From question to subordination: exploring the emergence of a complementizer in Brazilian Sign Language

[Da interrogação à subordinação: explorando a emergência de um complementizador na Libras]

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alessandro.vasconcelos@ifal.edu.br

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ABSTRACT: Our goal in this article is to discuss the different uses of the sigh ⬆ (*what* (English)/ *que* (Portuguese) in Brazilian Sign Language (Libras), considering its different categorical status that involves its function as an interrogative pronoun and as a complementizer in complement sentences. Considering naturalistic data extracted from two corpora, we analyzed the use of ⬆QUE in three different types of question-answer pairs, namely full, semi-rhetorical, and rhetorical questions, aiming to accommodate it in a synchronic *continuum* of grammaticalization uses that would represent various stages of grammaticalization and which could explain the use of ⬆ QUE as a complementizer.

KEYWORDS: Interrogative pronoun; complementizer; semi-rhetorical question; grammaticalization; Brazilian sign language.

RESUMO: O nosso objetivo neste artigo é discutir os diferentes usos do sinal ⬆ (*what* (Inglês)/ *que* (Português) na Língua Brasileira de Sinais (Libras) considerando o seu diferente estatuto categorial quer como um pronome interrogativo quer como complementizador em orações completivas. Tendo em conta dados naturalísticos extraídos de dois *corpora,* analisamos o uso de ⬆QUE em três tipos de pares pergunta-resposta, nomeadamente perguntas plenas, perguntas semi-retóricas e retóricas, de modo a acomodar esses diferentes usos num *continuum* sincrónico de gramaticalização, que representaria diferentes estádios de gramaticalização e que explicaria o uso de ⬆QUE como complementizador.

PALAVRAS-CHAVE: Pronome interrogativo; complementizador; pergunta semi-retórica; gramaticalização; Língua Brasileira de Sinais.

Introduction

In this work, we analyze different uses of the sign ⬆⬆🖐QUE, with the hand configuration in this way 🖐, with movement forward twice, as shown in Figure 1, used by deaf signers who use the Brazilian Sign Language (Libras).

FIGURE 1 – Sign ⬆⬆🖐

(Source: Authors own elaboration)

We chose to use the representation of the sign in *SignWriting* to maintain an analysis perspective further away from the spoken language, in this case, Brazilian Portuguese. We are concerned with how glosses are used, as Leite *et al*. (2021) advocated, so that it can compromise linguistic analysis. Therefore, we agree with the authors that the use of glosses "biases and simplifies our understanding of the semantics of Libras, inevitably directing our gaze towards isolated words in Portuguese" (Leite *et al*., 2021: 20).

Libras dictionaries translate this sign as *que* (English *what*), categorized as an interrogative pronoun. The dictionaries by Lira and Souza (2011) and Capovilla *et al*. (2017) provide similar translations of this sign. However, in our analysis, based on spontaneous data, we observed that this signal exhibits properties that need to be better described.

Regarding its use as an interrogative pronoun, following Araújo and Freitag (2010), Freitag (2010), and Santos (2017), we observed that this sign is not always associated with a full question; that is a question that demands a response from another interlocutor, but also to a rhetorical question, when there is no response

from the receiver or their own, and to a semi-rhetorical question, in which the signer himself produces his answer to the question. In this way, it is possible to discuss that using the ⚑ interrogative pronoun involves more and less abstract values. Furthermore, in some contexts, we identified that this sign can also function as a conjunction in complex sentences in which its interrogative value is weakened.

We hypothesize that we can explain these different uses of the sign ⚑ based on a *continuum* of grammaticalization, in which the sign loses its properties as an interrogative pronoun, used in full questions, starting to be used in semi-rhetorical and rhetorical questions, with more abstract and more grammatical function, until presenting an even more abstract use when it starts to function as a complementizer in complement sentences.

As already pointed out by authors such as Pfau and Steinbach (2011) and Rodrigues (2022), the study on grammaticalization in sign languages, although fruitful and pertinent, presents methodological challenges since we do not have a robust set of diachronic evidence. However, as the authors mentioned above suggest, the different uses of the sign ⚑ allow us to place it on a *continuum* of grammaticalization within a synchronic perspective.

