



Speech, hand, and facial gestures: a proposal of a multimodal approach to describe negative structures with *não* in Brazilian Portuguese

Fala, gestos das mãos e face: uma proposta de abordagem multimodal para descrever estruturas negativas com não no Português Brasileiro

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Abstract: In an interactional encounter, verbal structure, hand, and face gestures form usage events in which lexical items, together with these body movements, assume specific functions. In Brazilian Portuguese, negation can be expressed by *não* in pre-verbal, double, and post-verbal positions. Analysis based only on verbal structures assumes that these negative structures are three ways to express opposition. However, pragmatic studies assume that they express different conversational functions: denegation, thematic pause, return to a quantitative topic, face-saving, and negative evaluation. Multimodal approaches to gestures in German, English, Spanish, and Brazilian Portuguese suggest that negation has a gestural component. Based on that, we propose a multimodal analysis of negative structures with *não* in Brazilian Portuguese, assuming that negative structures with this particle suggest different functions, also characterized by hand and facial gestures.

Keywords: Multimodality; hand gestures; facial gestures; negative structures; usage events.

Resumo: Na interação, estrutura verbal, gestos das mãos e face formam eventos de uso nos quais os itens lexicais, juntamente com esses movimentos corporais, assumem funções específicas. No português brasileiro, a negação pode ser expressa por *não* em posições pré-verbal, dupla e pós-verbal. A análise baseada apenas nas estruturas verbais assume que essas estruturas negativas são três formas de expressar oposição. No entanto, os estudos pragmáticos assumem que elas expressam diferentes funções conversacionais: denegação, pausa temática, regresso a um tópico quantitativo, salvamento da face e

avaliação negativa. Abordagens multimodais de gestos em alemão, inglês, espanhol e português do Brasil sugerem que a negação tem um componente gestual. Com base nisso, neste artigo, propomos uma análise multimodal das estruturas negativas com *não* no português brasileiro, assumindo que as estruturas negativas com tal partícula indicam diferentes funções, caracterizadas também por gestos das mãos e face.

Palavras-chave: Multimodalidade; gestos das mãos; gestos da face; estruturas negativas; eventos de uso.

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1 Introduction

In an interactional encounter not only what we say is relevant.

When a person speaks there is always some movement in the body besides the movements of the jaws and lips that are directly involved in speech production. This speech-associated movement may be slight and comprise not more than a minor bobbing of the head or occasional movements of the eyes and eyebrows. Quite often, however, movement may be observed in other parts of the body as well, most notably in the arms and hands. These movements may become complex and extensive and they are generally recognized as being intimately linked to the activity of speaking and are often regarded as part of the speaker's total expression. (KENDON, 1980, p. 207).

The study of the relationship between gestures/body movements and speech is not new: works on classic and medieval rhetoric extensively describe how gestures can influence speakers' communicative performance, making them more or less convincing to an audience (KENDON, 1983). But the relevance of gestures is not restricted to argumentation. Questions like *How were gestures originated?*, *Is the relationship between gestures and speech related to the origin of language?*, *Are gestures generated together with speech?* propelled gestures studies for a long time. This scenario changed because "questions about language origins became out of order and, due to the growth of structural and functional perspectives,

approaches to gestures based on studies of small groups did not fit within the theoretical frameworks then prevailing” (KENDON, 1983, p. 159).

Gestures’ lack of relevance resulted in the establishment of the verbal *versus* non-verbal dichotomy, based on the assumption that body movements do not have the same communicative functions as verbal structures (KENDON, 1983, p. 160), so language studies should not pay attention to them. This scenario started to change in modern studies, as a consequence of research about how children acquire language, which stated that before using spoken language, “children make considerable use of visible action as a means of utterance.” (KENDON, 1983, p. 162). But gestures might not be relevant only during the language acquisition period. To McNeill (1985), through gestures speakers of all ages can also express semantic and propositional content.

According to the cognitive linguistics paradigm, the human mind is embodied. Motor experiences influence reasoning, the formation of spatial, and temporal concepts, and, therefore, speakers’ linguistic use, which are grounded in their body movements (GIBBS, 2005; FREITAG; CRUZ; NASCIMENTO, 2021). Language and gestures together are responsible for the construction of complex units of meanings anchored by contextual particularities (KENDON, 2004). Based on that, it might be plausible to say that language and gestures share pragmatic functions. Having pragmatic functions, gestures may be considered part of the linguistic sign. They can evoke mental images and, in specific situations, differentiate functions of structures that, although similar, do have different implications in real interactions. In different languages, there are shreds of evidence that hand gestures plus negative particles might express negation, rejection, face-saving, and negative evaluation (BRESSEM; MÜLLER, 2017; HARRISON, 2010; MÜLLER; SPECKMANN, 2002; SANTOS, 2021). Furthermore, facial gestures may also assume similar functions (PINHEIRO, 2021).

In Brazilian Portuguese, using the particle *não* is probably the most productive strategy to form negative structures. *Não* can be used in pre-verbal (*V-não*), double (*não-V-não*), and post-verbal positions (*V-não*). Descriptive studies (SEIXAS, DE ALKIMIM E CHAVES, 2012; SOUSA, 2007) assume that the occurrence of these three structures is a variable phenomenon, with pre-verbal negation being the most used form in all regions of Brazil. From this point of view, these three variants have the same function: mark opposition. However, their pattern of distribution

might suggest that there are contextual particularities linked to their use, which makes it necessary to include other variables in their description.

Informational approaches to negative structures with *não* (SCHWENTER, 2004) assume that the use of one of these three possibilities to negate something is associated with the informational status of the negated information, which can be given or new in the speech, literally activated or inferred by speakers. This status is probably relevant to identify the pragmatic functions assumed by negative structures with *não*: denegation, thematic pause, return to a quantitative topic, and face-saving (PETRY; GOLDNADEL; LAMBERT, 2021). Traditionally, all of them are described through verbal variables, considering the researchers' intuition to comprehend how, in interactions, multiple functions assumed by negative structures are differentiated. Although the tradition of studies based on the verbal versus non-verbal dichotomy is very strong, multimodal approaches assume that language is a symbolic phenomenon formed not only by verbal structure. As a consequence, it cannot be conceptualized, understood, and described without the particularities that portray each interactional situation. These situations form multimodal usage events that encompass "full phonetic detail of an utterance, as well as any other signals, such as gestures and body language" (CIENKI, 2015, p. 500).

In this article, we suppose that hand and face gestures differentiate the functions assumed by negative structures with *não* in Brazilian Portuguese. We assume that language and body movements form multi-complex signs that express, in interactive encounters, different pragmatic functions. For this reason, we propose a multimodal analysis of negation in Brazilian Portuguese.

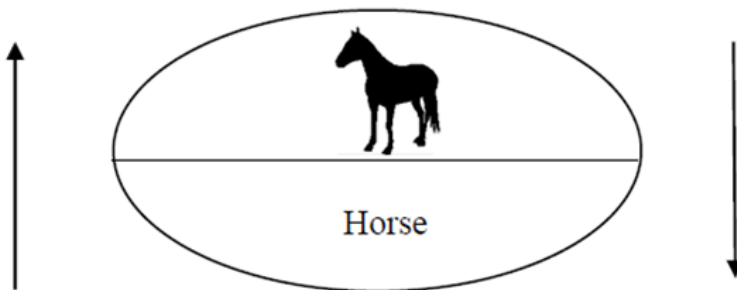
This article is divided into five more sections: in section two, we discuss the concept of signs and what their constituents are. In section three, we review the concept of gestures, how they can be described, and how these descriptions are included in two models of gesture description. After that, in section four, we describe the negative structures with *não* in Brazilian Portuguese. In section five, we first discuss pieces of evidence of multimodal negation in German, English, Spanish, and Brazilian Portuguese and then propose a multimodal analysis of the functions assumed by pre-verbal negation, double negation, and post-verbal negation in Brazilian Portuguese.

2 Signs: multi-complex structures that form usage events

There is no denying that approaches based on verbal structures have contributed and are still contributing to the expansion of the knowledge about different languages, their structure, and their internal functioning. Traditionally, studies of language description in this perspective include, in their analysis, the syntactic structure of sentences, the type of verbs, their semantic properties, and a description of internal and external arguments (if they are present in the syntactic structure). These descriptions are based on the assumption that properties like besides speech/speaker performances and gestures (encompassing hand and face gestures) are not part of the language. However, language is multimodal, and body movements might influence the construction of meanings (LADEWIG, 2020) and functions. So, to consider gestures as part of language, it is necessary to revisit conceptualizations about signs, and their constituents.

The most traditional definition of sign in modern linguistics is the one proposed by Saussure, in the *Course in General Linguistics*. According to this author, the primordial linguistic unity is the sign, formed by a mental concept and a sound-image, that is, a signified and a signifier, respectively (SAUSSURE, 2012, p. 107). From this perspective, when speakers listen to the word *horse*, for example, their mind, based on what they learned living in society, will activate the concept (a symbolic image) of a four-legged mammal that, before automobiles, was commonly used for transportation. There is linearity between the signified and the signifier, based on verbal structure and common knowledge.

