting with context and individual preference [15]. Thus, a resource that functions as a stand-alone message on one platform may function as a lightweight reaction on another.

Cultural variability is equally important. Birdwhistell’s account of kinesics treats body movement as culturally patterned [17; xi–xiv], and contemporary emoji research likewise demonstrates that pragmatic interpretation is not uniform across communities. For this reason, the framework identifies possible functional relations but does not claim universal meanings for individual emoji, gestures, GIFs, or typographic forms. Comparative validation in English and Karakalpak digital discourse remains a separate empirical task.

### **Results**

The theoretical synthesis suggests that digitally mediated meaning is better described as functional redistribution and semiotic recoding than as direct replacement of offline non-verbal behaviour. Three diagnostic relations emerged from the comparative analysis: functional preservation, semiotic transformation, and functional expansion. Table 1 distinguishes these relations from existing function-based classifications.

| Framework                 | Primary question                                                   | Typical categories                                                        | Relation to present study                                               |
|---------------------------|--------------------------------------------------------------------|---------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Dresner & Herring [2]     | What pragmatic work can emoticons perform?                         | Emotion / illocutionary force                                             | Provides pragmatic evidence; not a cross-modal transformation taxonomy. |
| Herring & Dainas [1]      | What conversational functions do graphicons perform?               | Mention, reaction, tone modification, riffing, action, narrative sequence | Function taxonomy used as evidence for digital resources.               |
| Herring & Ge-Stadnyk [13] | How do emoji relate illocutionarily to language?                   | Modify utterance, stand-alone speech act, virtual action                  | Shows functional expansion beyond affect display.                       |
| Dainas [14]               | What discourse functions do GIFs perform?                          | Multiple functions; reaction and riffing prominent                        | Supports GIF polyfunctionality and represented reaction.                |
| Present framework         | How is an offline-associated communicative function reorganized in | Functional preservation; semiotic transformation; functional expansion    | Classifies the relation between functions across modalities, not the    |

|  |                   |  |                           |
|--|-------------------|--|---------------------------|
|  | digital semiosis? |  | discourse function alone. |
|--|-------------------|--|---------------------------|

Table 1. Comparison of existing functional/pragmatic classifications and the proposed relational framework.

Functional preservation is diagnosed when the main communicative function remains comparable although the physical sign is absent. Semiotic transformation is diagnosed when the function is materially recoded through another modality or sign system. Functional expansion is diagnosed when the digital resource performs additional discourse-pragmatic work that cannot be explained by the offline analogue alone. Because digital signs are polyfunctional, the categories may overlap; the dominant-relation principle determines the primary analytical label.

| Traditional cue/domain    | Function                      | Digital resource                     | Primary relation                    | Digital function                                          | Evidence                     |
|---------------------------|-------------------------------|--------------------------------------|-------------------------------------|-----------------------------------------------------------|------------------------------|
| Facial expression         | Affect / interpersonal stance | Face emoji                           | Preservation + expansion            | Affect; pragmatic comment; tone modification              | [7; 1]; [12; 905–957]        |
| Conventional hand gesture | Response / social action      | Hand emoji; sticker                  | Preservation / transformation       | Acknowledgement; approval/disapproval; represented action | [1; 2185]; [18; 769–783]     |
| Bodily reaction           | Reaction / evaluation         | Reaction GIF                         | Transformation + expansion          | Represented reaction; riffing; evaluative stance          | [14; 295–325]; [19; 393–417] |
| Vocal intensity / prosody | Emphasis / affect             | Capitalization; punctuation          | Semiotic transformation             | Graphic intensity and stance marking                      | [6; 1]; [16; 175–244]        |
| Vocal lengthening         | Expressive intensity          | Letter repetition                    | Semiotic transformation             | Stylized intensification                                  | [9; 187]                     |
| Pause / hesitation        | Reservation / delay           | Ellipsis; lexical surrogate          | Functional analogy / transformation | Contextualized hesitation or unfinished stance            | [10; 1]                      |
| Utterance-level action    | Illocutionary force           | Emoji as modifier or stand-alone act | Functional expansion                | Speech-act modification / virtual action                  | [2; 255]; [13; 124–155]      |
| Interface-level response  | Acknowledgement / evaluation  | Platform reaction                    | Platform-specific recoding          | Lightweight response attached to prior content            | [15]                         |

Table 2. Evidence-based functional recoding of non-verbal and paralinguistic functions in digital communication.

**Source: developed by the author through comparative synthesis of the cited studies.**

The theoretical analysis further indicates that one-to-one correspondence is insufficient for three reasons. First, one offline-associated function can be realized by several digital resources. Affect may be cued through emoji, stickers, GIFs, punctuation, or combinations of these resources. Second, one digital resource can integrate several functions: a GIF may simultaneously display a bodily reaction, evaluate a prior message, and invoke an intertextual reference. Third, digital resources acquire platform-specific interactional functions, such as attached reactions or stand-alone speech acts, that are not reducible to bodily imitation.

The proposed framework should therefore be interpreted as a relational analytical scheme rather than an empirical model. Its contribution lies in separating the form of a cue from its communicative function and then specifying the type of cross-modal relation through which that function is reorganized.

#### LIMITATIONS

The study has four principal limitations. First, it is a theoretical synthesis and does not introduce a new corpus, experiment, or observational dataset; the framework therefore requires empirical validation. Second, the review is structured and targeted rather than exhaustive, and the retained source base cannot represent every strand of research on multimodality and computer-mediated communication. Third, platform differences are treated theoretically rather than tested through matched cross-platform data. Fourth, cultural variation, including possible differences between English and Karakalpak digital discourse, is acknowledged but not empirically compared in the present article. These limitations define the appropriate scope of the claims: the framework proposes analytical distinctions that can guide subsequent corpus-based and comparative research.

#### CONCLUSION

This study proposes a theoretical-analytical framework for examining how communicative functions associated with embodied non-verbal behaviour and paralanguage are reorganized through digital semiotic resources. Five conclusions follow from the synthesis. First, digital communication does not simply replace missing bodily cues; it redistributes communicative functions across graphicons, typography, orthography, and platform-specific mechanisms. Second, non-verbal, paralinguistic, and digital semiotic resources should remain terminologically distinct. Third, the relations identified can be described through functional preservation, semiotic transformation, and functional expansion, with possible overlap between categories. Fourth, the framework complements rather than replaces existing taxonomies of emoji, graphicon, and GIF functions by classifying cross-modal relations instead of discourse functions themselves. Fifth, platform affordances and cultural conventions constrain how these relations are realized.

Future research should test the framework on naturally occurring digital discourse, with explicit platform sampling and intercultural comparison. A focused English–Karakalpak corpus would be particularly useful for determining which proposed relations are stable across linguistic communities and which depend on local communicative conventions.

#### DECLARATION OF GENERATIVE AI USE

OpenAI ChatGPT was used as an assistive tool during manuscript revision for language editing, structural reorganization, formulation of search terms, and preliminary organization of the comparative analytical framework. The author independently reviewed the scholarly sources used in the article, evaluated and approved the analytical categories and interpretations, and assumes full responsibility for the accuracy, argumentation, citations, and final text.

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