The results of our analysis of the sign ⚑ are based on spontaneous Libras data extracted from two main corpora: *Corpus de Libras*, organized by researchers from the Federal University of Santa Catarina, and Minicorpus from the SignL Research Group, from Unesp. Our data analysis methodology includes a quantitative approach for measuring type and token frequencies and a qualitative approach for discussing occurrences' functional and semantic properties.

The article is organized as follows: in the first section, we discuss the nature of interrogative pronouns and the different semantic types of questions. In the second section, we will address the assumptions about the grammaticalization process. In the third section, we present our methodology, and in the fourth, our analysis. Conclusions and references are at the end of the text.

1. Interrogative pronouns and types of questions

According to Neves (2018: 566), the interrogative pronoun constitutes an indefinite pronoun that defines an interrogative nature as in the pronouns *que* (English *what*), *qual* (English *which*), and *quanto* (English *how*) in Brazilian Portuguese. These pronouns can occur in direct or indirect interrogation. Below, we present examples of interrogative sentences in Portuguese related to our research based on Neves (2018: 566). Example (1a) is a direct question due to its intonation characteristic, in which, generally, at the end of the question, there is a lowering of the intonational curve. Example (1b), in turn, is an indirect question in which the pronoun is used at the beginning of the clause, subordinated as a complement to the main clause; its intonation denotes a declarative sentence.

> (1)   a. ***Que*** *aconteceu? (REB-D)*
> (English) *What* happened?
> b. *Tiveram uma conversa. Interessante! Gostaria de saber **que** conversa foi essa. (AFA-R)*
> (English) They had a conversation. Interesting! I would like to know *what* that conversation was about. (Neves, 2018: 566)

Regarding the sign 🔼, in Libras, the dictionaries by Lira and Souza (2011) and Capovilla *et al*. (2017) define it as an interrogative pronoun used in sentences like VOCÊ BEBER O-QUE? (English trans. *What do you want to drink?*).

The sign 🔼 as an interrogative pronoun is associated with non-manual question marking in interrogative constructions. Facial expressions are essential components of sign languages that transmit grammatical, lexical, and morphosyntactic linguistic information. Most sign languages have similarities regarding non-manual interrogative marking: to produce a full question, frowning and moving the head forward are used (Quadros & Karnopp, 2004; Felipe & Monteiro, 2007; Pfau & Quer, 2010; Pfau & Bos, 2016; Figueiredo & Lourenço, 2019; Quadros, 1999, 2019; Royer & Quadros, 2021), as shown in Figure 2, and occurrences (2) from Quadros (1999) and adapted by Royer (2019: 47), which presents a direct question in Libras.

FIGURE 2 – Non-manual interrogative pronoun marking
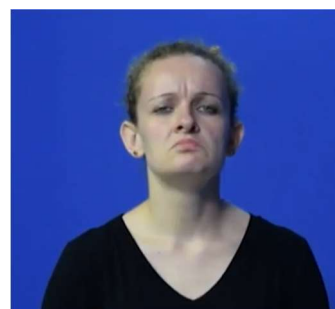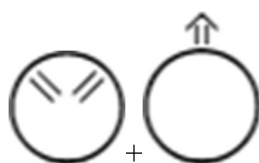
(2)

| WHAT | J-O-A-O | BUY |

English: *What did João buy?*

(Source: based on Quadros, 2019: 98)

Quadros (1999) highlights that the sign ⬆ can be used in indirect questions and complement sentences with different non-manual markings without pointing out these specific markers.

Freitag (2010) clarifies that the interrogative pronoun is used in different types of questions, in which it is possible to identify that its uses in question contexts are semantically different depending on the kind of question. The author discusses these different types of questions, which can be classified as full questions, semi-rhetorical questions, and rhetorical questions. The author defines each type of question-answer pair based on a grammaticalization *continuum*, in which an increase in abstractization is observed:

> In this continuum, a full question is a question from the speaker that necessarily requires a response from the listener. To this end, it is necessary that speaker and listener share the same semantic-discursive knowledge in the context of interaction. A semi-rhetorical question is a question asked by the speaker, who is the one who answers it. The

rhetorical question is asked by the speaker, but is not answered, neither by the hearer nor by the speaker; it is a question that requires no answer; according to Fávero (2000: 95), the "rhetorical question occurs when the speaker elaborates the question, but already knows the answer; used as a resource to maintain the turn or to establish contact (phatic function) (Freitag, 2010: 161).