Figure 1 – Saussurean representation of the sign

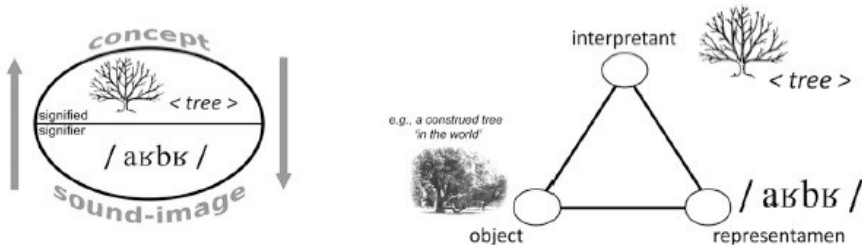


Source: produced by the author.

This linearity excludes the possible interference of particularities related to the gestural, visual, and individual performance of a speaker into meanings encompassed by a sign. However, a different approach is proposed by Pierce, who assumes that signs are formed by three parts that function together:

- (i) the representamen, ie, that which is being used as a source of information; (ii) the object, i.e., that which is being picked out by semiosis via the representamen; and (iii) the interpretant, i.e., the information or ‘response’ that is offered, received or constructed about the object by the representamen” (BATEMAN, 2018, p. 7).

Figure 2 – Piercean representation of the sign

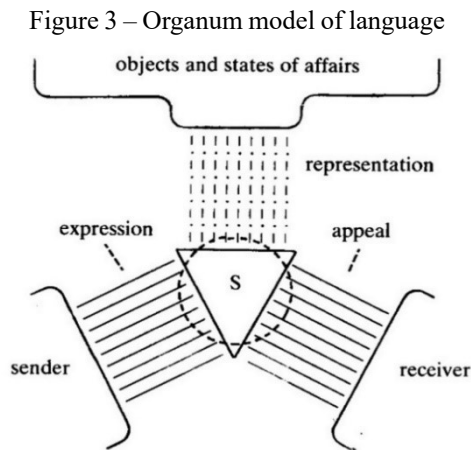


Source: Bateman (2018, p. 7).

From Pierce’s point of view, largely known in semiotic studies, there is no linearity between signs and their conceptualization. For example, the lexical item *tree* is a source of phonological information that presents an object that is part of the real world, which can only be conceptualized – literally or not, because *tree* may be used as a metaphor for a tall person, for example – by a person, in a specific situation.

Pierce’s three-parted perspective of signs has some similarities to the one proposed by Bühler (1990), according to whom the comprehension of the relationship between the sign constituents can only be conducted through the lenses of discursive events, situations in people’s lives that give a linguistic item/structure a particular meaning. (BÜHLER, 1990): the word *horse* (Figure 1), for example, may be used (with a particular intonation and pointing gestures) to express a negative evaluation of someone’s education or lack of politeness.

The discursive event can influence the speaker's language use, and the functions assumed by a linguistic item or structure. While the Saussurean notion of the sign has only two dimensions (sound-image concept), as the one proposed by Pierce, the one proposed by Bühler (1990) has three: expression, appeal, and representation:



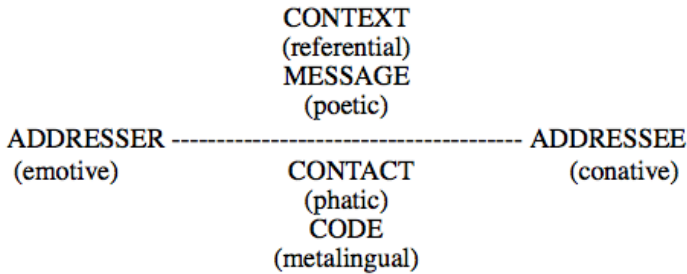
Source: Bühler (1990).

From an organic perspective, Bühler (1990) assumes that the sign is a complex symbol that represents objects and states of affairs whose conceptualization is affected by senders located in a specific context, and by their personal attitudes toward something. Their attitudes in specific contexts can be understood as discursive actions in which meanings might be formed. Based on that presupposition, Bühler (1990) proposes that language has three semantic functions: expression, appeal, and representation. Expression encompasses the conceptualization of things and states of affairs, appeal encompasses the speakers' intentions, and representation encompasses the conceptualization of what is said in a specific situation (BÜHLER, 1990).

Unlike the Saussurean approach, which assumes an objective composition of signs, Bühler (1990) argues that this objectivity does not exist. The sign is never finished, it is always being constructed by its context. To assume that there is no objectivity in language does not mean that we believe that language, in a broad sense, is chaotic. This was also

discussed by Jakobson (2008), who proposed the following schema to express the functions performed by language:

Figure 4 – The language system



Source: adapted from Jakobson (2008).

When interacting, an addresser talks to an addressee using a code that has a logical structure (the organization of sentences and their constituents in Brazilian Portuguese). This code can be explained by its own elements (using Portuguese to explain what is a verb), which characterize the metalinguistic function of language, and it can also be used to specify the context/situation in which an interaction occurs, characterizing the referential function of language. Addressee and addressees are people with internal states of mind and intentions toward each other. So, for example, in situation in which Maria is upset in her office, and she points outside and says (1):

(1) “Get out of my office!”

she probably expects a person that is with her to leave her alone. Maria, by using a code to influence the actions of someone, would be using the conative function of language. But instead of trying to influence the actions of someone, Maria could talk about the way she feels, and why she is upset. By doing that, she would be using the emotive function of language. Her feelings, hypothetically, could be expressed with a focus on the arrangement of sentences and the sonority of words. This way, she would be using the poetic function of language.

Both Bühler (1990) and Jakobson (2008) argue that, through speech, addressers express conceptualizations and execute actions that might influence their addressees. This is the core of the theory of speech acts, largely used for pragmatic analysis. From this point of view, by speaking,

subjects can perform statements, questions, exclamations, commands, wishes, and concessions (AUSTIN, 1975). By doing that, they are:

- (a) uttering words (morphemes, sentences) = performing utterance acts;
- (b) Referring and predicting = performing propositional acts;
- (c) Stating, questioning, commanding, promising, etc = performing illocutionary acts (SEARLE, 1975, p. 24).

A statement is an utterance that can be judged true or false in the real world. It does not require, for its realization, the execution of a corresponding act in the world. Consider the following example:

- (2) The sky is blue.

(2) is a simple statement that can only be considered true or false: the sky is or is not blue. It does not require, from the person who listens to it, any response, which is different from (1). The performative verb in (1) can only be used successfully in a context where the person saying *Get out of my office!* has the authority to expel someone from a room. In this case, the speech act influences the response of the listener, triggered by the conceptualization of the power balance that directs a capitalist society. This conceptualization is influenced by other factors that cannot be marked by the verbal structure, like the tone of voice, cadence, emphasis, and pointing gestures (AUSTIN, 1975, p. 82).

The situation in which a lexical item is used, plus particular patterns of gestures, might be responsible for the comprehension of a sign, which we understand as a multi-complex and non-bidimensional structure that forms a usage event. The gestures used by speakers are not random. They may reflect individual patterns, but they also reflect conceptualizations of the world and social interactions, formed by recurrent situations. When gestures assume pragmatic functions, they are aligned with a specific syntactic scope (HARRISON, 2010), in a temporal relationship. For this reason, they are the focus of the next section.

3 Cognitive roots of gestures and their functions

Nowadays, the relevance of gestures to communication is something well recognized by different areas of knowledge. Mittelberg and Hinnell

(2023) divide modern gestures studies into three waves: the first one covers the structural description of gestures and their types (including hand gestures, body posture, and facial gestures), the second one covers the description of gestures as utterances, based on a kinesic methodology, assuming that, as verbal language, gestures have grammar and, consequently, a structure that can be described. The third wave of modern gesture studies, highly influenced by multimodal cognitive linguistics, assumes that gestures, together with speech, form a system that reflects conceptualizations by cognitive processes (metaphor, mimesis), which can only be understood through the notion of usage event, “a set of verbal and non-verbal behaviors that interlocutors find relevant for their communication” (IRISKHANOVA; CIENKI, 2018, p. 26).

In this article, we assume it is only possible to describe different functions of negative structures through the exam of actual occurrences of *não*, considering, beside syntactic structure, gestures.

This section is divided into two major subsections. In 3.1, we define gestures, their types, and their functions, focusing on the description of hand gestures, and kinesic characteristics. After that, we describe the Linguistic Annotation System (LASG), a widely used methodology for multimodal annotation of hand gestures, proposed by Bressemer (2008); Bressemer and Ladewig (2011). In 3.2, we address pieces of evidence that suggest how, in interactions, facial gestures might express negative evaluation, which may happen with the use of negation with *não*.

3.1 Hand gestures

3.1.1 Kinesic approaches to gestures

According to Kendon (2000, p. 49), “if language is a cognitive activity, and if, as it is clear, gestural expression is intimately involved in acts of spoken linguistic expression, then it seems reasonable to look closely at gesture for the light it may throw on this cognitive activity”. It might be hard to draw a line defining what gestures are, what they are not, and what is their relationship to language and communication. In a broad sense, they are visible “bodily actions that are, more or less, generally regarded as part of a person’s willing expression. (...) It includes handwavings or gesticulations that accompany talk and various kinds of more or less conventionalized actions that have a symbolic or semiotic function.” (KENDON, 2000, p. 49).

Together with speech, bodily actions might assume six functions: (i) referential, in which gestures contribute to referential or propositional meanings; (ii) operational, in which gestures operate with what is said, verbally (confirmation, negation); (iii) modal, in which gestures add an interpretative layer to what is said; (iv) performative, in which gestures include illocutionary force to what is said (expressing a question, request, or offer); (v) parsing or punctual, in which gestures emphasize a piece of information, points out contrast or parenthesis; (vi) interactional regulation, in which a person uses gestures in waving, greeting, inviting. (KENDON, 2017, p. 167-168)

Having a symbolic/semiotic function, gestures assume an important role in communication because they “share with speech a computational stage; they are, accordingly, parts of the same psychological structure.” (McNEILL, 1985, p. 350). From that perspective, McNeill; Cassell, and McCullough characterize them as:

Iconics: representational gestures that display concrete aspects of the scene or event being concurrently described in speech.

Metaphorics also are representational gestures but display images of abstract concepts and relationships that typically relate to the concurrent speech on a meta-level.

Beats mark with baton-like movements words that are significant, not purely for their semantic content, but for their discourse-pragmatic event. (McNEILL; CASSELL; McCULLOUGH, 1994, p. 224-225).

We don't see the world objectively; we see it through metaphors (LAKOFF; JOHNSON, 2003, p. 5) which essence is “understanding and experiencing one kind of thing in terms of another”. Metaphors are cognitive processes grounded in experiences in the real world. They are the basis for the creation of imagistic schemas, anchored to the speaker's body as, for example, gestures that suggest distancing from something or someone (inside-out schema, visible in the “Away Family” gestures, illustrated in Table 2). Imagistic schemas are schematic images that contain integrated domains of knowledge. The domain of a hand, for example, is contained in the domain of the arm, which is contained in the domain of the body, and physical space. They all are integrated and are continuously retaken by speakers in specific contexts. Table 1 summarizes the inventory of image schemas described by Croft and Cruse (2004):

Table 1 – Imagistic schemas

Space	UP-DOWN, FRONT-BACK, LEFT-RIGHT, NEAR-FAR, CENTER-PERIPHERY, CONTACT
Scale	PATH
Container	CONTAINMENT, IN-OUT, SURFACE, FULL-EMPTY, CONTENT
Force	BALANCE, COUNTERFORCE, COMPULSION, RESTRAINT, ENABLEMENT, BLOCKAGE, DIVERSION, ATTRACTION
Unity/multiplicity	MERGING, COLLECTION, SPLITTING, ITERATION, PART-WHOLE, MASS-COUNT, LINK
Identity	MATCHING, SUPERIMPOSITION
Existence	REMOVAL, BOUNDED SPACE, CYCLE, OBJECT, PROCESS

Source: Adapted from Croft and Cruse (2004, p. 45).

The image schema associated with a specific gesture may be conceptualized together with speech, which might be the cause of its simultaneous expression. Assuming that gestures are generated together with verbal structures and that there is a representational element in their construction and pragmatic conventionalization, De Ruiter (2000) expands on the categorization of gestures proposed by McNeill; Cassell and McCullough (1994), defining that there are:

Iconic gestures: Depicting aspects of the accompanying speech topic. This category includes what McNeill calls *metaphoric* gestures, because from the perspective of gesture production it is of no relevance whether the imagery underlying the gesture is related to abstract or to real entities.

Pantomimes: Gestures that are imitations of functional motor activities.

Deictic gestures: Pointing gestures.

Beat gestures: Biphasic movements of the hands or fingers that do not represent anything.





Emblems: Gestures whose form–meaning relation is lexicalized. (DE RUITER, 2000, p. 205)

The categorization proposed by De Ruiter (2000) suggests that gestures are not necessarily related to verbal structures. Not all body movements are relevant to communication, such as beat gestures. The ones that are can be arranged in a continuum that encompasses two extremities: gestures generated by metaphorical conceptualizations, and gestures based on the lexicalization process and semantic-pragmatic particularities.

The relevance of semantic-pragmatic particularities is an important element of the approach to gestures assumed by Kendon (2004), who describes the movements executed by speakers in a kinesic perspective, focusing on hand shapes and orientations, supposing that verbal structures and gestures “interact in the utterance and, through a reciprocal process, form a more complex unit of meaning” (KENDON, 2004, p. 108). From this point of view, the interaction between gestures and verbal structure is affected by contextual variability. One specific hand movement will not always be used with the same function. However, it is possible that patterns of gestures to negate something, for example, exist. These patterns are possibly formed by “groupings of gestural expressions that have in common one or more kinesic or formational characteristics” (KENDON, 2004, p. 227), which often are executed continuously in the same context, forming what Ladewig (2010) defines as recurrent gestures.

Recurrent gestures work as discursive objects and “may serve referential function in depicting concrete or abstract aspects of the topic being addressed in speech” (BRESSEM; MÜLLER, 2017, p. 2). Examples of recurrent gestures are the ones that compose the “Away Family gestures”, based on the container and space imagistic schemas, and used to display the act of brushing aside and/or negating something (MÜLLER; LADEWIG; BRESSEM, 2013; BRESSEM; MÜLLER, 2017). The “Away Family” gestures include the sub-families sweeping away, holding away, brushing away e throwing away, described and characterized in Table 2:

Table 2 – Overview of “Away Family” gestures

Form		Action	Meaning
	Sweeping away	Sweeping away something from a flat surface so that absolutely nothing is left	Rejecting and negating
	Holding away	Holding or pushing away an object	Refusing and rejecting
	Throwing away	Throwing away middle-sized roundish objects, that one wants to get rid of	Negative assessment
	Brushing away	Rapidly brushing away small, annoying objects	Negative assessment

Source: Bressemer and Müller (2017, p. 3).

The “Away Family” gestures illustrated in Table 2 establish a relation of co-expressiveness with the linguistic elements to which they occur. This co-expressiveness is not objective: its formational characteristics are more flexible, and its meanings depend on a specific pragmatic situation. There are degrees of specificity in the form/meaning of different types of gestures, as described in Table 3:

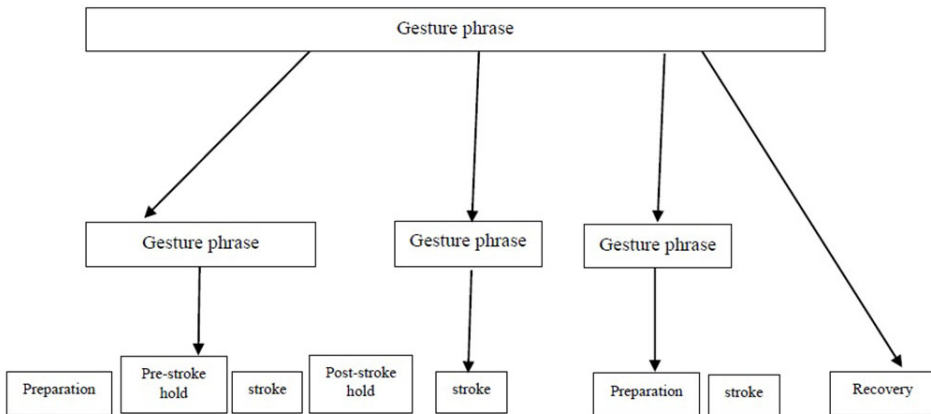
Table 3 – Summary of the degrees of specificity in the form and meaning of gestures

Gesture type	Emblems	Pointing gestures	Recurrent gestures	Creative gesticulation (as defined above)
Form	Largely fixed within a given culture.	More or less fixed within a given culture, with some degrees of freedom.	Common ‘formational core’, but strong variation within categories.	Flexible, but not unrestricted – bound to high-level norms and constrained by the grammar of the verbal channel.
Meaning	Largely fixed within a given culture.	Variable, but with clear commonalities – typically related to attention allocation.	Only characterizable in abstract terms and/or with constructs such as image schemas or ICMS.	Mostly context-dependent; generally associated with some modification of the verbal channel or emphasis of some aspect of it.

Source: Kok and Cienki (2016, p. 72).

All the subfamilies of gestures in the “Away Family” (Table 2) might form gesture phrases, defined by the movement of articulators from a rest position to a region in the space, with the posterior returning to a rest position. Specifically, gesture phrases are formed by preparation movement, stroke, post-stroke, hold (in some cases), and recovery. The stroke is the semantic-pragmatic core of a gesture phrase, which can be formed only by stroke or by stroke plus another movement, establishing “units of visible bodily action identified by kinesic features.” (KENDON, 2004, p. 108). Ladewig (2020, p. 31) illustrates this architecture of gesture units as follows:

Figure 5 – Illustration of Kendon’s proposal for gesture unit



Source: adapted from Ladewig (2020, p. 31).