We understand full and rhetorical questions like the examples in (1) and (2) above. Below, we present examples from the Portuguese of the type of semi-rhetorical question-answer pairs that were taken from Freitag (2010):

(3)   *"o arroz de forno... você pega o quê? um quilo de arroz bota pra cozinhar... com... com sazon... pode ser pra::: arroz branco... como você preferir... vários gosto de sazon né? colocou cozinhou tudo quanto tiver tudo cozinhado... o arroz... assim que você desligar o fogo... você pega dois ovos inteiro... joga dento e mexe... o arroz... que pra untar o arroz... depois do arroz untado... você vai na travessa... coloca o arroz... aí você pode colocar o quê? charque calabresa... escalda o charque... tudo bem picadinho... o charquezinho... escaldou o charque... torrou... separa a calabresa ... cortou ou em fatia ou também em cubinhos... torrou... reserva... depois de tudo reservado...tudo pronto pro recheio... você pode usar o quê? pode usar frango também se preferir... no arroz (MJ 02)"* (Freitag, 2010)

English: "the baked rice... what do you get? a kilo of rice can be used to cook... with... with spices... it can be for::: white rice... as you prefer... different tastes for spices, right? put everything cooked... the rice... as soon as you turn off the heat... you take two whole eggs... throw them in and stir... the rice... to grease the rice. .. after the greased rice... you go to the dish... add the rice... then what can you put? pepperoni jerky... blanch the jerky... finely chopped... the jerky... blanch the jerky... toast it... separate the pepperoni... cut it into slices or cubes... toast it ... reserve... after everything is reserved... everything is ready for the filling... what can you use? You can also use chicken if you prefer... in rice (MJ 02)" (Freitag, 2010, emphasis added)

In (3), when describing the steps of a recipe, the speaker asks: "what do you get?", and the answer is immediately given by herself/himself. Semi-rhetorical questions of the same type are used throughout the statement, such as "then what can you put?" and "what can you use?" As the author points out, "the modal *can* in questions expands the range of possible answers, but it is the speaker himself who answers them, enumerating the next step in the recipe" (Freitag, 2010: 162).

Concerning LIBRAS, Severino (2022) highlights using semi-rhetorical and rhetorical questions in the Portuguese and Libras language pair as a translation strategy. Considering the analysis of several occurrences of translators in the translated videos using semi-rhetorical/rhetorical questions, the deaf researcher, with experience in the deaf community that uses this type of question, observes that it is a form of interactional communication strategy. The occurrences from Severino (2022) in which the sign ⛛ was used to highlight issues related to this text are presented in (4-6) below.

In all three instances, the underlined sentences are in the affirmative form, but the translators made their choices and added semi-rhetorical questions in the Libras version. These are questions that translation readers are not expected to answer – the translator will answer. In (4), it appears in translation as "Esperantists dream of what? It's bringing people together" (Severino, 2022: 137). In (5), as "[...] parameter/rule what? selection of more understandable signals" (Severino, 2022: 137). In (6), the WFD sign (World Federation of Deaf in English) was signaled, using ⛛ it to signal the meaning of the previous sign, and continues signaling the World Federation of the Deaf.

(4)

GROUP | ASK | IX3(GROUP) | e-s-p-e-r-a-n-t-o

GROUP | POSS3 | DREAM | WHAT | BE | SUBJET
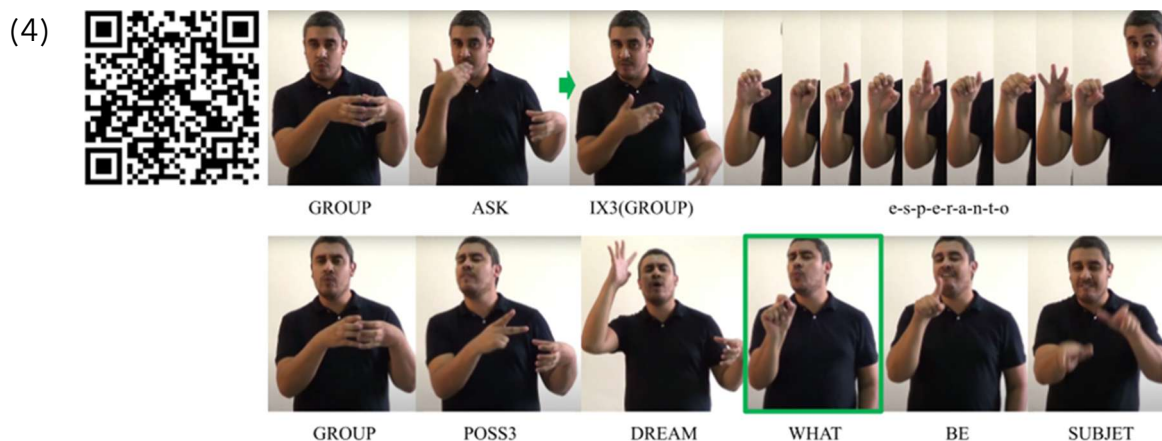
English: *The dream of Esperantists is to unite people, naturally separated by the diversity of languages.*
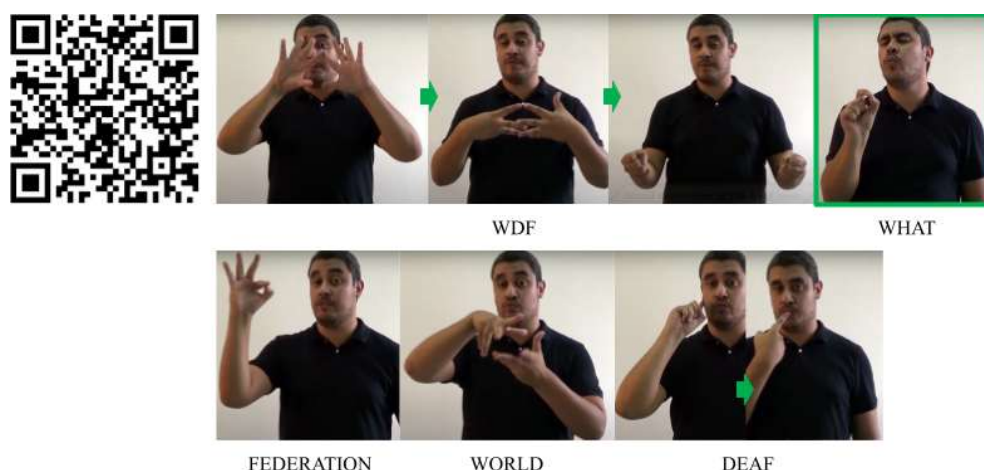
(Source: Severino, 2022)

(5)

English: *In the mid-1970s, the Sign Unification Commission committee proposed a standardized system of international signs, with the parameter being the selection of more understandable signs, with the aim of facilitating learning, through the integration of different sign languages.*

(Source: Severino, 2022)

(6)

English: *This term was mentioned for the first time in 1951 at the World Congress of the WFD – World Federation of the Deaf.*

(Source: Severino, 2022)

The relationship between the types of question pairs is discussed by Freitag (2010) and Araújo and Freitag (2010), considering a *continuum* of grammaticalization that would lead to the emergence of discursive markers in Portuguese, characterized by their interpersonal and intersubjective uses. For the authors, questions are used as integration strategies. Therefore, they comprise discursive procedures as "conventionalized strategies for verbalizing the

communicative situation, that is, they are constructions that are part of the grammar of the language" (Araújo & Freitag, 2010: 322).

In the discussion about the emergence of discursive markers from types of questions, we hypothesize that the increase in the degree of subjectivity and intersubjectivity observed in the *continuum* full question > semi-rhetorical question > rhetorical question can serve as a basis for our understanding of the use of the sign QUE as a complementizer as a grammaticalization product in Libras. Therefore, in the following section, we will explore studies on grammaticalization in greater depth.

2. Grammaticalization

Antoine Meillet, in a work dedicated to the "historical evolution of grammatical forms" (Meillet, 1912), presents the term grammaticalization, which is defined as "the attribution of a grammatical character to a previously autonomous word" (Meillet, 1912). In this grammaticalization process, we see that a lexical item can start to function as a new grammatical form.

Heine (2003: 163) argues that grammaticalization can be understood from an underlying unidirectional trajectory that presupposes "a cognitive strategy through which less concrete, less immediately accessible and/or less delineated meaning contents are understood in terms content that is more concrete, more quickly accessible and/or has a more clearly delineated meaning". For the author, grammaticalization processes take place metaphorically, which implies an increase in abstraction and consequent more grammaticalization as the lexical items begin to perform grammatical functions in the language.