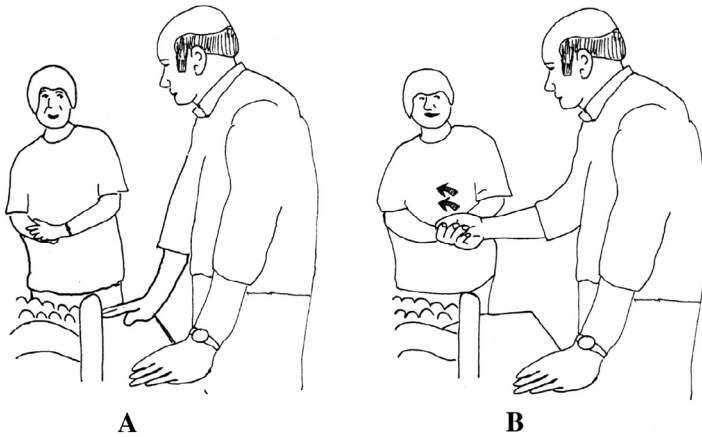
The kinesic features that structure a gesture phrase can constitute an illocutionary act, defined not only by verbal elements but also by a visible action or a combination of verbal structure and gestures, counting “for participants as a ‘turn’ or ‘contribution’ or ‘move’ within the occasion of interaction in which they are engaged” (KENDON, 2004, p. 110).

The functioning of a gesture phrase in interaction is illustrated by Kendon (2004, p. 113) through a situation in which one speaker explains to another how his father kept cheeses from their store for sale¹. He says

¹ The situation described by Kendon was taken from a record called Crick. Its metadata and transcription are available in the appendix from the book *Gesture: Visible action as utterance*, published in 2004.

and he used to go down and throw ground rice over it. Initially, he is in front of a table with his hands in the rest position (A). When the speaker says *and throw*, he raises his hand (preparation), puts it on his body center (pre-stroke) before, in a flat position, moving it forward (stroke movement, containing the core meaning of the utterance), with his palm up (B), as illustrated in figure 6:

Figure 6 – Illustration of Kendon’s proposal for finger-shaped gesture unit



Source: Kendon (2004, p. 114).

With his palm up, the speaker illustrates the conceptualization of the movement executed by his father, creating a complex meaning structure. The description of gesture units as proposed by Kendon (2004) is based on form-based properties, an approach influenced by sign language studies, which assumes that every movement has distinctive phonetic properties, as happens with spoken languages (STOKOE, 1960). From that perspective, Bressemer and Ladewig (2011, p. 1080) proposed a description of hand gestures addressing four parameters: hand shapes, movement patterns, positions in gesture space, and orientations of the hand. The handshape parameter includes four types of hand configuration: (1) fist, (2) flat hand, (3) single fingers, and (4) combination of fingers (Figure 7):

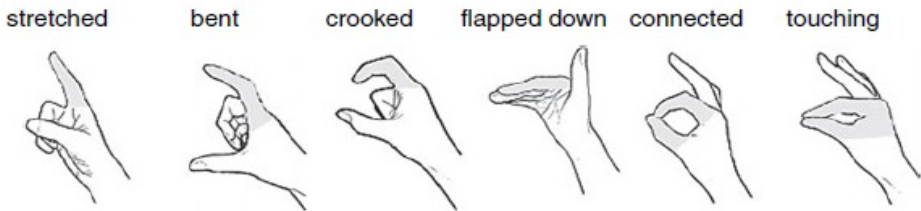
Figure 7 – Handshape configuration



Source: Bressemer and Ladewig (2011, p. 1085).

All four types of hand configurations illustrated in Figure 7 can occur with different finger-shaped configurations. Fingers can be stretched, bent, crooked, flapped down, connected, or touching each other (Figure 8):

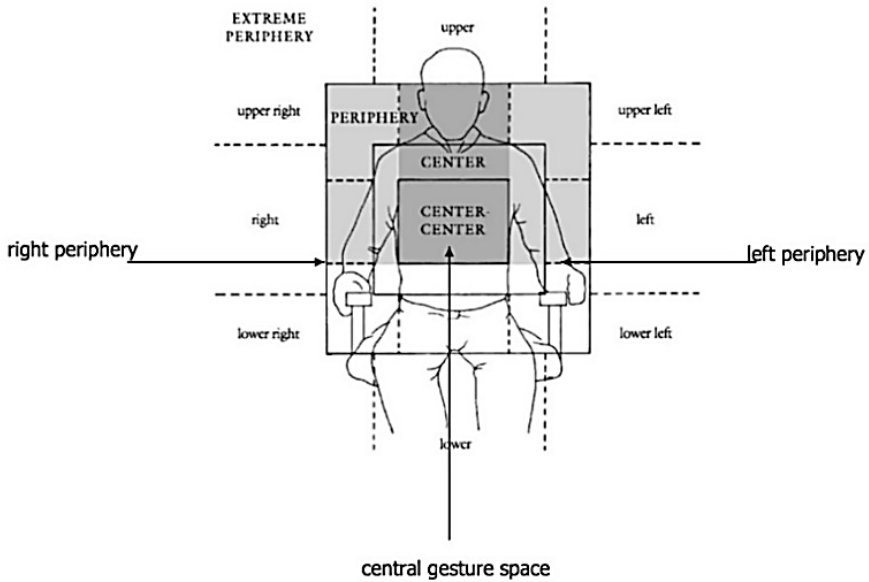
Figure 8 – Inger-shaped configuration



Source: Bressemer and Ladewig (2011, p. 1085).

The execution of all these hand gestures has spatial properties described through four angles of orientation: palm up, palm down, palm lateral, and palm vertical. All of them are based on McNeill's (1992) proposal. In addition to these, the model of description proposed by Bressemer (2006) includes two more angles, present in the configuration of "Away Gestures" family (Table 2): they are palm lateral and diagonal, both differentiated by their distance from the body center, according to McNeill (1992)'s division of gesture space (Figure 9):

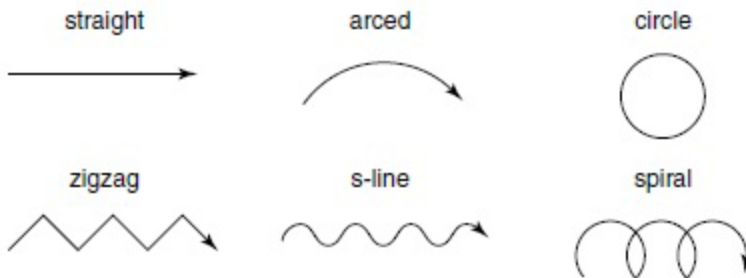
Figure 9 – McNeill’s division of gestures’ space



Source: McNeill (1992, p. 99).

Besides hand, fingers configuration and spatial division from the body center, hand gestures can be executed with a: straight movement, arced movement, circle, spiral, zigzag and s-line (Figure10):

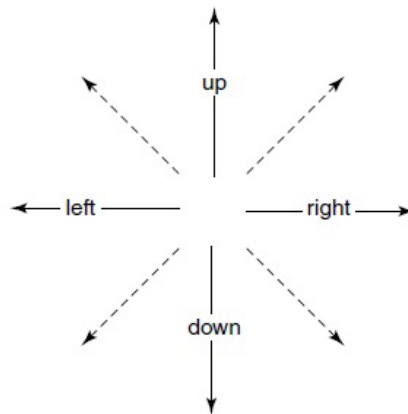
Figure 10 – Types of hand movements



Source: Bressemer and Ladewig (2011, p. 1088).

The types of movements illustrated in Figure 10 can be executed in three directions: along the horizontal axis (right and left, regarded from the perspective of the gesture), along the vertical axis (up and down), and along the sagittal axis (away from the body and towards the body) (BRESSEM; LADEWIG, 2011, p. 1089):

Figure 11 – Direction of movements along the vertical and horizontal axis



Source: Bressema and Ladewig (2011, p. 1089).

The kinesic or form-based approach to describe hand gestures is used in the Linguistic Annotation System (LASG), proposed by Bressema (2008); Bressema and Ladewig (2011), and largely used to describe recurrent gestures used to form multimodal negative structures (BRESSEM; MÜLLER, 2017). The LASG is structured by parameters that suppose a temporal synchronization between speech and gestures. These parameters, which evoke geometrical and schematic patterns, are motivated by an embodied perspective of verbal meaning that emerges during the interaction, when people represent concepts (like the concept of rejection), events, and objects in the real world (BRESSEM; LADEWIG; MÜLLER, 2013, p. 1104). Gestures might have similar functions to language, but they have particular configurations that must be addressed properly. These configurations are responsible for structuring a gesture phrase which, in different pragmatic contexts, together with a verbal structure, assume specific functions. For this reason, LASG is structured by a level of (i)

annotation of gestures; (ii) annotation of speech; (iii) annotation of gestures in relation speech.

LASG's annotation of gestures level is based on Bressemer and Ladewig's (2011). This level is divided into three sublevels: i) determining units, referent to the constitution of gesture units and gesture phrases; ii) annotation of form, which encompasses the configuration of hands (stretched, bent, crooked, flapped down, connected, touching), movement type (straight, arced, circle, zigzag, s-line, spiral), movement direction (up, right, down, left), movement quality; iii) motivation of form, expressed by the parameters of hand shapes, movement patterns, positions in gesture space, and orientations of the hand.

The speech annotation level of LASG is divided into two sublevels that address verbal and intonational information. The first refers to the annotation of speech, based on speech turns, defined as an interactionally relevant block based on syntax and prosody, while the second refers to intonation units, characterized by Chafe (1994, p. 58) as "a sequence of words combined under a single, coherent intonation contour, usually preceded by a pause". Inside this contour can exist one or more accents, which might be relevant to different purposes, marked by one or more gesture phrases.

The level referent to the relation of gestures and speech includes four sublevels: prosody of speech, syntax, semantics, and pragmatics. The sublevel of prosody includes the final pitch movement of speech (perceived by speakers as high or low sounds), which may also express different functions, since "depending on the final pitch movement, gestures may accompany turns or intonation units fulfilling a declarative or questioning function, which in turn has effects on the meaning and function of the gestures" (SACKS; SCHEGLOFF; JEFFERSON, 1974).

Regarding the syntax sublevel, LASG encompasses word class, syntactic function; and integration of gestures into the syntax of speech (BRESSEMER; LADEWIG; MÜLLER, 2013, p. 1109). The relevance of word class, which can be described according to any perspective of language, is based on the attributive function of many words, and its consequent ability to modify the semantic nucleus of a noun phrase. The integration of gestures into the syntax of speech, on the other hand, is based on the notion of "degrees of integrability", which assumes that gestures can or cannot be temporally integrated into the illocutionary act (BRESSEMER, 2021).

On the sublevel of semantics, LASG includes (i) temporal relation, (ii) semantic relation of gestures with speech, and (iii) semantic function of gestures. The temporal relation is based on the notion of co-expressiveness of speech and gestures: they can occur before or after a speech-turn, or in parallel with it. Gestures can also be executed alone, without a “direct spoken counterpart at the moment of being uttered but occur in pauses, in syntactic gasps, or in larger speechless segments.” (BRESSEM; LADEWIG; MÜLLER, 2013, p. 1111).

The notion of co-expressiveness is also the base of the semantic relationship between speech and gesture. This relationship can be: (i) redundant, with gestures matching the semantic features of speech/image schemas; (ii) complementary/supplementary, with gestures contributing to semantic features or images schemas evoked during a speech; (iii) contrary, with gestures, speech, semantic features, and image schemas not matching; (iv) replacing, with gestures being used independently, without speech (BRESSEM; LADEWIG; MÜLLER, 2013, p. 1111).

Besides the type of relationship established between speech and gesture, LASG also includes the semantic function of the hand movements, which can be used to: (i) emphasize semantic features or image schemas; (ii) modify semantic features or image schemas; (iii) add semantic features to an image schema; iv) substitute semantic features or image schemas when there is no speech. (BRESSEM; LADEWIG; MÜLLER, 2013, p. 1112).

Syntactic, prosodic, and semantic properties of speech and gestures have pragmatic consequences for the execution of illocutionary acts. In an interactive encounter, verbal structures and gestures, each one with their particularities and (more or less) systematized semantic-pragmatic properties might express concepts, one speaker’s intentions toward others, and communicative functions. LASG describes these intentions and functions acting not only individually but also in a relational way: negation has gestural and lexical expressions and they might co-occur with the same purpose, or they might not. In this paper, hand and facial gestures are conceived as important elements that, in a usage event, differentiate the functions that *não* in pre-verbal position, post-verbal position, or double negation assume. The model of description proposed by LASG has proved to be very efficient to describe gesture functions. However, for our purposes, a more fluid description of gestures would be needed in order to differentiate the apparent three ways of encode opposition (pre-verbal position, post-verbal position, and double negation) . In the next section, we describe

a semiotic model of gesture annotation which encompasses some of LASG's elements plus semiotic features, based on the way gestures may be understood by speakers.

3.1.2 Semiotic/multimodal cognitive approaches to gestures

Studies in multimodal cognitive linguistics from a usage-based perspective assume that linguistic needs go beyond verbal expression (KOK; CIENKI, 2016, p. 68) and, because of that, it encompasses gestures, understood as multifunctional symbolic units (LANGACKER, 2012) that reflect metaphors and mimesis, cognitive process through which speakers “mime” the semantics of the words they co-occur with [...], “showing isomorphism between a gestural form and the corresponding entity” (IRISKHANOVA; CIENKI, 2018, p. 27).

Gestures as a symbolic unit is a perspective influenced by the triadic Piercean model of signs. From that point of view, hand gestures might be a *representamen* linked to an *object*, a function conventionalized by a group. This object can only be conceived by the *interpretant*, which considers verbal structure and gestures to compose a sign function. Verbal structure and gestures, when in a co-dependent relationship, constitute a usage event. Assuming that speech and gestures share a computational stage (MCNEILL, 1985) and, together, form a usage event, their structure needs to be described in terms of forms, features, and functions. Gestures' form/structure can be described through kinesiological approaches, which can or cannot be the one described in the last subsection. Cienki (2021), for example, used the kinesiological system developed by Boutet (2010) to describe palm-up open hand gestures, used to present an argumentative point.

Besides their form, gestures' functions might be described from the point of view of usage events. Iriskhanova and Cienki (2018) assume that this is possible through an analysis that includes, beyond kinesic description (associated with prosodic, semantic, and pragmatic properties), the following semiotic features, constituting a multi-level and fluid model, annotated in degrees: conventionality, semanticity, arbitrariness, pragmatic transparency, autonomy, social and cultural import (symbolism), awareness, recurrence, iconicity, metaphoricity, indexicality, and salience.

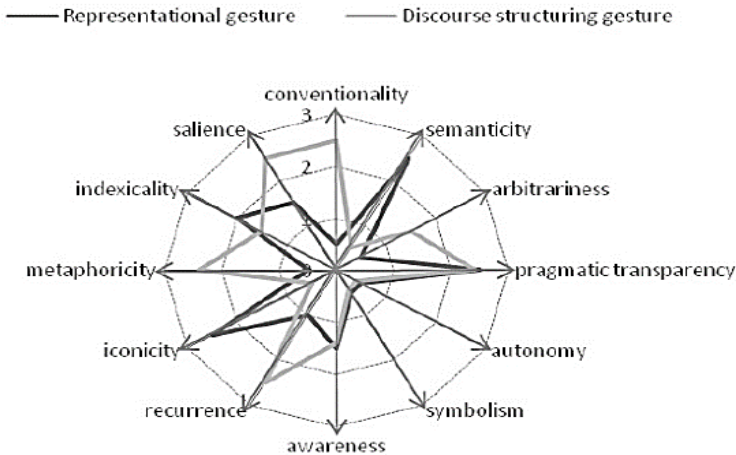
Conventionality is the entrenchment of form and function, such as the thumbs-up gesture to express *good*, *nice*. Semanticity is the capacity to transmit a meaningful message, arbitrariness is the absence of form-meaning association, pragmatic transparency is the degree of explicitness

of the locutors intention toward an interlocutor, while autonomy is the possibility of a gesture to be interpreted without any verbal item. Social and cultural import is whether a gesture is associated with social practices, and awareness is the signaling of meta-communication during gesture production. Recurrence is the repetition of features to express a certain function. Iconicity is the representativity of concrete characteristics of objects and actions, while metaphoricity is the capacity to represent abstract ideas or entities. Indexicality is whether a gesture points at a “close” or prototypical frame of reference and salience is if a gesture is in a prominent position in a multimodal event (IRISKHANOVA; CIENKI, 2018, p. 30).

The semiotic features of gestures cannot be defined alone, only through the relationship between kinesic features, speech, and all the other elements that might constitute a specific usage event, in which speakers perform statements, questions, exclamations, commands, wishes, and concessions, as proposed by the theory of speech acts, which might be enriched by the inclusion of gestures to describe the actions executed by speakers in specific interactions. Iriskhanova and Cienki (2018) organized the semiotic features of hand gestures in the following multi-vector semiotic model (Figure 12):

Figure 12 – Semiotic profiles of *fell down* and *actually*

Semiotic profiles of gestures with *упало и на самом деле*



Source: Iriskhanova and Cienki (2018, p. 31).

The model illustrated in Figure 12 is divided into vectors across which one gesture can move. The vectors form areas that reflect degrees of semiotic features, which can be low (1-0), medium (1-2), and high (2-3) (IRISKHANOVA; CIENKI, 2018, p. 30). These degrees are essential to describe functions of gestures executed together with speech, in specific situations. The diagram in Figure 12 illustrates the degrees of semiotic features of two gestures, executed by two speakers, when uttering the expression *fell down* and the word *actually*. The expression *fell down* was spoken during the description of a landscape, and was accompanied by a gesture described as *right-hand, flat palm down*, used to represent a concrete object in the world. Meanwhile, the word *actually* was spoken during the introduction of a new topic into the conversation, with a gesture described as *left-hand, flat palm up, directed towards the listener*, to talk about the place where the speaker lives (IRISKHANOVA; CIENKI, 2018, p. 31). While the gestures executed along with *fell down* have a representational function, the ones with *actually* have a discursive function, expressed by different degrees of iconicity, semanticity, and pragmatic transparency between them.

Regardless of the distinct objectives of the *right-hand, flat palm down* and *right-hand, flat palm down* gestures, both of them are distributed in all vectors, suggesting that gestures are multi-complex signs that encompass numerous traces. This analysis and its subsequent conclusions have theoretical and methodological implications.