The advancement of grammaticalization activates multiple processes – phonetic, morphosyntactic, semantic, and pragmatic –which involve, according to Heine and Kuteva (2002), four mechanisms: (i) *desemanticization or semantic reduction*, in which semantic properties are lost or altered: (ii) *contextual extension or generalization*, observed when the grammaticalized item starts to be used in new contexts; (iii) *decategorization*, in which there is a loss of morphosyntactic properties

characteristic of less grammatical use; (iv) *erosion*, in which there is a loss of phonetic substance (phonological reduction).

Hopper and Traugott (2003) consider two perspectives for studying grammaticalization. From a diachronic or historical perspective, the origins of grammatical forms and the changes that occurred over time are studied. From a synchronic perspective, grammaticalization can be perceived based on fluid patterns of linguistic use.

In the case of sign languages, for which we can rarely obtain diachronic evidence, as stated by Pfau and Steinbach (2011), the synchronic analysis of grammaticalization allows us to organize patterns of use of related linguistic items within a *cline* that represents the synchronic arrangement of lexical and grammatical forms.

Wilcox (2004; 2017) argues that spontaneous gestures are encoded as language – from external development at the beginning of life to the conventional linguistic system. The author proposes a grammaticalization route based on the gesture that becomes a grammatical morpheme; this gesture can be incorporated by sign language as a lexical item, encoding itself to assume a new grammatical function over time, according to Wilcox's (2004; 2017) unidirectional route.

FIGURE 3 – Gesture grammaticalization Route
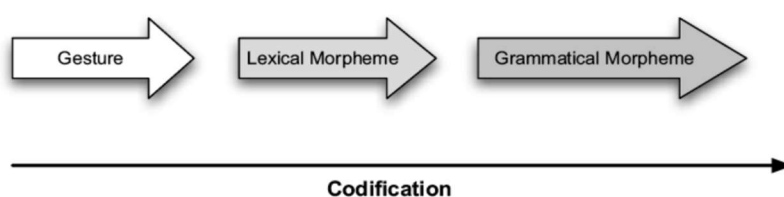
(Source: Wilcox, 2017: 12)

Grammaticalization studies have been consolidated to analyze data from oral languages (Hopper & Traugott, 2003), and a very fruitful field of investigation concerns the emergence of conjunctions, since Meillet (1912) initial studies. Some authors have deepened the analysis of the grammaticalization of conjunctions by analyzing sign language data, such as Schermer and Pfau (2016), who presented the

sign (REASON) as a noun in German Sign Language (DGS) that was grammaticalized as a causal conjunction in adverbial clauses. Rodrigues and Souza (2019) and Rodrigues (2022) propose that this process can be exemplified in Libras through the uses of three different manual conjunction: the sign ![sign](WAIT/STOP) (WAIT/STOP) as a gesture/emblem that was grammaticalized as an adversative conjunction BUT; the sign (REASON) used as a noun and grammaticalized as a causal conjunction; and the sign (EXAMPLE) used as a noun and grammaticalized as a conditional conjunction.

The studies by Wilcox (2004), Pfau and Steinbach (2011), Schermer and Pfau (2016), Rodrigues and Souza (2019), and Rodrigues (2022, 2019) are necessary for our research because they show how new conjunctions can emerge in sign languages. In this case, we have two grammaticalization routes, the first of which has a gestural source and the second, a lexical source. Regarding the sign analyzed in this research, our hypothesis is that ![sign] may present less grammatical uses, such as interrogative pronouns, and more grammatical uses, such as conjunction. In this case, in the analysis section, we will present our analysis to support our hypothesis that the uses of the sign ![sign] can be organized in a synchronic *continuum* of grammaticalization, where less grammatical uses, such as interrogative pronouns, can serve as a basis for the emergence of more grammatical uses as complementizer in complement sentences.

3. Methodology

Our research was based on the analysis of two main corpora. Data collected from the Libras Corpus of the Federal University of Santa Catarina were used, "involving video recordings of elicited and spontaneous situations of use, to be used in research and other applied purposes" (Quadros *et al.*, 2020), and we added a minicorpus compiled by researchers from the SignL Research Group at Unesp. The two sources of data collection totaled 46 videos lasting 3 hours, 10 minutes, and 11

seconds, an average of 4 minutes and 14 seconds. All videos were completed transcriptions of the ELAN program glosses to facilitate searching in our research.

Our analysis parameters involved the hand configuration when making the sign, movement, non-manual markers, the function of the sign 🔼 (interrogative or complementizing pronoun), and context of use (full question, semi-rhetorical, rhetorical, and complement clause). Quantitative analysis was conducted using type-token frequency (Bybee, 2003).

4. Types of questions and the grammaticalization of 🔼 in Libras

Our data reveal the use of 🔼 full, semi-rhetorical, and rhetorical questions and complementizers in complement sentences. We present below representative examples of these uses:

4.1. Full question

In (7), the signer explains that he prefers to study in a deaf class and in a hearing inclusive class than in a hearing room. When reporting to his interlocutor, he asks him what his feelings would be about this.

(7)

English: *How do you feel about it?*

(Source: © Corpus de Libras-UFSC)

In this case, non-manual eyebrow furrowing and head movement marking were used, converging with the interrogative meaning.

4.2. Rhetorical question

In (8), the signer explains about the hearing teacher who learns a little LIBRAS to teach deaf people and asks a rhetorical question: "What will the deaf understand?". Soon after, she continues pointing out that deaf people communicate very well using sign language. Therefore, there is no answer to the question itself – it means that deaf people may have difficulty understanding what the teacher is signaling because he is not fluent.

(8)
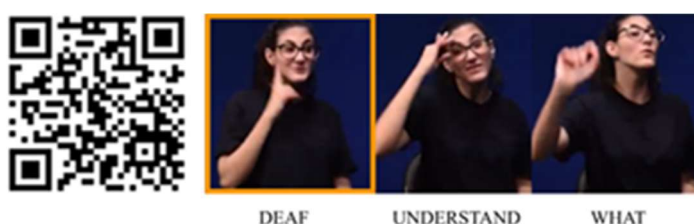
English: *What will deaf people understand?*

(Source: © Corpus de Libras-UFSC)

4.3. Semi-rhetorical question

In (9), the signer uses the sign ⬚ related to the verb ⬚ (WORK), accompanied by the non-manual marking of a furrowed eyebrow and head movement in the statement that we translate as "*Even today you ask, for example, what do you work?*". Soon she responds, following "*I'm a Libras teacher*".

(9)

English: *People often ask me, for example: "What do you do for a living?" "I am a Libras teacher".*

(Source: © Minicorpus SignL)

4.4. Complement sentence

In (10), the signer used the sign ⬆⬆⬛ after the verb ⬇↗ (NOT-LIKE) to complete a sentence that refers to this verb.

(10)

English: *I don't like that the TV shows anything about cochlear implant.*
(Source: © Corpus de Libras-UFSC)

Assuming a synchronic perspective of grammaticalization, we argue that the different uses of the sign ⬆⬆⬛ can be organized into a *continuum* capable of accommodating uses that are less and more grammatical.

5. Grammaticalization of question-answer pairs

Studies on the grammaticalization of conjunctions in sign languages of the world have shown that even though these elements are scarcer in sign languages, as argued by Tang and Lau (2012), for example, the emergence of new conjunctions in these languages   has increased our view of grammaticalization as a modality independent process.

Our hypothesis in this work aims to explain how the interrogative pronoun ⬆⬆⬛ started to function as a complementizer in subordinate clauses in Libras. Therefore, following Hopper and Traugott (2003), we propose a synchronic cline where these different uses ⬆⬆⬛ correspond to varying degrees of grammaticalization, with the use as a complementizer appearing to develop from the use as a pronoun in semi-rhetorical questions:

interrogative pronoun   >   *interrogative pronoun*   >   *complementizer*

(full questions)   *(semi-rhetorical questions)*

In this process, we can observe the action of the four mechanisms proposed by Heine (2003):

- extension: as a complementizer, the sign ⟐ starts to be used in a new syntactic context on the clausal border;

- desemanticization: the sign ⟐ loses its interrogative semantic value, as it is neither particularized nor refers to an antecedent, as it has become a conjunction introducing a complement clause;

- decategorization: the sign ⟐ changes its syntactic properties, mainly about mobility, as it starts to be used as a complementizer with a fixed position on the sentence.

- erosion: in its use as a complementizer, the signal ⟐ changes in its phonological properties, ceasing to be associated with non-manual question marks.