Theoretically, considering gestures as symbolic units with semiotic features means adopting a concept of signs distant from the dichotomy of verbal *versus* non-verbal language, including the speaker's intentions, plus all behavioral elements that are relevant to communication (as hand and facial gestures). From that point of view, signs are formed in the usage event. Methodologically, considering gestures as multi-complex units and using semiotic features to describe them have serious implications. The model of description and analysis proposed by Iriskhanova and Cienki (2018) covers kinesic properties and semiotic features, distributed by vectors, and organized in areas and degrees. Each feature included in a particular analysis must be relevant to a specific gesture. For example, the analysis of the *palm-up open* gesture realized by Cienki (2021), besides kinesic characteristics, included in its model the following features: representational transparency (covering semanticity and iconicity), based on the system proposed by Müller (1998), pragmatic transparency, covering the pragmatic functions

of gestures proposed by Kendon (2017): referential, operational, modal, performative, parsing, interactional regulation, and interactive transparency, referent to the degree in which the gesture displayed the interlocutor's attention. All of them were selected based on previous studies about the functions assumed by the "palm-up open" movement.

By using an analysis that combined kinesic and semiotic features, Cienki (2021) concluded that multiple functions are assumed by similar movements that look the same but are not: *palm-up open* movement might suggest different modal positions, which have particular consequences in interactive encounters. Likewise, to analyze the semiotic features of gestures that might have negative functions, it is necessary to consider the descriptive studies about them, and to specify their functions when used together with *não* in Brazilian Portuguese.

Bressemer and Müller (2017) suggest that multimodal negative structures usually assume modal functions. The hand movements that are part of these structures might be used to sweep/hold/throw/brush away ideas or objects of different sizes, metaphorically situated close or distant from speakers. This is an assumption based on the description of real uses of negative gestures in German. We believe that this may be a promising approach to describe the multimodal properties of negation in Brazilian Portuguese. However, to describe the possible relationship between hand gestures and negative structures with *não* in Brazilian Portuguese, it is necessary to execute a robust kinesic description of these body movements, considering the usage events they form, to define the semiotic traces that may or may not be relevant to analyze them.

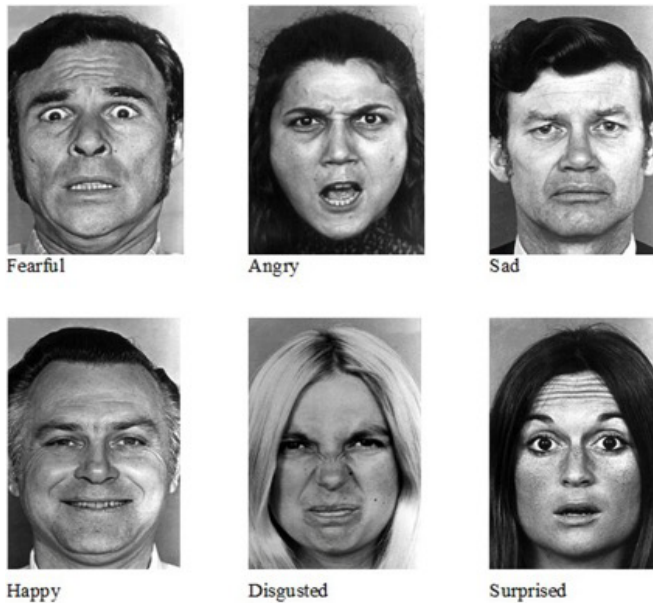
3.2 Face gestures

So far, we discussed the cognitive roots of hand gestures, which are related to the conception of image schemas, metaphors, and mimesis, processes through which we conceptualize the world. We assumed that hand gestures and verbal structure have a co-expressive relationship and are partially dependent. Their combination might form a sign in a given context, something whose function can only be conceptualized and understood by a speaker, in a specific situation. That's why it is possible to describe hand gestures considering their kinesic characteristics (hand shape, configuration, direction, position, etc) and their pragmatic functions. The hand gestures produced by individuals in an interactional

encounter may be associated with their speech content. The same probably happens with facial gestures.

Facial gestures, that is, the contraction of facial muscles, are a topic of vigorous discussion in psychological studies. These contractions may be similar in different parts of the world. Through them, people can express six mental states, usually called basic emotions: fear, anger, sadness, happiness, disgust, and surprise, all of them illustrated in Figure 13:

Figure 13 – Facial expressions of surprise, fear, sadness, anger, disgust



Source: adapted from Ekman; Friesen (2003).

The so-called basic emotions are characterized by contractions of eyebrows, nose, and mouth. These movements, according to psycho-evolutionist approaches, may express mental states that allowed the survival and perpetuation of humankind on Earth. When afraid of something, for example, our ancestors might have expressed this state by face gestures and by trying to escape from a dangerous situation (MIGUEL, 2015, p. 154).

Beyond a possible reflex that guaranteed our survival, face gestures are also elements of non-verbal communication categorized by Ekman and

Friesen (2003) as affective displays, movements that express the speaker's evaluations toward something or someone, during language production and processing. For example, in an interactional encounter, together with a negative verbal structure and hand gestures from the Away Family, a person may contract the eyebrows and mouth (disgust gesture) to negate or reject something, differentiating the functions assumed by *não* in pre-verbal, double or post-verbal positions.

The description and analysis of the facial gestures presented in Figure 13 can be done manually, using manuals elaborated to help researchers to execute this task (EKMAN; FRIESEN, 2003), or it can be done automatically. Freitag *et al* (2020) used a *script* that, based on the CK+ database (KANADE; COHN; TIAN, 2000), recognized and categorized the movements that characterize happiness, disgust, neutrality, fear, and surprise, made by college students from the Federal University of Sergipe, while they listened to a stigmatized linguistic variant: rotacism, which occurs when people exchanges /r/ for /l/, producing /pranta/ instead of /planta/. Rotacism is a highly stigmatized linguistic variant, usually associated with speakers with a low degree of education and who live in the rural regions of Brazil (AMARAL, 1976). The analysis executed by Freitag *et al* (2020) showed that in addition to the low acceptability judgment ranking, the negative evaluation regarding rotacism was expressed by the students' faces: when exposed to stimuli like /pranta/, they smiled, which, based on descriptive studies about this linguistic phenomenon, might be associated to a negative reaction (as mockery, for example), not with happiness.

Besides judgments of phonetic variables, facial gestures might also be associated with complex concepts, acting in the disambiguation of polysemic linguistic elements. In Brazilian Portuguese, *(eu) acho que* (I think that) is a construction that might express certainty, doubt, and uncertainty. These functions are probably differentiated by the speaker's personal experience with what is said (questions about something experienced directly might evoke doubt, while questions about something experienced indirectly might evoke uncertainty), and by facial gestures (ANTUNES; AUGERBÉ; SASA, 2014). Using an automatic protocol to recognize and categorize facial gestures that characterize happiness, sadness, surprise, fear, disgust, and mockery, Cardoso (2021) studied, in sociolinguistic interviews conducted with students from the Federal University of Sergipe, the functions assumed by *(eu) acho que* (I think that). The data analysis suggested that to express certainty, speakers maintained a neutral facial expression (without any muscle movement). However, to

express doubt and uncertainty, they wrinkled their eyebrows, nose, and mouth, movements that characterize anger and disgust but, in interactive encounters, may suggest doubt and uncertainty (CARDOSO, 2021).

In addition to the degree of knowledge and involvement with something, facial gestures may demonstrate different types of evaluation, like the diminutive morpheme in Brazilian Portuguese. This morpheme can either indicate small size, positive or negative evaluation. Pinheiro (2021), using the same corpus as Cardoso (2021), analyzed the functions indicated by words like *casinha* (a small house), *livrinho* (small book), and *barzinho* (a comfortable/nice bar), and concluded that negative evaluations were expressed by speakers when diminutives were accompanied by contraction of eyebrows and mouth. Negative evaluation may also be expressed through negative structures with *não*, the focus of the next section.

4 Negative structures with *não* in Brazilian Portuguese

Negation is a property common to all natural languages. It can be expressed in different ways, by (i) morphemes or affixes (*infeliz, desiludido* – unhappy, disillusioned); (ii) negative particles (*não, nunca* – no, never); and (iii) negative verbs (*inviabilizar, disability* – make it impossible, disable) (DAHL, 2010). In general, textbooks assume that this typology has only one function: to indicate opposition to something. However, in real conversations, negation assumes more functions than stating an opposition. In Brazilian Portuguese, using the particle *não* to negate something might be the most productive strategy of negation. In a sentence, this particle can appear in three positions, forming

(3) a. pre-verbal negation (*não*-V)²

ADRIMI: mas eu já fui pro centro cultural faço até alguns projetos hoje em dia () lá e é bem eu gosto muito acho muito interessante de ver aspectos da nossa cultura assim que a gente basicamente **não tem** muito acesso

*But I've been to the cultural center and I even do some projects there nowadays () and I like it very much, I think it's very interesting to see aspects of our culture that we basically **don't have** much access to*

² These three examples of uses of negative structures with *não* were taken from the Falares Sergipanos database, a sample composed of 100 sociolinguistic interviews recorded by the Grupo de Estudos em Linguagem, Interação e Sociedade (GELINS).

b. double negation (não-V-não)

ANTIMI: ainda **não fui não** [a um estádio] ainda não tive essa oportunidade como eu disse meus pais me prenderam bastante

*I have **not gone no** [to a stadium] I have not had that opportunity yet as I said my parents held me back a lot*

c. post-verbal negation (V-não)

LARIFI: Nunca **precisei** [de assistência policial] **não**

*Never **needed** [police assistance] **no***

Pre-verbal, double, and post-verbal negation coexist as a consequence of the variable nature of language, signaling, according to Jespersen (2010), a cyclic process in which

the original negative adverb is first weakened, then found insufficient and therefore strengthened, generally through some additional word, and this in its turn may be felt as the negative proper and may then in course of time be subject to the same development as the original word. (JESPERSEN, 2010, p. 2).