Regarding this last mechanism, the non-manual markers associated with the sign ⟐ with interrogative value demonstrate head movement and furrowed eyebrows. As we mentioned, the authors who approach non-manual interrogative marking to produce questions say that it is common to use forward head movement with furrowed eyebrows (Quadros & Karnopp, 2004; Felipe & Monteiro, 2007; Pfau & Quer, 2010; Pfau & Bos, 2016; Figueiredo & Lourenço, 2019; Quadros, 1999, 2019; Royer & Quadros, 2021). Different uses of the sign ⟐ made us realize that it was not only used with the non-manual marker mentioned by these authors. Then, we will present the use of a non-manual marker associated with the sign according to our results.

FIGURE 4 – Use of eyebrows with the sign
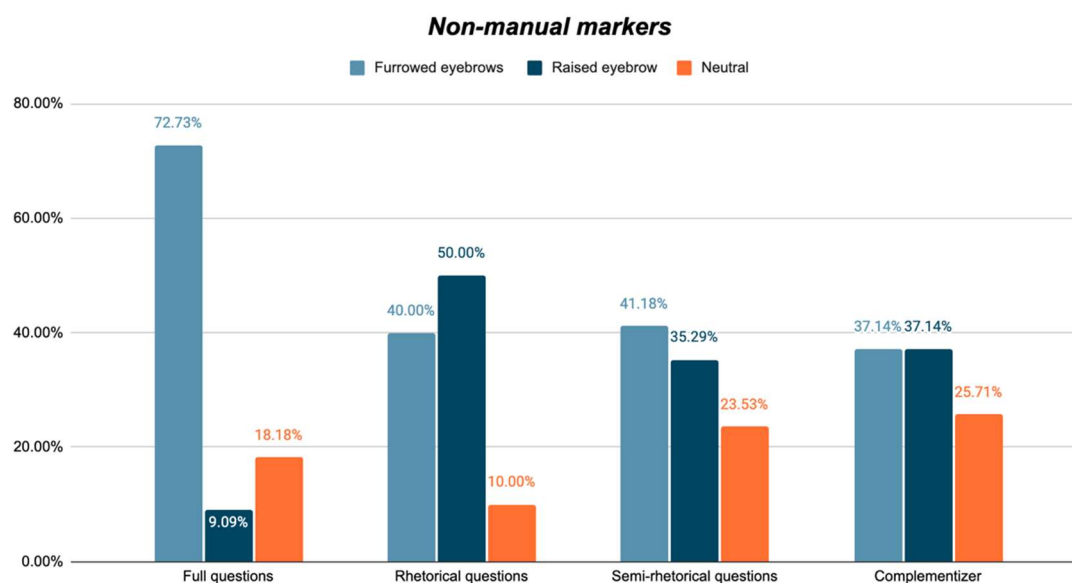
(Source: based on Vasconcelos, 2023)

We found variants of head movements in the analysis. The movement of the head forward was more frequent. We believe that there is a similarity with the movement upwards. We find three positions regarding the eyebrows: *frowning, arching,* and *neutral.* The frequency of these uses is shown in Figure 4. The interrogative pronoun divides three question-answer pairs using eyebrows that have their restrictions: the full question uses furrowed eyebrows; rhetorical and semi-rhetorical questions have a difference between furrowed and arched eyebrows. So, the eyebrows of full questions remain furrowed, as stated by the authors mentioned above, and rhetorical and semi-rhetorical ones can choose between furrowed and arched. What drew attention to our data was the increase in neutral eyebrow marking and the decrease in furrowed and arched eyebrow marking associated with using it as a complementizer. This indicates that, in more grammaticalized uses, there appears to be a neutralization of the non-manual markers related to interrogative values.

Conclusion

We hypothesize that these different uses of the sign ⛬ may be associated with a process of grammaticalization, as we identify uses that are less or more grammatical, which would involve, on the one hand, its use as an interrogative pronoun (less grammatical) and, on the other, its use as a complementizer, linking sentences (more grammatical).

As a gradual process, we do not expect grammatical changes to be taken abruptly, so to develop a new function as a complementizer in Libras, the sign QUE gradually lost its interrogative value in some contexts, namely semi-rhetorical question, where the question meaning is weakened. This case reinforces the importance of considering the morphosyntactic context in which an item undergoes semantic and morphosyntactic changes that allow it to be used in a new context with a more grammatical function.

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