From this perspective, the weakening of *não* to negate something would favor the realizations like 3b. Besides 3b and 3c, there is still another possibility of negation with a phonetic variation of *não*:

- (4) ADRIMI: sim era legal [trabalhar] só que (HES) **num tava** dando o resultado que eu esperava dar

*Yes it was nice [to work] but (HES) **it was not giving** me the result that I hoped*

In (4), the pre-verbal *não* becomes *num* by a process of phonological erosion. This loss of phonological content makes it necessary to reinforce the negation by using *não* in a post-verbal position. This process is associated with two principles: iconicity and economy. According to Furtado da Cunha (2001, p. 18), the co-occurrence of *não-V*, *não-V-não*, and *V-não* reveals two competitive motivations in the negation domain:

one towards the restoration of iconicity, and the other leading to a loss of iconicity, in a movement toward the economy. The double negative provides positive evidence for the iconic quantity principle, according to which the more relevant and unpredictable

information is, the greater the quantity of form. (Furtado da Cunha, 2001, p. 18)

Because negation with *não* presents three co-existent variables, descriptive studies suppose that all of them constitute different ways to say the same thing. As a consequence, negative structures with *não* are described in different speech varieties through social (speaker's region, gender, and age) and linguistic (type of clause, position of negation form, and type of utterance) variables. Sousa (2007), Seixas, de Alkmim and Chaves (2012) suggest that in all regions of Brazil, 3a is the negative structure most used by Brazilian speakers, followed by 3b and 3c.

In general, the results of descriptive studies suggest that the structure *V-não* is less used by Brazilians, which may suggest that the occurrence of *não-V*, *não-V-não*, and *V-não* is not conditioned by regional or social factors. The use and function of pre-verbal, double, and post-verbal negative structures may have some contextual specificities that require better understanding. According to Schwenter (2004), the use of pre-verbal, double, and post-verbal negation is conditioned by the informational status of the negated information, which may be given or new in the speech, literally activated or inferred by speakers from their knowledge. Yet, this knowledge may not be enough to explain the uses of 3a, 3b, and 3c in real interactive situations. For Petry, Goldnadel, and Lambert (2021, p. 8), Schwenter's (2004) proposal is an important step toward the identification of enunciative functions of negative structures with *não*. They assume that negation serves more complex conversational intentions, relative to the relationship between speaker, listener, and the subject under discussion: denegation, thematic pause, return to a quantitative topic, and face-saving.

Denegation is characterized by the opposition to something explicit or suggested by inference by the speaker; while the thematic pause is characterized by a break of topic continuity. Meanwhile, the return to a quantitative topic is characterized by the use of a negative structure with *não* to justify what was said. Face-saving, for its part, is characterized by the use of a negative structure to maintain the conversation's continuity. To investigate the enunciative functions of negative structures with *não*, Petry, Goldnadel, and Lambert (2021) analyzed sociolinguistic interviews from the Projeto Variação Linguística na Região Sul do Brasil (VARISUL) database and concluded that it was only possible to differentiate the functions of each negative form due to

the analysis of the relationship between subject, speaker, and listener, considering each specific situation.

Apart from the particularity of each interactive encounter, there is another factor related to the description of the functions assumed by pre-verbal, double, and post-verbal negation structures that should be considered: gestures. Language is a symbolic phenomenon that encompasses “the phonetic detail of an utterance, as well as any other signals, such as gestures.” (CIENKI, 2015, p. 500). Beyond what is said and what can be inferred by speakers, in an interactional encounter body movements also assume communicative functions. In different languages (German, English, Spanish) multimodal studies (BRESSEM; MÜLLER, 2017; HARRISON, 2010; MÜLLER; SPECKMANN, 2002) suggest that hand gestures are relevant to form the functions assumed by negative items, which can do more than state an opposition. In the next section, we discuss them.

5 Speech, hand gestures, and negative statements


Questions regarding negation and how this property of natural languages is expressed by speakers have been asked in different languages. Some of these questions were made based on the presupposition that negating is something that can be done by negative lexical items alone, or by negative lexical items plus body movements.

Multimodal approaches suppose that negative structures plus hand gestures can suggest specific functions in interactive encounters, which reinforces the necessity to think of signs not only in a bi-dimensional way. Regardless of differences in conceptualizations about gestures, their description, and analysis, descriptive studies highlight that this is an approach that might help us to understand how human cognition works, how we conceptualize concrete or non-concrete elements, evaluations, and how we communicate them. In the following paragraphs, we describe multimodal studies about negation in German, Spanish, English, and Brazilian Portuguese. All of them include, in their model of analysis, hand gestures.

As discussed in the previous sections of this article, gestures, when expressing pragmatic functions, might establish with speech a co-expressive and non-random relationship. This relationship can be witnessed in data from German, Spanish, English, and Brazilian Portuguese. This is why we assume that gestures might differentiate the functions assumed by

negative structures with *não*. The “Away Family” gestures described in Table 2, when executed along with negative assessments formed by open class elements (nouns, verbs, and adverbs), express specific pragmatic functions, analyzed by Bressemer and Müller (2017). Using 34 hours of videos of different discourse types (naturalistic conversations, TV shows, academic lectures, experimental data among others), these authors studied the “Throwing Away” gestures performed by German speakers, using a corpus codified according to the Linguistic Annotation System, as shown in Table 4:

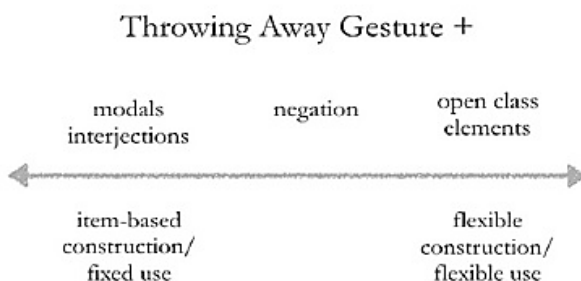
Table 4 – Description of the “Throwing Away” subfamily of gestures

	Characteristic form	Lax flat hand oriented vertically, palm facing away from the speaker's body, hand flaps downward from the wrist.
	Shared embodied motivation	Clearing body space and removal of unwanted and annoying objects, throwing away middle-sized roundish objects, that one wants to get rid of
	Shared meaning	Negative assessment, getting rid of, removing and dismissing annoying topics of talk, by throwing it away from the speaker's body.
	Shared action scheme/ experiential frame	“Away Action Scheme”

Source: Bressemer and Müller (2017, p. 4).

The Throwing Away gestures “may simply negatively assess the referent expressed in the proposition, as is the case with verbal negation, nouns, verbs, and adverbs (...), and it may add a modal or affective qualification in contexts with modals and interjections” (BRESSEMER; MÜLLER, 2017, p. 4), forming a verb-kinetic structure characterized as Throwing Away Gesture + particles/negation/N/V/ADV, which use can be more or less fixed, in a *continuum*. In this verbo-kinetic structure, the combination between linguistic items and gestures can or cannot be fixed (Figure 14), and their execution may be influenced by the type of words with which they occur, highlighting the necessity of a multimodal analysis that encompasses the particularities of each interactive encounter.

Figure 14 – Degrees of the “Negative-Assessment-Construction”



Source: Bressemer and Müller (2017, p. 6).

The use of verb-kinesic structures to demonstrate modal and affective qualification seems to be common in different languages. Müller and Speckmann (2002) analyzed a situation in which a Spanish speaker was talking about a hypothetical reality: how it would be if Cuba had four TV stations instead of two. In that situation, he said:

- (5) Pero en Cuba con cuatro canale otro problema es esto (MÜLLER; SPECKMANN, 2002, p. 93).

The verbal structure in (5) was accompanied by three sets of gestures. The last one was the *quitar* (similar to the brushing away) gesture, synchronized with the first syllables of *canale* and used as “a metacommunicative resource operated in a specific verbal context: evaluate what is being said as a type of event unacceptable or impossible, assuming the function of a modal particle that operates together with the expression’s propositional content.” (MÜLLER; SPECKMANN, 2002, p. 91). The analysis of the *quitar* gesture by Müller and Speckmann (2002) reinforces the presupposition that hand gestures might add to verbal structures new meanings, forming specific pragmatic functions.

To form a specific pragmatic function, gestures cannot be included in random positions of the utterance. As negative particles, gestures also have their scope. Using a corpus formed by eight hours and twenty minutes of conversation between native speakers of English, Harrison (2010) analyzed how these people organized negative statements formed by negative particles (*no, not, nothing, never* etc), negative affixes (*dis-, im-, un-* etc), inherent negatives (*fail, sad, deny* etc), non-speech sounds

(*tut tut, uh uh* etc) (HARRISON, 2010, p. 33) plus hand gestures as the one illustrated in Figure 15:

Figure 15 – The palm down horizontally across the body gesture



Source: Harrison (2010, p. 31).

The gesture illustrated in Figure 15 is defined as “the palm down horizontal across the body” (PD across gesture). In this sample, it was used more frequently to negate actions and states with verbal clausal negations and to express the speaker’s evaluations and dislikes (HARRISON, 2010, p. 34-35). Based on the annotation protocol proposed by Kendon (2004), Harrison (2010) also analyzed gestures through the lenses of gesture phrases, focusing on their semantic-pragmatic core, the stroke, and their relationship with negative particles. From a gestural point of view, Harrison’s research focuses on negative gesture phrases. From a syntactic point of view, it focuses on the expression of negation. Syntactically, negation is structured by a node, the negative item (*suffix, affix, particle*), and its verbal scope, which usually covers the whole utterance, until its end. However, in conversations, with people speaking for a longer period, it is hard to specify what is the scope of negation, which can go beyond the limit of a specific sentence, being marked by gestures used to achieve a specific pragmatic function, in a temporal synchronization to what is said. This is illustrated in the following example:

- (6) So he COuldn't... he COuldn't uh WIn and eventually he got so FEEd up and despondent³
(HARISON, 2010, p. 42).

In (6), the speaker executed the gesture illustrated in figure 15 together with *couldn't*, and extended the gesture throughout the whole utterance. Syntactically, the end of the scope of negation would be *win*. However, the PDacross gesture extended this limit to achieve a communicative intention, which suggests that pragmatic functions assumed by verb-kinesic structures have an internal organization. This organization may evidence the multimodal nature of language and the relevance of this type of analysis. Other studies in German, English, Spanish, French, and Italian (BRESSEM; MÜLLER, 2014; CALBRIS, 2011; DE JORIO, 2000 KENDON, 2004; STREECK; 2009; TEßENDORF, 2014;) have been presenting similar results reinforcing that negation is multimodal and conveys more than opposition.

The profusion of studies about gestures and their relation to verbal structure in different languages has encouraged multimodal approaches to negation in Brazilian Portuguese. For instance, Santos (2021) studied the forms and recurrent functions of negative gestures in different communicative contexts, based on the assumption that negation is not only a matter of opposition. In her study, she analyzed 53 negative gestures that occurred in 25 minutes of audiovisual data, taken from TEDxTalks conferences and Distributed Little Red Hen Lab, a library of international news. As criteria for data collection in TEDxTalks conferences, she used the configuration of the speaker's hand, based on studies about negation in German. Meanwhile, the criteria for data collection in Red Hen was the co-occurrence of the keywords in Table 5, plus hand gestures.

³ This is the literal transcription used by Harrison. The syllables in capital letters represent the occurrence of hand gestures.

Table 5 – Keywords and number of occurrences taken from Red Hen

Keywords	Number of occurrences
Não (<i>no/not</i>)	13
Nem (<i>neither</i>)	2
Nunca (<i>never</i>)	2
Ninguém (<i>nobody</i>)	2
Jamais (<i>ever</i>)	1
Nenhuma (<i>none</i>)	1
Sem (<i>without</i>)	1
Nada (<i>nothing</i>)	1
Impossível (<i>impossible</i>)	1
Desativar (<i>deactivate</i>)	1

Source: Santos (2021, p. 68).

Altogether, the data collected by Santos (2021) contained 9% (5/53) of sweeping away gestures; 25% (13/53) of holding away gestures; 13% (7/53) of Kendon's definition of open hand supine gestures which, in this sample, was used to indicate indifference, 4% (2/53) of throwing away gesture, and 9% (5/53) of brushing away gestures. The analysis of all these movements suggests that they express rejection, interruption, metaphorical withdrawal, and negative evaluation. To reject something, speakers tended to, metaphorically, sweep away conversational topics, expressing epistemic position. Holding away gestures were used to express interruption and a more emphatic rejection. In this case, they were performative actions, regulating the interlocutor's behavior (SANTOS, 2021, p. 101). Between speakers of Brazilian Portuguese, what Kendon (2004) defines as open-hand supine gestures were used to express negative evaluation about something that must be taken away from the speaker.

Santos (2021) concluded that different patterns of hand movements synchronized with linguistic items assume specific pragmatic functions. Based on that, it might be plausible to assume that gestures – hand and

facial, since both types might express modal (negative) evaluation – can differentiate the functions assumed by negative structures with *não*. However, it is important to consider that the negative gestures executed by Brazilian Portuguese speakers are not totally similar to the ones executed by German speakers. The multimodal approach to negation in Brazilian Portuguese is still underexplored, and awaits for further studies.

6 Negative statements on Brazilian Portuguese: an analysis proposal

In Brazilian Portuguese, descriptive studies whose analyses are based on structural variables (SOUSA, 2007; SEIXAS, DE ALKMIM E CHAVES, 2012) suggest that the occurrence of pre-verbal, double, and post-verbal negation with *não* is a variable phenomenon. From this point of view, these three contexts of occurrence are three possibilities to express opposition. However, approaches that focus on the informational status (SCHWENTER, 2004) of negation assume that the occurrence of negative structures with *não* is conditioned to the status of the negated information, which may be given or new in the speech, literally activated or inferred by speakers. This status is probably relevant to identify the pragmatic functions assumed by negative structures with *não*: denegation, thematic pause, return to a quantitative topic, and face-saving (PETRY; GOLDNADEL; LAMBERT, 2021). Traditionally, all of them are described through verbal variables based on researchers' intuition to comprehend how, in interactions, multiple functions of negative structures are differentiated. But beyond linguistic structure and informational status, based on the paradigm of cognitive linguistics (GIBBS, 2005; FREITAG; CRUZ; NASCIMENTO, 2021), and the notion of usage events (CIENKI, 2015) we suppose that another factor must be considered to describe the functions of negative structures: hand and facial gestures.

In German, Spanish, and English, negation is expressed by linguistic items and gestures. Santos (2021) observed that the same might happen in Brazilian Portuguese. Together with different operators of negation (*não*, *nunca*, *ninguém*, *jamais*, etc), hand gestures assume modal functions, suggesting rejection, interruption, metaphorical withdrawal, and negative evaluation. All these functions might be assumed by negative structures with *não* which, as we assume, are not three ways to state opposition. Additionally, facial gestures might also express negative evaluation by the contraction of eyebrows, nose, and mouth.

Based on descriptive studies about pragmatic functions of negation, and on our additional assumptions about verbal structure in combination with gestures, we assume that negative structures with *não* might suggest denegation, thematic pause, return to a quantitative topic, and face-saving, as defined by Petry; Goldnadel and Lambert (2021), and negative evaluation, based on the results reported by Pinheiro (2021). We also assume that to describe all the variables that act to express the functions of negative structures with *não* it is necessary to consider their context of use, including phonetic detail, hand, and facial gestures, elements that form multi-complex signs which might be described through kinesic properties, in a co-dependent relationship. Based on these assumptions, we defend a multimodal description of interactionally relevant blocks composed of negative structures with *não*.

7 Summary

We initiated this article by discussing the notions of sign proposed by Saussure, Bühler, and Pierce to address the theoretical implications of different models of language description. In an interactive encounter, what we say and what we see is relevant to express functions of elements that might look the same but are not. The gestures executed by speakers in an interactive encounter are expressions of cognitive processes (metaphor, mimesis): they emerge through the conceptualization of schematic images and, when executed continuously and in similar situations, become recurrent, acquiring more specific meanings. The “Away Family” (Table 2) exemplifies this. Based on the container and space imagistic schemas, they are used to negate, reject, express negative evaluation, and show the speakers’ intention to distance themselves from something.

In Brazilian Portuguese, descriptive studies based only on verbal structure assume that pre-verbal negation, double negation, and post-verbal negation with *não* have the same function: express opposition. However, pragmatic approaches assume that these structures express complex conversational functions: denegation, thematic pause, return to a quantitative topic, face-saving, and negative evaluation. That is what we assume, supposing that the possibilities of negation with *não* are not different ways to say something.

Traditionally, the functions of negative structures with *não* are described through verbal variables, based on researchers’ intuition to

comprehend how, in interactions, multiple functions assumed by a lexical item are differentiated. All these functions might be differentiated by hand and facial gestures. Based on a multimodal cognitive perspective, and anchored on evidence of the multimodality of negation in German, English, Spanish, and Brazilian Portuguese, we proposed a multimodal description of negative structures with *não*, aiming to analyze if their complex functions are differentiated by gestures, analyzed through kinesic and semiotic features, an approach that might contribute to understanding the relationship between language, gestures, and between conceptualization and expression of negation and, consequently, usage events.

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